Art Therapy as a Bottom-Up Processing Intervention in the Contextual Framework of the Neurosequential Model of Therapeutics

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By

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Copyright Statement

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Abstract

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This single site, multiple case study investigated using art therapy as a primary modality for treating trauma and attachment rupture in children and adolescents based on characteristic features that exploit neurological information processing. The study focused on utilizing art therapy interventions conducted on a twice monthly basis with 6 males (ages 9–16) in a residential treatment center that employed the Neurosequential Model of Therapeutics (NMT) for treatment and assessment. The NMT is an assessment procedure and ensuing therapeutic recommendations based on research conducted by Dr. Bruce Perry (2006). For the participants chosen for this study, art therapy was specifically identified as an appropriate bottom-up intervention via the NMT assessment. The documentation of these sessions included aspects of the assessment as well as imagery that the participants created. Current neuroscience theories posit that when the brain receives information about perceived fearful events or triggering stimuli, it attempts to process these stimuli along neural pathways that travel from the bottom of the brain (where sensorimotor and emotional structures are located) to the top of the brain and its executive functions. Art therapy intervenes by accessing the trauma response through parallel, bottom-up processes, in contrast with “top-down” treatment approaches.

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In addition, I dedicate this to my recovery community and to my rescue animals, Mr. B the Turtle and Carlos the Dog, all of whom continue to rescue me every day.

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Dedication

Tom Robbins wrote in *Skinny Legs and All*, "In the haunted house of life, art is the only stair that doesn't creak." I dedicate this to the six clients who were willing to use art with me in such brave and uncompromising ways. I also dedicate this dissertation to all of the wonderful, wounded people who are willing to delve into their trauma in order to seek healing.

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CHAPTER 1. INTRODUCTION

This research study examined the role of art therapy as a primary modality to treat cumulative trauma by integrating art therapy practices with a well-known neuroscience treatmet model developed by Perry (2006) known as the Neurosequential Model of Therapeutics (NMT). In order to accomplish this integration it was essential to review the literature using a trauma lens, paying particular attention to the impact of trauma on youth, treatment implications and approaches for repair, art therapy and neurobiology, and art therapy in the context of the Neurosequential Model of Therapeutics.

While reviewing the literature and conducting my research, I found that the meaning of "trauma-informed care" varied greatly from setting to setting. For some agencies, the employment of cognitive-based models was the mainstream treatment approach used to address cumulative trauma. In other facilities, there was a concerted effort not only to employ cognitive-based models but also to utilize experiential formats that worked to repair cumulative trauma through action-oriented, holistic treatment activities that engaged the full spectrum of the individual's traumatic recovery system. However, despite their evident value, a primary obstacle to integrating these experiential modes of therapy is financial cost and the training of practitioners. For example, completing Perry's (2009) well-regarded Neurosequential Model of Therapeutics training demands a large investment of time, labor, and financial resources, as compared to free online trauma-focused cognitive behavioral therapy training that can be completed in a few hours.

Although training and financial issues pose challenges, the most profound barrier I encountered was the lack of recognition by treatment agencies of the skills of art

therapists and their ability to facilitate healing in the wake of widespread cumulative trauma. The trauma literature rarely mentions art therapy as an intervention, even though utilizing imagery is often recommended. Research in trauma therapy approaches appears to be widening to include the connections between the impact of trauma, human development in neurobiology, somatic responses to trauma, and the process of somatic healing, but although nonverbal methodologies were discussed and referenced in the literature, there was a gap between the foundational knowledge of art therapy and its validation as a primary treatment intervention for trauma.

I conducted a single site, multiple case study research project with six youth ages 9–16 over a period of 5 months, utilizing art therapy as a bottom-up intervention in the context of the Neurosequential Model of Therapeutics. Bottom-up intervention refers to therapeutic activities that sitimulate lower brain functions before engaging the neocortex. Each participant had had at least one NMT assessment; based on the recommendations of the assessment, I used art therapy interventions to address sensory integration, self-regulation, relational functioning, and cognitive functioning, the four core domains specified by the NMT framework. The objective was to continue with repair for cumulative trauma within the residential program that the youth were currently enrolled in. My purpose was to provide evidence of treatment outcomes in order to generalize this research so that art therapy becomes firmly situated as an essential modality in trauma repair, specifically with engaging bottom-up functioning in the repair process.

CHAPTER 2. REVIEW OF THE LITERATURE

This research study positions art therapy as a primary modality to treat cumulative trauma using the Neurosequential Model of Therapeutics as a framework. The theoretical concepts are defined and examined through a trauma lens with an art therapy perspective; this is intentional due to the broad scope of neurobiology and trauma research.

Theoretical Framework: An Explanation of Bottom-Up and Top-Down Processing

There are marked differences between the brain's bottom-up and top-down neurological information processing when receiving traumatic stimuli. Ogden and Minton (2000) described the brain as having a hierarchy of sensorimotor, emotional, and cognitive systems. Hass-Cohen, an art therapist who studied the neurobiological characteristics of art therapy, noted that emotional arousal is seated in the amygdala, which she described as "the self's lookout"; when it detects a potentially threatening stimulus it immediately "sounds bodily and emotional alarms" (Hass-Cohen & Carr, 2008, p. 296). When a person's amygdala becomes trained over time to perceive that a threat is ever-present, due to cumulative and/or constant exposure to trauma and chaos, the central nervous system resorts to either collapse or hyperarousal. The amygdala correlates with the brain's sensorimotor and emotional functions that produce "fight, flight, or freeze" responses (i.e., fighting off a perceived threat, running from it, or freezing in the face of it such that the body cannot respond physically or emotionally). These behaviors then become adaptive responses to relatively benign stimuli.

"Top-down" or cognitive systems regulate a person's reactions to traumatic stimuli through reason and rational thought, as opposed to the "bottom-up" dysregulated emotional arousal of the amygdala. Perry, Pollard, Blakly, Baker, and Vigilante (1996)

described the cortex as the driver for abstract thought and language, whereas the brainstem regulates heart rate, blood pressure, and arousal states. The limbic region modulates attachment and affect, which are portions of feeling states. In addition, the authors detailed the hyperarousal and dissociative continuums that are particularly damaging to children who experience trauma and grow up with their childhood triggers to trauma intact. Hyperarousal tends to present as over-reactivity and fight or flight reactions to stress, whereas dissociative responses tend to manifest as isolation, distraction, and inattentiveness (Perry et al., 1996).

Kolb and Fantie (2009) identified a gap in the research literature between studying the structural development of a child's brain versus the impact that this development had on a child's behavior and behavioral development. They delineated the development of structure–function relationships in three basic ways: (a) by correlating the structural development of the nervous system with the emergence of specific behaviors, (b) by scrutinizing behavior and then making inferences about neural maturation, and (c) by studying neural structure–function relationships in order to relate brain malfunction to behavioral disorder (Kolb & Fantie, 2009, pp. 19–20).

Piaget's systematic study of cognitive development resulted in a theory of development stages. These were organized into four stages correlating to age ranges: sensorimotor (birth–age 2), preoperational (ages 2–7), concrete operational (ages 7–11), and formal operation (age 11 and older; Piaget, 1952). These stages are idealistic in nature; in my experience, children with proper nurturing, healthy attachment, and no exposure to traumatic events or organic brain issues may reach these stages as Piaget outlined. They are excellent benchmarks but development may not match chronological

age if there have been epigenetic factors that compromise development. Kolb and Fantie's (2009) three lenses for viewing development take into consideration Piaget's model but also look at both the nature and the nurture of the maturation of a child, the child's brain functioning, and the effects of that functioning on the child's behavior.

Vygotsky's (1978) social development theory emphasized social influences and their impact on an individual's maturation. The zone of proximal development describes a spectrum of learning between "what is known" and "what is unknown." The link between the two axes is the introduction of a teacher who provides guidance to assist a child in a skill that is too difficult for the child's own mastery. Vygotsky emphasized the importance of language in a child's development. Private speech is language that is internalized and assists a child in decision-making; it is product of the child's social environment (Vygotsky, 1978). If the external speech is negative or nonexistent due to neglect, this impacts private speech and what concepts become ingrained.

Perry's (2006) neurosequential model of development integrates social influence, developmental benchmarks, and neurobiology. Perry discussed the importance of the teacher, as discussed by Vygotsky (1978), as a resiliency factor. Having beneficial relationships with trusted adults and peers creates an intimacy barrier that protects the child. Perry factored in relational aspects versus adverse childhood experiences and the impact of these factors on the brain's development. He wrote that the brain organizes and develops in a neurosequential manner:

> The organization of higher parts of the brain depends upon input from the lower parts of the brain. If the patterns or incoming neural activity in these monoamine systems is regulated, synchronous, patterned and of "normal" intensity, the higher

> areas will organize in healthier ways; if the patterns are extreme, dysregulated, and asynchronous, the higher areas will organize to reflect these abnormal patterns. (Perry, 2009, p. 242)

Given that the bottom-up structures of the brain develop first, the impacts of environment and biology on these bottom-up portions will determine the health and the pattern of growth for the child's upper-level brain development.

Perry explained that the brain develops from the bottom up in order to ensure that infants and children have basic instincts to survive and respond on a primal level to their environments. As maturation occurs, the brain eventually becomes able to use reason and logic as well as abstract thinking. However, these areas where top-down information processing take place are not available to infants and children. The way that they make sense of their worlds is limited to their developmentally appropriate levels. For example, they experience themselves as the center of their worlds. If their needs are not being met or if harm is being caused to them, this information can only be stored by the body and is not yet available to the mind. In addition, young people tend to view themselves as the cause of any harm or neglect (Perry, 1999).

One of the drawbacks of the sequential development of the brain is that prolonged exposure to neglect, abuse, and chaos damage the nervous system's ability to detect and discern elements of safety versus elements of danger. This results in the individual's determination that the world is entirely unsafe, which causes either an increased sensory response of hypervigilence or an overarching collapse also known as dissociation. Consequently, effective interventions that take into account the impact of trauma on the body and the mind must access the "low road" functions of the brain in order to begin

communication with the “high road” (Siegel & Hartzell, 2004). Otherwise, the trauma is merely reexperienced or discussed without repair or without regulatory skills being applied.

Because an individual’s developmental stage may not correspond with chronological age, it is imperative for clinicians to choose the right kind of intervention to meet the client’s developmental needs. From personal observation, the behaviors that result from trauma appear to result in mood dysregulation and somatic responses. I proposed that in order to treat dysregulation and somatic symptoms, a nonverbal approach would best intervene at the level of the central nervous system where the disturbance occurs.

Trauma

Trauma is an experience that can alter a child’s worldview. It is something terror-filled and may result from a single incident, such as a car accident or witnessing a violent event. It is important to note that what one individual might experience as traumatic another person may find commonplace or less disturbing. According to Jaffe, Segal, and Dumke (2005), the event itself, though traumatic in nature, is not what is most impactful; it is the client’s experiencing of the event. The authors determined that there are three factors that comprise a traumatic experience: the element of surprise, lack of preparation, and helplessness to prevent the event. The American Psychiatric Association (2013) also has indicated that lack of preparation and surprise and an innate sense of helplessness are components of trauma. Jaffe et al. (2005) specified that an individual may experience trauma firsthand, may learn about the event from someone else, may be threatened or victimized repeatedly, or may be traumatized by exposure to disturbing imagery.

The effects of trauma also occur on a spectrum. Although there have been attempts to categorize the criteria to meet trauma reaction diagnoses, the behaviors and symptoms of trauma tend to be specific for each individual who has experienced traumatic events. Falasca and Caulfield (1999) identified several components that contribute to the impact of trauma on a child: (a) the traumatic event itself, (b) the child's developmental stage when the event was experienced, (c) the child's ability to adapt, (d) the support system surrounding the child, (e) the subject of the trauma (e.g., whether the child observed an act of violence or was the recipient of violence, or both), and (f) the extent of the trauma (e.g., whether it was associated with an unanticipated single event, was a long-standing event, or was due to multiple acts; p. 213).

Van der Kolk (2014) stated that trauma tends to affect the limbic system and the brain stem. These are the parts of the brain that monitor an individual's environment, scanning for elements that indicate either safety or danger. Van der Kolk described the amygdala as "the smoke detector" and the frontal lobes as "the watchtower," saying, "the amygdala . . . gets you ready to fight back or escape, even before the front lobes can make an assessment (2014, p. 62). Because the brain stem is affected, there are implications for basic physiological functions, such as abnormal sleep patterns, breathing problems, urination issues, and imbalances in the chemicals in the brain and body. Higher-level functioning such as rationalization and planning, as well as decision-making and impulse control, can also be adversely impacted. In addition, a person's ability to verbalize can decrease, which contributes to dissociation and becoming shut down (van der Kolk, 2014).

Cumulative Trauma

Cumulative or chronic trauma has been described as a “breaking point of moral existence” (Shay, 1994, p. 164). It may be caused by an ongoing experience such as continued neglect; Perry and Szalavitz (2010) recognized the impact of neglect as a trauma category—they emphasized the long-term deprivation of a child’s basic and emotional needs as a form of rupture. The impact of neglect is pervasive, altering a child’s resiliency, compromising the ability to trust, and potentially damaging the child’s self-concept. It shifts a person’s “emotional, cognitive, behavioral, social, and physiological functioning” (Perry et al., 1996 p. 272). Shay (1994) described several factors of chronic or cumulative trauma: longer-term or reoccurring traumatic events; loss of control; hypervigilance over a period of time; a feeling of “being crazy” because memory cannot be trusted; and a persistence of betrayal, isolation, suicidality, meaninglessness, and “destruction of the capacity for democratic participation” (p. 164).

From my observations, these components ring true. Traumatized individuals may display distrust, a desire to withdraw when overwhelmed, aggression from perceived threats, anxiety, and/or a lack of social skills. Though these skills may be appropriate for a child or adolescent’s chronological age, they are not available for the developmental level of some traumatized individuals. Kangaslampi, Garoff, and Peltonen (2015) also outlined the following as results of PTSD in children: “lower verbal memory function and overall cognitive performance, impairment in academic performance, decreased quality of life, and increased suffering” (p. 128). For childhood trauma survivors, PTSD can carry “enormous economic costs associated with loss of personal income, inability to work, as well as increased utilization of treatment and support service” (Kangaslampi et al., 2015, p. 128).

One of the misconceptions in treating and addressing trauma tends to be that children only need to repair or be treated for a single traumatic event. This idea is highly inaccurate in that children who are at risk for trauma typically undergo a series of traumas that result in more prolonged or sustained traumatic exposure. There is some delineation in the literature between what is termed “Big-T” and “little-t” trauma. “Big-T” trauma is a single incident such as witnessing a natural disaster, a terrorist attack, or a violent situation, whereas “little-t” trauma is not life threatening but does “evoke overwhelming negative affect and result in painful, unresolved memories, which negatively impact on the person’s view of self and others” (James & MacKinnon, 2012, p. 191). If a caregiver is unable or unwilling to protect the child from the harm, this creates an additional layer to the trauma. Cloitre et al. (2009) suggested that sustained exposure to trauma during childhood creates not only post-traumatic stress symptoms but also obstructions in the ability to self-regulate. Explosive anger, anxiety, inability to concentrate and to remain present, and/or isolate or violent behaviors are possible symptomology (Cloitre et al., 2009, pp. 399–400).

The PTSD criteria in the *DSM-5* include compromises to self-concept and to adaptation to ordinary life events. Complex Post-Traumatic Stress Disorder is composed of several traumatic incidents that may have occurred over longer periods of time. In addition, the symptomology tends to include more elements of interpersonal relationship issues as well as reactions that are more intense in nature given the sustained or repetitive exposures to trauma (American Psychiatric Association, 2013). Early on Herman (1997) viewed the PTSD diagnosis as not adequately providing criteria for individuals who have sustained long-term, repetitive traumatic events, and this critique may still be true today.

For example, intimacy and relationships become much more difficult for these individuals to experience and to sustain. Individuals may isolate or may be overly sociable but then exhibit a "push-pull" dynamic in relationships. They may be clingy and desire a much more intimate relationship than what is appropriate per societally informed boundaries. Sensing that rejection may be imminent or even experiencing concern that rejection could happen, an individual may decide to either test or reject the other party. In either case, self-protection is the primary goal in either avoiding or joining into relationship, generally resulting in impaired intimacy.

The Impact of Trauma on Youth

Affect, Memory, and Behavior

Duration, frequency, and intensity of the trauma itself are indicators for the ways in which behaviors and symptoms will manifest for a child or adolescent. Falasca and Caulfield (1999) further divided symptoms into three categories: affect, memories, and behaviors . Children can exhibit changes of affect and behaviors after the trauma occurs (whether cumulative or singular in nature). There can be what appear to be shutdowns or hypoarousals, in which blunt, withdrawn, or even flat affect become apparent. On the other end of the affect spectrum, children can become hyperactive or hypervigilant; for example, they can behave in manipulative or overly solicitous ways in order to deflect attempts at therapeutic intervention or to simply find ways to get their emotional or material needs met. There is also a range of affect that may take place in between the two extremes (Falasca & Caulfield, 1999).

From my clinical observations, children who are survivors of trauma are unable to maintain concentration or focus, exhibited through either daydreaming or withdrawal.

Conversely, they can also display hyperactive behaviors such as being overly talkative, disruptive, or even violent. They can have problems in school, in the community, or at home. Their behaviors can appear abnormal or disconcerting to others, and sometimes echo the abusive situations that they underwent. For example, some children hoard food if they have previously been neglected, or they self-harm in order to attempt to shift emotional pain to a more physical sensation. Depending upon children's ability to cope and survive their trauma, they can develop maladaptive responses such as eating disorders, substance abuse disorders, and verbal and physical aggression. These observations correlate with the spectrum that Falasca and Caulfield (1999) outlined.

In addition to affect and behavioral symptoms, memory can be affected as well, resulting in intense flashbacks and recall of the traumatic events that are uncontrollable and highly intrusive. These can occur in the form of night terrors as well. Briere and Scott (2006) discussed the fact that individuals might not remember any events or even basic information, such as where they lived at the time of the trauma, how old they were, who the perpetrator was, or other memories. Details that correlate with the timing or facts of the traumatic events might no longer be in the client's available recall. Conversely, the traumatic events could be crystal clear, including smells, colors, and details of the setting and events. According to Briere and Scott, these phenomena exist between two poles, the absence of memory versus the intensity and clarity of memories of a particular traumatic event; children can also fluctuate between the two poles. Certain smells, sounds, textures, and sights can cause a recall that feels unexplainable and uncontrollable in nature (Briere & Scott, 2006).

Hypervigilance and Dissociation

Perry and Szalavitz (2010) described responses to lack of nurture and to trauma as an alternation between two states: the alarm state and the dissociative state. In the alarm state, heart rate and blood pressure are elevated, which can appear as hyperactivity, rage, hypervigilance, and tantrums. This is the fight or flight of the stress response. The dissociative state can appear as numbness or a way of appearing "spaced out," paired with a lowering of blood pressure and heart rate. The body responds to the realization that help will not be coming, that protection is not to be expected, with surrender and collapse. Children who have experienced cumulative trauma or neglect often navigate through the world with a dissociative and/or hypervigilant lens. Children will adapt based on survival cues (Perry & Szalavitz, 2010).

I also observed in my research that it was possible for children and adolescents to be hypervigilant and dissociative concurrently; like hitting the gas while simultaneously pumping the brakes. This is reminiscent of a cartoon character that is running as fast as it can but is not moving; there is a paralyzation and an overactivity that happens simultaneously that is difficult to describe but unmistakable when witnessed. The child reacts with fear but cannot find adequate words or behavior to match the emotion; the child reaches for any behavior or affect that will assist with diminishing the panic. There is an action and a dissociation that happens with the action; self-harm is generally compartmentalized as a dissociative behavior but when paired with hypervigilance it seems to be somewhere in between the two states. Streeck-Fischer and van der Kolk (2000) wrote: "Chronic childhood trauma interferes with the capacity to integrate sensory, emotional and cognitive information into a cohesive whole and sets the stage for unfocused and irrelevant responses to subsequent stress" (p. 903). A child who has

experienced cumulative trauma could appear to have attention deficit hyperactivity disorder or bipolar symptoms and behaviors but in reality could be struggling with emotional regulation due to a central nervous system that is simply attempting to evaluate for safety.

When self-protection remains the primary goal, this compromises the ability of the brain to respond in a neurotypical fashion, increasing the possibility of a stress-related mental disorder. Bremner (2005) elaborated on the combination of trauma with a stress-related mental disorder that can lead to long-term changes in the hippocampus and frontal cortex, causing memory problems and ongoing abnormal fear responses as well as other psychiatric symptoms. In the long run, rather than the effects being merely psychological, there are long-lasting alterations in the brain chemistry.

Treatment Implications

Assessment of trauma and maladaptive traumatic responses in children and adolescents continues to be complex. Porges (2006) discussed the discrepancy between assessment tools and the way that research and treatment are implemented; he recommended translational research to bridge this gap. In effect practitioners are tasked to translate neuroscience and other research findings into interventions that improve overall health. Since the inception of Freudian theory, there has been a reliance on utilizing top-down approaches to look at psychological disturbances as purely clinical. Instead, the emphasis of translational research is on the importance of connecting clinical assessments to neuroscientific approaches in order to have a more complete diagnostic scope as well as a plan for treatment (Porges, 2006).

There is a need to embrace both the clinical and the neurobiological aspects of trauma. There have been a number of efforts to substantiate assessments as well as treatment implications as evidence-based or best practice, but with these efforts, there may be discrepancies in the accuracy of results due to differences in such factors as culture, age, intellectual capability, cumulative trauma versus single exposure, traumatized versus non-traumatized caregivers, and so on. In addition, previous research might not have fully considered the changes in the brain and body that occur as a result of cumulative trauma. Van der Kolk, Roth, Pelcovitz, Sunday, and Spinazzola (2005) wrote: "What does not fit into the PTSD framework is relegated as a 'comorbid condition' that is not related to the PTSD diagnosis. This impacts the research as well as treatment approaches applied" (p. 390).

Van der Kolk (2014) described three approaches for healing the brain's neuroplasticity in order to allow trauma survivors to return to being participants in the here-and-now of their own lives:

> 1) top down, by talking . . . while processing the memories of the trauma; 2) by taking medicines that shut down inappropriate alarm reactions, or by utilizing other technologies that change the way the brain organizes information, and 3) bottom up: by allowing the body to have experiences that deeply and viscerally contradict the helplessness, rage or collapse that result from trauma. (p. 3).

Van der Kolk asserted that generally a combination of the three may be necessary. However, for childhood trauma, verbal and cognitive behavioral methodologies continue to be predominate in treatment because of the current research evidence that supports

these approaches. There is a need for evidence of the effectiveness of other approaches that address the bottom-up avenue for healing (van der Kolk, 2014, p. 3).

Approaches to Repair

Top-Down Processing Interventions and Challenges in Trauma Applications

Top-down processing interventions to address trauma consist of modalities such as (but not limited to) cognitive behavioral therapy (CBT), dialectical behavior therapy, and trauma-focused cognitive behavioral therapy (TF-CBT). With top-down processing interventions, one of the core goals is for the client to be able to express traumatic memories in a narrative form and then to potentially reduce sensitivity as there is increased exposure to the traumatic memory. However, Briere and Scott (2006) suggested that traumatic memories are unlike typical memories. With a typical memory, the brain can create a story that can be told and restated that is autobiographical in nature. For a traumatic memory, this story often cannot be related in words and remains unprocessed, living in the body or stored in cell memory (also referred to as implicit or undigested). Triggers directly stem from implicit memories in that these are reactions to a sight, smell, texture, or sound, all of which are stored in the lower brain or the bottom-up portion. Children rarely can explain a trigger but they can potentially identify the sensory component of the implicit memory (Briere & Scott, 2006).

Harris (2009) wrote: “A primary principle largely shared by these [cognitive] interventions is that verbalization about traumatic stressors is fundamental to the survivor’s mental health, and such processing or working through of traumatic stress necessarily precedes normalization” (p. 95). The author explored different aspects of the importance of narrative but also looked at the importance of symbolization in order to not

only tell the story but to imbue it with meaning or even a way of changing or reintegrating it. One of the primary issues is that memories that cannot be recovered or verbalized are not addressed with a narrative format. Because the memories were stored on a somatic level when the event or events occurred, they not only are not retrievable with a cognitive intervention, but they also are not repairable with a top-down approach (Harris, 2009). This continues to substantiate the need for metaverbal and nonverbal bottom-up approaches such as art therapy.

Kangaslampi et al. (2015) recognized that most verbal-based interventions include some level of creative–expressive exercises. Since these approaches tend to incorporate safety-building and body-oriented methods into their psychoeducational and cognitive-based interventions, it is difficult to discern which of the methods are most effective. Some utilize emotional regulation directives that recognize the physiological components of emotions. Per Kangaslampi et al. (2015), there has been little research into which of the methods are most beneficial within the largely verbally based modality. The methodologies as a whole have simply been labeled “evidence-based” rather than examining the individual interventions within the methodology to determine the impact of each intervention. As a response to this concern the module that Kangaslampi et al. introduced is called narrative exposure therapy treatment. The primary intervention is to create a trauma timeline using creative means (i.e., a rope with different objects to represent moments in the child’s life, both positive and negative). This introduces a component that could be considered an art therapy intervention with a top-down approach for application and processing (Kangaslampi et al., 2015).

Trauma-focused cognitive behavioral therapy utilizes several components of in vivo exposure. Lang, Ford, and Fitzgerald (2010) proposed an algorithm for determining when TF-CBT is most applicable. The authors discussed how, within the widespread movement of evidence-based practice, the implementation of new manualized practices can be challenging and not always indicated. They wrote: “Evidence-based tools to assist clinicians in determining whether a particular treatment is indicated for a particular client are rare” (Lang et al., 2010, p. 567). Grasso, Marquez, Joselow, and Webb (2011) conducted a TF-CBT case study where the three phases of TF-CBT were outlined. First, a client learns mindfulness and relaxation techniques. Second, an alliance is formed with the therapist and a support person. Third, the creation and the presentation of a trauma narrative is the culmination of the treatment process. The narrative can be in an artistic format or purely narrative. The narrative is a form of in vivo exposure.

Letter writing was an example given by Grasso et al. (2011) that “facilitate[s] exploration and organization of trauma-related thoughts and feelings associated with interpersonal relationships” (p. 195). It is a highly cognitive activity that demands that the client is on a developmentally and emotionally appropriate level. If the client is still functioning out of a sensorimotor and emotionally responsive framework, this type of intervention will do little to repair the trauma on a functional basis.

In my review of literature, I found little research regarding the multicultural aspects and intellectual requirements required to complete a TF-CBT regimen. The brevity of the application could also be potentially damaging for issues of attachment. One notable exception is a study by Scheeringa, Weems, Cohen, Amaa-Jackson, and Guthrie (2011), who examined the functionality of TF-CBT with 3- to 6-year-old

children. This study was different from prior studies because it focused exclusively on young children, participants' experience of trauma was not limited to sexual abuse, the majority of participants were ethnic minorities, and most participants had no father figure in the home. This is important because, according to the authors, most previous studies had focused on Caucasian children between the ages of 6 to 10 in upper socioeconomic brackets who had experienced sexual abuse. Rather than only focusing on children who may have had greater access to services and support systems and may have only experienced one traumatic event, the study by Scheeringa et al. looked at children affected by trauma at younger ages who had less access to services and had possibly experienced cumulative trauma.

Another significant aspect of the study by Scheeringa et al. (2011) is that cartoons were used to explain the concepts and art interventions made up two of the major components of the TF-CBT modules, although art therapy is not referenced or recognized in the study. The authors did state that the 3- and 4-year-old children struggled with the narrative components of the interventions. The remainder of the participants had to be guided through all portions of the interventions (Scheeringa et al., 2011, pp. 853–860). In order for the "top-down" portion of the intervention to be utilized with traumatized children, an art therapy intervention was introduced—although it was not necessarily a bottom-up art therapy approach given that the intention was to limit the art to convey a narrative.

Miller-Graff and Campion (2016) completed a literature review regarding interventions and treatment success factors for PTSD in children exposed to violence. The authors noted that "polyvictimization" versus single-incident trauma complicated

cognitive behavioral therapies as the appropriate interventions. They outlined the fact that chronicity and severity are often overlooked. In addition, they observed an “extreme dearth of studies in children younger than 8 years of age, and the relative dip in evaluations of mid- to late-adolescents” (Miller-Graff & Campion, 2016, p. 238). As in similar reviews, the authors stated that the inclusion of family in the process could be complicated, especially if a caregiver is the perpetrator or if there is an absence of family.

Miller-Graff and Campion (2016) suggested that there should be more attention given to the interventions used than the overarching paradigm. They noted that the U.K. National Institute for Health and Care Excellence “cited sufficient evidence to recommend TF-CBT for children and young people suffering from PTSD; however they argued that the evidence was insufficient to recommend play, art, and family therapies” (Miller-Graff & Campion, 2016, p. 226). TF-CBT typically utilizes an art therapy component in the form of the trauma narrative, if done in a pictorial fashion. It utilizes family therapy sessions that may incorporate play. Research has been conducted on TF-CBT as a whole as opposed to identifying which components are the most effective, which makes it difficult to discern from the research whether TF-CBT as whole is most effective or if particular aspects of TF-CBT such as art therapy, play therapy, family therapy, and somatic experiential interventions are responsible for its effectiveness.

This being said, top-down approaches should not be discounted for their usefulness in later stages of treatment. In addition, it is important to recognize that art therapy can be used very effectively as a top-down approach in a concrete directive or assessment process or when the goal is to obtain a narrative. However, when looking at cumulative trauma repair with clients who suffer from emotional development

impairment, the research suggests that it is not appropriate to begin with cognitive approaches.

Art Therapy as a Bottom-Up Processing Intervention

Art therapy can operate from the bottom-up, from the top-down, or both depending on what is appropriate for the client. Lusebink (2010) described four levels for art therapy as stimulation for information processing, which she conceptualized as the Expressive Therapies Continuum: the kinesthetic/sensory level, the perceptual/affective level, the cognitive/symbolic level, and the introduction or reintroduction of creativity at any of the previous levels. This delineation supports the view that imagination and fantasy need to be reintroduced for individuals who have experienced trauma. The different levels are approached on a continuum in order to address the client's needs, ranging from simple to more complex levels of information processing.

Per Rak & Patterson (1996), in order to begin repair of trauma through an art therapy process, it is important to work on the reinstatement of a sense of safety and resiliency by beginning at the kinesthetic/sensory level and working up to the cognitive and creative levels. Resiliency is the ability to overcome potential negative effects and symptoms from events that would otherwise cause negative outcomes; creative imagery is a way to increase resiliency (Rak & Patterson, 1996, p. 371). Play and imagination are essential for resiliency. When survival is the predominant goal, trauma can render a child unable to play or to tap into the imagination (Streeck-Fischer & van der Kolk, 2000). "Play is a powerful stimulant for organizing a brain that fosters the creation of joy, curiosity, and exploration" (Kravits, 2008, p. 139). Individuals who become accustomed to operating out of a survival perspective struggle with fantasy and symbolization. Art

therapy can begin the process of reawakening the capacity for the higher-level functions of fantasy and symbolization by first approaching the sensory and somatic aspects on the bottom-up level.

Chong (2015) wrote:

> Art materials offer a unique capacity to absorb and slow down high impulse emotions. The ability to slow down high impulse emotions is a big leap in opening up opportunities for the cortex to be reconnected, and thus to get involved in the process of stress response. (p. 122)

To address the spectrum of trauma responses, clinicians find it essential to reduce impulsivity and to increase response time, creating a longer period of felt safety. Art therapy provides a container for expression and regulation of the high impulse emotions resulting from hypervigilance and hyperarousal. Additionally, Chong indicated that dissociation is also better treated through art materials and interventions. Many trauma survivors have indicated that cognitive interventions allowed for denial or continued diversions from feeling and from truth, whether intentional or unintentional on the part of the survivor. Art therapy provides a vehicle for adverse experiences to be expressed without the facade of words or the ability to detach through the language component. In addition, it reengages the implicit memory stored in the body through kinesthetic and sensory approaches, discouraging dissociation. Once the body is more regulated through kinesthetic and sensory approaches, the capacity for symbolism can be increased.

Pointon (2004) stated that there is a power through the drawing process, which is "an activity that re-engages the prefrontal cortex of the brain and provides an alternative way of symbolically representing trauma" (p. 5). This has the potential to restore that lost

capacity for imagination (Pointon, 2004). Siegel and Hartzell (2004) called the higher parts of the brain, or the neocortex, and their integration with the lower regions of the brain, or the brain stem, the "high road." He stated that the "low road" tends to be void of higher processing abilities such as self-reflection, attunement, and empathy. Traumatized individuals respond to stimuli with the low road much more quickly. When triggers are apparent, the reactions are exaggerated and harder to extinguish.

Art therapist, Carr (2008) discussed the high road versus the low road as well. He discussed how survival responses emerge from the low road, arousing the sympathetic nervous system. For the high road, there is a complete circuit of the brain, involving all portions and integrating the different sections, allowing for decision-making and greater awareness to occur. For children who have experienced trauma, impulsivity and anger management issues are common. Carr stated, "Sensory art therapy practices stimulate thalamic connections to and from cortical and subcortical brain regions. . . . Sensory enriched, multi-modal, self- and other-regulated environments are known to help 'bottom-up' and 'top-down' approaches coordinate and deregulate thalamic gateway functions" (2008, p. 50).

Streeck-Fischer and van der Kolk (2000) emphasized the need for a mediator between inner and outer reality that can provide a space and relationship that is conducive for fantasy and creativity. There is a difference between the creation of art in an art therapy setting to work on bottom-up processing repair versus in vivo exposure, however. Though in vivo exposure in minimal amounts that are paired with resource imagery can be highly useful. In vivo exposure requires elements of top-down processing to assist with rationalization and with soothing mechanisms in order to prevent further harm.

Through clinical observation, I have found that using art materials such as clay, model magic, oil pastels, and collage help with grounding on a somatic level, decreasing impulsivity, engaging bilateral stimulation, and decreasing fear responses.

Though there have been inroads with using art therapy to treat trauma, I found that many of these options have been utilized within the frameworks of top-down interventions such as TF-CBT or dialectical behavior therapy. There continues to be a lack of exploration into art therapy as the mode in which to appeal to the bottom-up processes that will open the doors to the top-down ones. This research is designed to begin to address this deficit.

Top-Down and Bottom-Up: The Destination

Anda et al. (2006) discussed the long-term effects of adverse childhood experiences and the drawbacks of the currently employed medical approaches to treat the impact of these experiences. The authors voiced a need for multidisciplinary cooperation and criticized the current practices of medicine and mental health for being "fragmented by categorical funding, organizational boundaries, and a symptom-based system of medical care" (Anda et al., 2006, p. 183). The authors also discussed the sequential growth and development of the brain and the impact of adverse experiences on this development. Because the brain develops from the bottom up rather than the top down, development of the brain corresponds with areas needed for survival. If the environment is supportive enough for an infant or child to develop properly, the top-down components of the brain will then begin to develop (Anda et al., 2006).

Sarid and Huss (2010) looked at similarities and differences between art therapy and cognitive interventions and their overarching goals. They contrasted the ways in

which physiological reactions are experienced. Cognitive approaches use regulatory processes whereas art therapy “creates actual sensory experiences based on the visual and tactile characteristics of art materials” (Sarid & Huss, 2010, p. 10). Cognitive intervention engages the senses, but on a top-down level. Art therapy intervention “provides an opportunity to visualize, hear, and sense traumatic events but under the control of cognitive process” (Sarid & Huss, 2010, p. 10). Art therapy techniques may be used in the framework of top-down applications; however, what differs in utilizing a bottom-up approach for art therapy is the ability to first address the implicit components of trauma prior to connecting to the cognitive component.

Johnson (2009) examined underlying paradigms for treating trauma. He questioned whether the creative arts therapies and cognitive behavioral therapy operate from opposite standpoints and posited that the two modalities could be conducive to one another, suggesting the need for an integration of top-down and bottom-up approaches. Johnson reviewed the creative/expressive, psychoanalytic, sociocultural, and neuroscience paradigms at work in the field of creative arts therapies, and concluded his article with three directions for the field of art therapy. The first was to create CBT-based approaches for trauma treatment with creative formats, the second was to look at ways to hybridize methods, and the third was to continue to approach trauma treatment through creative pathways (Johnson, 2009).

There are several studies and approaches that have been created in an effort to bridge the gap between art therapy and cognitive-based interventions by integrating or hybridizing nonverbal, metaverbal, and verbal approaches. Lyshak-Stelzer, Singer, St. John, and Chemtob (2007) completed a pilot study using TF-CBT and an art therapy

intervention entitled trauma-focused expressive art therapy protocol. The authors found that participants in the art therapy treatment protocol showed a significant reduction in mean scores on the UCLA PTSD Reaction Index compared to participants in the control group. Naff (2014) interviewed several art therapists who utilized TF-CBT as a framework to complete a trauma narrative in art form. The art therapists had wholly positive responses to the combination of the TF-CBT components with the art therapy intervention (Naff, 2014). The Chapman Art Therapy Treatment Intervention (Chapman, Morabito, Ladakakos, Schreier, & Knudson, 2001) combines the art-making process with a formulated procedure to address PTSD. This study was a randomized, prospective cohort design with children ranging in age from 7 to 17 who had undergone similar trauma and were in a hospital setting due to physical injury which required hospitalization longer than a 24-hour period. Although there was not a marked variation between PTSD symptoms in the control group versus the art therapy group, there was a strong decline in acute stress symptoms (Chapman et al., 2001).

In these studies, as well as in the trauma repair process, the ideal is to create interplay between verbal and nonverbal systems, but only after the client has acquired the ability to move beyond bottom-up neurological processes to attain a connection to the top-down processes. Bucci (1989) wrote:

> The two systems, with different contents and different organizing principles, are joined by the referential links. These referential connections are bidirectional, permitting us to name what we see and to point to what has been named—to translate, our own experience into words, and to translate the words of others back into nonverbal form. (p. 258)

It is not that top-down interventions are not advisable; in my opinion and observations, it is that generally they are used prematurely. I feel it is imperative for the art therapist to be able to translate and to give space for the nonverbal to allow for eventual movement toward the verbal should that be what is clinically appropriate or useful. The ability to oscillate between the verbal and the nonverbal, between the bottom-up and the top-down, is what allows for healing and further development to take place as evidenced by the results of this research.

The combination of top-down and bottom-up processing methods are important; it is necessary to determine how to meet clients on the level on which they can function. Though a combination of top-down and bottom-up interventions is useful, the trauma literature suggests that first the bottom-up interventions must be utilized to address the somatosensory and emotional components that need repair. In my experience, it is essential to assess the developmental level of a client to determine the appropriateness of bottom-up and/or top-down processing modalities.

Art Therapy and the Neurosequential Model of Therapeutics

Lusebrink's (2010) Expressive Therapies Continuum seems to correlate with the bottom-up and top-down approaches specified in the framework of the Neurosequential Model of Therapeutics. The kinesthetic/sensory level of the continuum operates on the somatic level, the perceptual/affective level focuses on the amygdala, and the cognitive/symbolic level moves into the abstract thinking capabilities of the cortex and ultimately to creativity (Lusebrink, Martinson, & Dzilna-Silova, 2013). Through the Neurosequential Model of Therapeutics assessment, appropriate interventions are determined in order to address sensory integration, self-regulation, relational capacity,

and cognitive functioning. The Expressive Therapies Continuum aligns well with the components of the NMT assessment.

Art engages the body. There are somatic elements in the movements used in production of art, in the sensory aspects of materials used to create art, and in the finished art product that can continue to appeal to the senses. When a project is completed, it can serve as a tangible product that can accompany its creator in a way that purely verbal or top-down interactions cannot. Through therapeutic art making, there is the potential for layered meaning and obscurity. This means that clients can begin to put words to their images when they are ready or they can continue to allow the meanings(s) of the image to remain implicit and/or obscure without verbal elaboration.

Skaife (2001) expounded on this, stating that the art therapy client is not forced into a reexperiencing or a re-traumatization but rather is able to process the trauma through engagement with art at a speed and intensity that feels comfortable and appropriate. There is an interaction between therapist and client, client and art, and therapist and art. There is a safe container in the relationship and in the art. There is the ability to express feelings and experiences that are too terrible to talk about, still allowing the individual to process them without having to verbalize. Lastly, beauty can balance the intolerable (Skaife, 2001).

Haas-Cohen and Carr (2008) discussed the concept of extinction in relation to art therapy. With the goal being the elimination of fear responses to benign stimuli, extinction occurs through conditioning. Therefore, one way that art therapy as an intervention creates a way to expose a person who has experienced trauma to limited amounts of fearful material is by pairing “the experience of a new image with the

memory of old fearful images. Thus, providing positive experiences associated with serotonin release can mediate fear. Altering amygdala reactions helps generate more active cortically driven coping responses" (Hass-Cohen & Carr, 2008, p. 296). By using a positive image as a resource (perhaps a safe place, safe person, favorite color or feeling) and pairing it with a negative image, the process begins to pair a benign stimulus with a malignant one, working to change the way that the brain and the body experience the fearful material. Art therapy allows an individual to pair implicit traumatic memories with positive and optimistic memories, increasing a sense of hope and resiliency and decreasing feelings of helplessness (Hass-Cohen, Findlay, Carr, & Vanderlan, 2014). This correlates with the overarching purpose of the utilization of the neurosequential assessment lens, as Perry (2006) suggested that resiliency and adversity must be paired in order to achieve healing.

The Neurosequential Assessment Lens

Perry (personal communication, April 6, 2015) stated that by using the neurosequential assessment, treatment teams could "quantify developmental adversity vs. resilience-related factors." Resilience-related factors include support people, coping strategies, optimism, talents, and so forth. These factors act as buffers that decrease the impact of the developmental adversity. If an individual has minimal support and few coping mechanisms, then exposure to traumatic events has greater effects. This results in a decreased level of function. According to Perry, CBT is not applicable with such a client, due to "undeveloped executive functioning, creating the perfect candidate for art therapy and nonverbal strategies" (B. D. Perry, personal communication, April 6, 2015).

Through the assessment lens of the Neurosequential Model of Therapeutics, there

are four facets: demographics; history (developmental, adverse events measure, and relational health measure); current status (central nervous system functional status measure and relational health measure); and recommendations made for the therapeutic web, the family, and the client. There are four areas that are focused on for the client: sensory integration, self-regulation, capacity for relationship, and cognitive functioning (Perry, 2013). Rather than being a treatment intervention, NMT is a way of creating a map for educators, caregivers, clients, and the therapeutic web. The NMT assessment lens provides clear-cut indications to which interventions will be the most efficient and appropriate.

Perry (as cited in MacKinnon, 2012) further described ways to assist dysregulated youth. The first is to address "bottom-up somatosensory regulatory routes" where rhythmic and repetitive activities can calm "neural networks that originate in the lower parts of the brain and are essential to the stress response" (MacKinnon, 2012, p. 215).

Application of Art Therapy to Perry's Neurosequential Framework

There are many art therapy interventions that are able to provide the rhythm and repetition that are indicated through the NMT model utilizing clay and tactile materials, scribble drawings, the acts of painting and drawing or coloring, paper-mache, newspaper sculptures, and other options. In my experience in treating trauma symptoms in dysregulated youth, I begin by providing tactile options such as clay or Play-Doh, coloring materials, and so on. I often suggest sitting on the ground and using repetitive motions to knead the clay or Play-Doh or to color. The motions usually begin as chaotic and fast until the client's body begins to regulate. The autonomic nervous system comes back online and into a rhythm that assists with an overall grounding process.

Dissociation in a controlled fashion also can be regulatory in the forms of daydreaming, doodling, and distraction. By engaging the bottom-up processes, the top-down systems can begin to operate and interact on a developmentally appropriate level. By doing so, the cortex will eventually mature, strengthening in functioning. “The maturation and strengthening of the cortex occurs through mastering the bottom-up and then introducing the addition of the acquisition of language, interacting in social situations, and other top-down processes” (MacKinnon, 2012, p. 215).

My research indicates that art therapy can and perhaps should be included as a primary treatment modality given the practical applications of what the NMT model indicates for appropriate clinical interventions to repair cumulative trauma. Art therapists continue to explore ways to bridge the gap between expressive therapy and neuroscience (Klorer, 2005). Klorer (2005) asked the question that so many art therapists ask: “How does this work?” (p. 218), when referring to the effectiveness of art therapy interventions in healing trauma wounds. Though the art therapy field as a whole has understood on an implicit level that art therapy appears to be effective for treating trauma, pairing neuroscience with art therapy assists in providing evidence-based explanations as to how this works. This explanation is important for other medical professionals, caregivers, educators, and others to get a sense of how art therapy works with trauma repair.

In addition, if other helping professionals do not have further understanding regarding the need for nonverbal interventions, clients may continue to be inaccurately diagnosed and/or treated. Gantt and Tinnin (2009) suggested that this is not a time to delay treatment or to conclude that a client is not compliant with treatment simply because a client cannot discuss the trauma on a top-down level:

> Art therapy is effective for trauma survivors not because it bypasses defenses but because it provides a path where none existed previously. If peritraumatic dissociation disrupts the coding of experience in words, memories are still laid down but in the nonverbal part of the brain. (Gantt & Tinnin, 2009, p. 151)

Traumatic memories are not stored in the brain in the same way that autobiographical memories are. These memories are tied to the nonverbal; they are coded as emotional and sensory experiences. These memories may be intrusive and involve physical sensations and emotions. The sensations tend to be visual in nature but may also be connected to sounds, smells, and textures.

Retrieval is not the most important component of trauma treatment. In fact, what is felt implicitly may not be retrievable in a verbal or cognitive sense. What is most important is to be able to integrate traumatic memories and to begin addressing the effects of implicit memories. Talwar (2007) stated that the "integration of traumatic experiences is dependent upon the bilateral stimulation of the frontal lobes. . . . Non-verbal expressive therapies . . . all activate the subcortical regions" (p. 26). This integration is essential in order to reduce the fight, flight, and freeze responses that may occur without a clear trigger or source. Without integration, it is nearly impossible to decrease hypervigilance and/or dissociation.

Being able to put emotional memories into the context of autobiographical memories assists with decreasing the phenomenon of intrusive recall. Intrusions take the form of flashbacks or perceived hallucinations. Because such intrusions are not firmly rooted in the autobiographical context, the sensory triggers may quickly produce a flashback that feels current and immediate. The newer trends in exposure therapy are to

not only expose the person to a trigger but to pair this with an image of safety and comfort (Brewin, Gregory, Lipton, & Burgess, 2010). The telling and retelling of the story of the traumatic event is not what heals; it is the ability to integrate the story on a neurobiological level even if the memory is not retrievable.

In the process of creating imagery, the rapport between the therapist and client creates an opportunity for witnessing. During a creative intervention, clients are witnessed as they formulate images, as they construct meaning, and—if possible—as they integrate the images into autobiographical and top-down or verbal contexts. In this process, a client can be seen in a healthy partnership rather than in an intrusive or degrading way. This may be corrective and a source of repair in its own right (Meekums, 1999).

In a neuroimaging study conducted by Belkofer, Van Hecke, and Konopka (2014), the authors identified relaxing states of consciousness as a result of creative behaviors in art therapy that implicated self-regulation in the participants' neurobiological systems. This is a useful correlation to the treatment map that Perry (2006) created in the NMT model, the need for a self-regulatory, bottom-up processing intervention. Given the need to access sensorimotor functions when treating trauma, art therapy as a nonverbal intervention appears to be particularly adept at gaining access at this bottom-up level. The eventual goal is to connect the sensorimotor functions to the cognitive-symbolic functions so that the trauma story can be integrated and the trauma resolved. In a similar study, Buk (2009) posited that symbolism and metaphor are innate portions of the art therapy process, assisting with creating a concrete form for memories that may only be implicit. There is a need to make meaning out of suffering through

metaphor. In my experience, through meaning making, there may be an integral shift in identity from victim to survivor due to an increased internal locus of control, which reinforces the NMT's emphasis on increasing resiliency.

One of the drawbacks of art therapy is that at times, in vivo exposure to a traumatic memory through the art piece can cause intense emotional and somatic responses. Though this could be viewed as a shortcoming, it can also create opportunities for healing. When a client can be exposed to a traumatic image and experience mastery over the image, this may decrease somatic responses to otherwise triggering circumstances. This demonstrates the importance of clients being well-resourced at the onset of the art therapy process so that they experience safety in the therapeutic relationship.

Given that the art image itself can be triggering, this demonstrates the need for care and consideration when utilizing art therapy techniques. Clinicians who do not have art therapy education and training should not be using these interventions. Art therapy is a unique treatment strategy to focus on accessing the bottom-up processing elements of the brain and eventually connecting to the narrative capabilities or top-down elements when the client is equipped and adequately prepared to do so.

CHAPTER 3. METHODS

The purpose of my study was to contextualize art therapy as a bottom-up processing intervention for repairing cumulative trauma in the framework of the Neurosequential Model of Therapeutics. Cognitive interventions have historically been the mainstream approaches to trauma treatment and have been given the greatest focus of research. The issue remains that in cases of cumulative trauma and subsequent relational challenges, these approaches have not treated the full spectrum of behaviors, symptoms, and depth of rupture from trauma (Perry, 1999). They do not meet clients on their level of experience or their developmental level. Interventions are needed that address the trauma and attachment ruptures on the levels on which they occurred. I examined how art therapy could serve as a bottom-up processing intervention that could be utilized for the repair of attachment rupture and cumulative trauma. My purpose was to demonstrate how art therapy could be integrated into Perry's Neurosequential Model of Therapeutics and thereby expand the use of art therapy as a bottom-up processing intervention in treating cumulative trauma and subsequent relational issues.

The goal was to create an art therapy intervention that went beyond simply using the art process as a way to increase a client's regulation and was offered instead as a process of meaning making, connecting the trauma response to a more positive or pleasurable art and relational experience. I posited that if this occurred, an autobiographical context could be given to what was originally an intrusive, traumatic memory. When the context is given and language becomes connected to what was previously a somatic response to an implicit memory, the bottom-up process of the brain is able to communicate with the higher functions or the top-down component of the brain.

This process first begins with the regulation of the hypervigilant or dissociative responses prior to attempting to connect with the more complex aspects of meaning making and autobiographical context. Utilizing art therapy initially engages the bottom-up processes, thus regulating the central nervous system and helping the client move from a fight, flight, or freeze response to a more balanced state.

One of the largest frustrations for parents, school systems, and child clients themselves is that cumulative trauma responses often include behavioral disturbances. Because therapy usually is sought out due to concerning behaviors on the part of the child at home, in school, or in community settings, a treatment emphasis tends to be placed on curbing disruptive behaviors. Though it is often tempting to utilize a cognitive-based intervention first, doing so is not indicated given that the repair needs to first take place on an emotional and somatic level. Nonverbal interventions may require longer amounts of time with clients because the nonverbal and somatic systems are being engaged. If the symptoms and behaviors are addressed only with a cognitive behavioral Band-Aid, of sorts, then the behaviors and symptoms generally intensify until or unless the underlying factors are addressed on the somatic level. My research sought outcomes to support the theory that because art therapy can engage nonverbal and somatic symptoms, it is a valuable tool for trauma repair. Art therapy is an integral bottom-up processing intervention that often is excluded from the trauma neuroscience and in turn, potentially underutilized to repair trauma. Art therapy should be recognized and integrated as a primary bottom-up processing intervention in the NMT framework because of its efficacy with cumulative trauma. The primary research question was: Can an art therapy program based on the Neurosequential Model of Therapeutics (NMT) for treatment and

assessment of trauma in children and adolescents produce outcomes that exploit bottom-up neurological information processing?

Research Methodology

Design

I chose to use a single site multiple case study design for this study due to its flexibility and its suitability for implementing a naturalistic field study with a small sample of clinical cases (Kapitan, 2010). In addition, the case study method is useful for collecting outcomes data on innovative practices in order to integrate them into a larger framework of treatment, specifically the Neurosequential Model of Therapeutics. Given the 5- to 6-month timeframe of the study, the ability to learn from and to disseminate discoveries from individual cases in a narrative form would be particularly useful to address the research question (McLeod, 2010).

Each client and I met twice per month for individual sessions. In each session, I utilized the recommendations from the assessment as well as my observations of the client to determine the appropriate art therapy intervention or activity. Often, the clients would ask for media and/ or art activity. I would work with them to use the intervention to meet their needs regarding self-regulation, sensory integration, relational capacity, and cognitive abilities. After each session, I would photograph the artwork and document the session with my observations, the client's remarks, and their overall progress.

In preparing for the research, I engaged in a year-long doctoral internship experience (including clinical supervision, meetings, and trainings) at SaintA in Milwaukee, Wisconsin, a flagship organization that specializes in applying the

Neurosequential Model of Therapeutics to clinical services as well as utilizing the NMT assessment to determine best practices for treatment interventions. During the internship, I was able to observe elements of the assessment process and to review several completed assessment documents.

In addition, in the summer of 2016, I attended and presented at the Child Trauma Academy conference in Banff, Alberta, Canada; exposure to the child trauma professional community was essential to my deepening understanding and preparations for conducting my research. Following the conference, I observed and attended meetings on behalf of SaintA and to meet with the clinical supervisor for NMT services in order to schedule and to select participants for this research study.

Participants

The six participants selected for inclusion in the study were clients in the residential program of SaintA. The residential therapists and the NMT specialist/ clinical supervisor selected the participants based on their histories of cumulative trauma as well as the participants' difficulties with cognitive treatment interventions. The residential treatment program focuses on assessment, stabilization, treatment, and transition planning for boys, ages 5–16, with serious emotional and behavioral challenges. The program includes individual, group, and family therapy, as well as recreational programming, health services, and schooling. The clients usually are referred through state or county human services agencies and the Division of Milwaukee Child Protective Services.

As part of intake into the program, each of the six participants received the NMT assessment as well as psychiatric evaluations. In the NMT assessment, there is a section that identifies interventions that would be clinically advantageous for the individual. The

participants were selected for the study based on the NMT assessment indicators as well as recommendations from their individual residential therapists. Because the participants received weekly individual sessions with their individual therapists as well as group and family sessions, it was determined that I would implement twice-monthly art therapy sessions. In addition, I was able to have access to participants' progress notes written by their staff therapists as well as any updates to the NMT assessment documents. I was granted access to communication with the SaintA therapists and staff as well as monthly supervision sessions with the SaintA clinical supervisor.

Informed Consent and Confidentiality

Prior to the individual art therapy sessions, the residential therapists at SaintA provided all participants' legal guardians with a copy of an informed consent form (Appendix A) as well as a permission form for the use of artworks in this study (Appendix B). No names or significant identifying information are present as part of the research. The research design was reviewed and approved by the Institutional Review Boards of both Mount Mary University and SaintA.

Intervention and Procedures

Initially, the consent form stated the possibility of 24 to 52 art therapy sessions; attempts were made to work with outpatient clients during the summer preceding the start of the study. However, this plan was not possible due to the inconsistency of sessions and difficulty with scheduling. In light of these difficulties the study was moved from the outpatient population to the residential population at SaintA. This change resulted in fewer sessions but greater ability to see the participants on a more consistent basis.

Each participant received 6 to 10 twice monthly art therapy sessions designed to repair trauma on a somatic and nonverbal level in order to engage bottom-up processing and, when indicated, possible top-down processing functions. Typically, each session lasted approximately 45 to 60 minutes. Participants were given multiple choices of media as well as activities. In addition, they often made art activity requests, which, if possible, were granted. During each session, there were times when a predetermined intervention was used but many times the participants were allowed to guide the sessions with support and the context of a safe space.

After the session, I documented the imagery as well as recording case notes that specifically considered how the session approached the four NMT core domains of functioning and the recommendations from the assessment. Each session was documented in a case note format (Appendix C).

Data Collection and Analysis

The primary purpose of my documentation and case study compilations of the data was to discern patterns in the responses of the participants as well as practical applications for art therapy practice with cumulative trauma repair in the framework of the NMT. Therefore, I created a case record for each participant that documented all responses from the NMT interventions, whether positive, negative, or nonresponsive. In addition, if there was an adverse response or a particularly advantageous response, SaintA staff were notified to ensure proper support or to generalize the positive impact in the treatment milieu. Case notes and images of artwork, as well as assessments and documentation, were stored on an external hard drive in accordance with HIPAA

standards. Artwork was retained by the participants or given to primary therapists to return to the youth.

Because the sample was small, I was able to focus the data collection on detailed interactions and the clients' responses (verbal, metaverbal, and somatic) in each session. After the session, I reviewed, coded, and analyzed the data to identify outcomes could be generalized to art therapy within the NMT framework. In subsequent sessions, I drew from the analysis to choose particular interventions, followed by evaluation of the sessionsin light of the participant's NMT assessment results. Readers who are interested in replicating the study are directed to The Child Trauma Academy website, childtrauma.org, for information on NMT assessment training and other details of the NMT model that was utilized in the study.

Case Study Outcomes

In presenting the outcomes of the study, I have included the 3 tables that indicate the results and recommendations of the client's NMT assessment in each case. The first table describes current relational health, the cortical modulation ratio, and the developmental history outcome. The client's current relational health is scored as either "enriched," "adequate," or "impoverished" based on the NMT assessment protocol. The cortical modulation ratio discerns capacity for self-regulation and executive functioning. A score below 1.0 indicates poor or undeveloped self-regulation and executive functioning. Ratios between 1.0 and 2.0 indicate emerging but episodic functioning. A low cortical modulation ratio denotes that a client is not able to benefit from cognitive interventions. The developmental history values factor adverse experiences and

reslational health (resiliency factors) in order to determine the developmental history values.

The second table presented in each case study designates the client's score for each of the four domains: sensory integration, self regulation, relational, and cognitive. Clients can receive scores of below 65% (lowest), between 65 and 85%, and above 85% (highest) for each domain. The appropriate recommendations for the four domains are included in this table. In the third table, the client's current Central Nervous System functionality is reported by denoting which function corresponds to the brainstem, DE(diencephalon)/cerebellum, limbic, cortex, and frontal cortex. Each function is compared to the age typical score vs. the client's score; they are listed from lowest level to highest level in accordance with the areas that are impacted. In particular, the recommendations made in the NMT assessment were important in the way that I directed the interventions used as well as in the format for the documentation.

Limitations

I designed the study as a practitioner-led field study, which gave me the opportunity to collect and assess treatment outcomes. However, I recognized that I had a bias in that I believed that art therapy was an important treatment approach in cumulative trauma repair and that it was indeed a bottom-up modality that could operate well in the framework of the Neurosequential Model of Therapeutics. That being said, in reporting the information in my case notes, I worked to manage this bias by reporting observations of what occurred in the session through my viewpoint as a practitioner-researcher and an art therapist rather than attempting to interpret outcomes during the session itself. I also sought and obtained feedback from SaintA staff and therapists who did not have a stake

in the research, as well as supervision with the SaintA clinical supervisor, who assisted by providing and encouraging objectivity toward the data collected. Though a bias toward art therapy practice may have existed, I was able to operate within the idea that the case studies would dictate the outcome of the study, rather than my own personal beliefs.

CHAPTER 4. RESULTS

Each case study is introduced below with a table that presents the outcomes of the NMT assessment and the recommendations for treatment that were indicated by them. The NMT data included in the tables were chosen according to their clinical significance to the study intervention. After sharing a brief trauma timeline and historical background for the participant, I present case highlights from the youth/therapist experience during art therapy sessions. At the end of each case study, I summarize the main outcome that implicates art therapy as a bottom-up intervention in the framework of the Neurosequential Model of Therapeutics.

Case Study #1

David (pseudonym) is a high school age adolescent who was admitted to the residential program one year prior to the study (see Tables 1–3 for NMT assessment data). He was referred to residential treatment due to sexual acting out, aggression, suicidal gestures, and self-harm. He had been charged with approximately 20 violations ranging from disorderly conduct to an assault on his mother to sexual assault of a child. In addition, he had been detained in four different residential settings prior to this admission.

Table 1

David's NMT Assessment, Overall

Assessment category	Result
Current relational health	Impoverished

Cortical modulation ratio	0.53 (executive functioning and somatic regulation are impoverished)
Developmental history	High risk

Table 2

David's NMT Assessment and Functional Domain Recommendations

Functional domain	Value	Recommendations
Sensory integration	Below 65%	Patterned, repetitive somatosensory activities, does throughout the day, 7–8 minutes at a time: massage, music, movement, yoga/breathing, animal-assisted therapy
Self-regulation	Below 65%	Transition activity for each change, patterned and repetitive proprioceptive occupational therapy activities, structure for bedtime rituals, music/movement activities, eye movement desensitization and reprocessing therapy
Relational	Below 65%	Art therapy, individual play therapy, parent–child interaction therapy, dyadic parallel play with a trusted adult leading to dyadic parallel play with a peer, then a group
Cognitive	Below 65%	Speech and language therapy, insight-oriented psychodynamic treatment, CBT, family therapy

David's mother reportedly had mental health concerns and a trauma history and his father had been inactive due to incarceration and probation in another state for most David's life. His father had sustained a traumatic brain injury in his adolescence in addition to substance abuse issues. Both parents reported mental health issues in their families as well. David's mother was 17 when she gave birth to him and had a lack of

support, was subjected to domestic violence, and encountered health issues during the pregnancy. David was born with pneumonia and had several surgeries. There was an attachment rupture during this time when his mother was brutally attacked and required time away for recovery.

Table 3

David's NMT Assessment, Level of Functioning

Level of functioning	Frontal cortex	Cortex	Limbic	Cerebellum	Brain stem
Severe dysfunction	n/a	n/a	n/a	n/a	n/a
Undeveloped	Nonverbal cognition, modulate reactivity, math/ symbolic cognition, abstract/ reflective cognition, values/beliefs	Delayed gratification, expressive/ receptive communication, self-awareness/ self-image, speech/ articulation	Reward, affect regulation, attunement/ empathy, psychosexual, relational, short-term memory/ learning	Feeding/ appetite, dissociative continuum, arousal continuum, neuro-endocrine/ hypothalamic, primary sensory integration	Autonomic regulation, attention/ tracking
Moderate dysfunction	Reading/ verbal	Somato/ motorsensory integration, concrete cognition	n/a	Sleep, fine motor skills, coordination/ large motor functioning	Cardio-vascular/ autonomic nervous system (ANS), temperature regulation/ metabolism

Mild compromise	n/a	n/a	n/a	n/a	Suck/swallow/ gag
Episodic/ Emerging	n/a	n/a	n/a	n/a	n/a
typical range	n/a	n/a	n/a	n/a	n/a

As a young child, David exhibited a number of developmental delays that included feeding, motor movements, and speech/language issues. He did not speak his first word until age 1 and did not speak in sentences until age 4. He received physical therapy for feeding and sucking issues, occupational therapy for gross/fine motor delays, and speech therapy. From age 1–3, David had episodes of feces smearing presumed to be due to physical and verbal abuse from his stepfather. In addition, his mother gave birth to a stillborn daughter during this period. From age 3–12, David's mother was married to his stepfather.

David had multiple issues in the educational environment; he was bullied often and there was a report of sexual abuse by a neighborhood boy as well as by his mother's ex-boyfriend's son. He displayed a number of erratic behaviors and also attempted to sexually assault his cousin. In his early teens, he began sexually abusing his half-brother and began making suicidal gestures and was physically aggressive toward peers and his mother. He was hospitalized twice during this time, including admission to a psychiatric institution where he attempted to stab himself in the chest with scissors; a second-degree sexual assault charge was also filed by a female peer from school. He was removed from his mother's custody and was not allowed to have contact with anyone under the age of 14. David was placed into foster care but was unable to remain there due to behavioral issues. This was when he was placed into treatment at SaintA.

Case Vignette: A Snake, a Lion, and an Elephant

When I first met David, he greeted me warily but seemed excited about the art process. He towered over me and seemed almost apologetic and awkward regarding his physical stature. He wanted to participate but voiced feeling anxious; his leg shook quickly when he became anxious or excited. I offered several emoji squeeze balls that he seemed to like. We then started an icebreaker activity of a name embellishment: I asked David to draw some of his favorite activities. He then suggested a category of "what do you want to be when you grow up?" and looked at me and laughed, stating that I had probably already figured that out. He then made up his own category, which was a bucket list. He indicated wanting to see Mount Rushmore. He wanted to see my image and at times would exaggerate or state something that was untrue and quickly backtrack. We worked independently, but David peeked at my work, and I, in turn, peeked back at his. This felt like a nicely patterned give and take.

On the next visit, David shared that he had had a difficult day. He discussed how a peer had verbally attacked him three times and that he had been able to maintain regulation until the third time when he "lost it" and attempted to strangle the peer. David shared that he could not be picked on or hurt again and that he was not remorseful about the fight. He discussed feelings of anger and fear. I asked him about how he was feeling now and if he felt safe. He responded that he did and that he wanted to do artwork. Because he came into the session very shaken, I presented modeling clay as a way to help him get more grounded. David rolled the clay on the table, rocking back and forth and making movements with his mouth.

David created a rattlesnake (Figure 1). I observed that he had done well with using the clay to get grounded and was able to move into creating a symbol. David discussed how a rattlesnake warned people before it bit them; I asked about ways that the snake knew who was trustworthy and who was not. He stated that it could sense it and then talked about where fear was experienced in his own body. At this point, there was a rhythm of connecting a bottom-up process of using the clay with a top-down aspect of symbolization and storytelling.

Figure 1. David, Snake

The conversation turned then to whom David could trust; he stated that his mother was the only person he could trust. As soon as he verbalized this, he became dysregulated as evidenced by his leg shaking, a change of color in his face, and faster breathing. He then asked to return to the unit. I was concerned with how quickly he had moved from being calm and happy to dipping into fear and sadness that moved to physical dysregulation. I asked him to slow down his leg movement and to use another piece of clay to squeeze while he slowed down his breathing. David appeared to be able to use the symbolization of the snake but after creating the snake and talking about the snake as a metaphor for himself, this activity was too personal and too cognitive in nature, requiring bottom-up interventions for regulation. At this time in the session, I was unaware of the current situation with David's mother. I did not learn more until spending more time with him.

It also appeared that David continued to struggle with expressing his feelings without becoming physically aggressive toward himself or others. During our third session, he discussed having an altercation with a staff member that became violent. He stated that the staff member had said something about his mother and David admitted that he could not control himself; however, from David's account, the staff member became aggressive as well. He then abruptly stated that he did not want to talk about this anymore and asked for art supplies; he looked at me and asked what he would be drawing today. David had quickly become accustomed to using the art process as a way to express difficult feelings. I chose to work on a feelings activity (see Figure 2); for "happy," David drew a gold necklace with a lion medallion, stating that he wanted his mother to give him this for Christmas as a symbol of his strength. He appeared calm as he drew this image and was able to mention his mother without moving into panic.

For "sad," David drew a puddle that he said he felt he resided in when he was sad, but he denied feeling this emotion often. For "excited," he drew an image of his dog, stating that the dog displays excitement when it sees him; when discussing the dog being with his mother, he began rocking back and forth and shaking. I asked him to slow down his movements and to pause for a moment. He then requested to draw "angry," symbolized by "0 to 10" and fire, stating that nothing slows him down and that he loses

Figure 2. David, Feelings

track of his body. We talked a little about this; I wanted to know if he could imagine anything that helps him become more calm. He then asked to draw “calm,” and drew a cool breeze and blue squares, stating that one of the squares was a drawing because drawing calms him. The other was an ice cube. We oscillated between the images representing calm and anger; I folded the paper so that he could see only calm or only anger. I asked him to think about what he felt in his body when he saw each image. He responded well to this and seemed to think he could use the calm image to help with angry feelings. His “scared” image related to horror film stereotypes, and he had a hard time thinking of a time where he was actually scared. His “lonely” image was of himself kicking a rock. He stated that it could turn to happy if someone came to interact with him; it not, it turned to angry.

The theme of anger continued in our fourth session. The session began with a scribble and finding imagery in the scribble (Figure 3). David seemed to like this and found a fish’s face in the scribble, which made him laugh. He then talked briefly about home. I asked him to draw who lived in his home, which he quickly stated that he couldn’t do and looked panicked. I felt the change in his body as his emotional state switched from laughing and calm to scared and anxious. I realized that I had pushed too far too quickly. David made a distinct boundary with me regarding his need to work within

Figure 3. David, Fish Scribble

the context of bottom-up versus top-down. I thanked him for letting me know that this was something he could not do. I quickly asked him to draw how he felt at that moment. He drew an image of himself crying (Figure 4). I noted how young the child in the image looked compared to David.

Figure 4. David, Sad Face

I put David's calm image from our third session and the sad image on the floor several feet apart from one another, and asked him to walk very slowly between the sad image and the calm image, noticing the changes in his body as he did. I asked him to stay next to the calm image and to see how he felt. He smiled and stated that he felt calm. On the way back to the unit, I thanked him for his hard work as well as for asking for what he needed during the session. I reflected on my drive home how much I appreciated David telling me what he could not do, but I also was surprised at myself for moving into top-down processing rather than continuing to meet the youth where he was. I wondered at this point how many times, when working with clients, had I skipped ahead a step?

During the fifth session, David came to the session visibly upset, stating that he was coming from a meeting with his mother and his treatment team. He shared that he had been informed that because his mother's boyfriend was a registered sex offender, he would be unable to return home for permanency. Now, I could understand better why David was so distressed when his mother was mentioned. Although I had read his history

and spoken with his therapist, I was unaware that his mother had made this choice. Given that this was his one secure connection, it made sense that he would have the reaction he did to drawing who lived in his home, because his mother was choosing to not have him return there. In addition, there was someone very unsafe in that home.

David stated that the only person he had was a grandmother who lived out of state and that he didn't know where he could go. He also shared that he had known that this discussion was going to happen and that it was unsafe for him at his house. I decided that David needed something rhythmic and repetitive in nature to help with regulation. I pulled three choices of media from the closet. He quickly chose to use the Spirograph. He talked about how he had always wanted to use one but that he had never had the chance. As he worked with the Spirograph, he moved from calm and happy to anxious and frustrated, as it was not cooperating with his shaking hands. I worked with him on breathing and slowing down his movements. At this time, David asked to return to the unit, stating that he was tired and that he just wanted to lie down. I honored this request and thanked him for asking for what he needed. Though David exhibited his best ability to regulate with my help, he was struggling with the level of discomfort and sadness from the information he had received prior to our session.

During the following session, I was surprised to learn that David remembered that I had a bead activity in the closet. This activity required an iron, and he had already asked to borrow an iron from the unit to work on the bead activity. I noticed that he had scratches all over his neck, arms, and hands. He stated that he had used a safety pin that he had smuggled into his room to self-harm. He said that this had happened the day after he received the news from his mother. I told him how sorry I was and that I hoped that he

wouldn't hurt himself anymore. He stated that he didn't have the safety pin and that he was feeling better.

David chose the pattern he wanted to create with the beads, which was an alien with glow-in-the-dark eyes. He became frustrated quickly. His hands were shaking badly and he struggled with picking up the beads. He shared that he wanted to finish this piece today but that he was aware of running out of time; he became tearful and red-faced. I reassured him that we would work until he was finished and told him not to worry. I operated as his assistant throughout this session and helped him move through frustration into excitement and pride; he was thrilled with the finished project and how the piece glowed in the dark. I complimented David on his ability to move through hard feelings to happier ones. He showed the piece to other residents and staff on the unit, smiling broadly.

During the seventh session, David was highly frustrated when I got to the unit. He was going to work on something with several of his peers and felt interrupted when I went to get him. Before an alternative plan could be offered, he went to his room and threw things, banged the wall with his fist, and yelled. He then returned, appearing much calmer, with the artwork he had been working on to show me, presenting as if nothing had happened. I sat with David and reviewed his drawings; he said he had begun carrying his notebook around and drawing whenever he was upset. In addition, he talked about getting a mentor and how this seemed to be helping, as well as his plans for Christmas. He then asked to play Monopoly, which seemed to continue to help with regulation. I left this session amazed that David had been able to take some of the skills he had learned

with me and use them on his own to help with self-expression. He was really proud of his work.

Knowing how important slow and regulated transitions needed to be for this youth, I began preparing him for the termination of our work together. I made sure to do a countdown during our last few sessions. David seemed aware that the end to our sessions was coming. He could ask for what he needed in session, though he showed increased hypervigilance (e.g., checking over the space, looking at supplies, and leg shaking). He said that he had not done any art as of late given that he was too frustrated and angry. The day of our eighth session, David had been using a remote-control drone that his mother had bought him for Christmas and it had broken. He was talking with his mother on the phone when I came to get him.

David stated that he was frustrated that he still did not know where he would be going after his discharge. Overall, he was agitated during this session but could calm himself slightly with the repetitive movement he used when drawing with colored pencils. I had offered colored pencils because they are less fluid and could offer greater containment and rhythm. David initially began making movements that he planned to continue throughout the picture but he decided that that would take too long. He then changed his mind and drew an elephant with hay and water (Figure 5). He said that the elephant was in the wild because the hay was fresh and had

Figure 5. David, Elephant

some green in it. He did not want to talk about the picture but he was not shaking or rocking and appeared calmer.

David came to the next session with his dinner. We talked about this being his last session with me. He stated that he understood and that he was not happy about being in an occupational therapy group on Wednesdays now, because it was with another youth he did not like and the leaders were all “old women.” He did state that he had gotten more art supplies as a gift from his grandmother in Missouri and that this had been a nice surprise. When David began to eat, he reacted to the heat of the dinner, struggling with the food being too hot and burning his mouth; he became frustrated to the point where he decided not to eat any more. He was quickly angered and dysregulated by this sensory overload, as evidenced by stomping his feet, cursing, and breathing hard. I suggested letting the food cool.

David opted for chalk pastels and seemed excited about this option. He knew exactly what he wanted to do and immediately became less frustrated and more animated as he worked on his artwork (Figure 6). Throughout different points of working, he said, “But wait, there’s more,” and “You haven’t even seen the best part yet.” He worked steadily with full focus and used his hands to smear and manipulate the chalk; although David’s hands often shake, his hands remained steadier during this process. We talked about the water, the birds, the mountains, the palm trees, and

Figure 6. David, Sunset

the clouds. He said that he was so happy with this picture and that he loved the way the sun shone over the mountains. I agreed that it was absolutely beautiful.

Figure 7. David, American Flag

After the completion of the first image, David said he had one more to do and created an American flag that he was very pleased with (Figure 7). He talked about how he had done art when he was little and that this was something that he had taught himself. He stated that this was one talent that he felt confident and pleased about. I talked about how amazed I was with the images. They were so beautiful, and I said that I hoped that he could continue to make art a part of his daily life.

Outcome #1: Bottom-Up and Top-Down Are Not Separate Entities but Exist on a Spectrum; Art Therapy Allows and Encourages Both

David responded very well to the art therapy components and was also able to verbalize when the transition from bottom-up to top-down processing was too much for him. At times, he could process his emotions verbally and even indicate where in his body he experienced the emotion. He was articulate in asking for what he needed and refusing what he did not. David was artistically talented and for brief moments could tap into metaphor and symbolism, which are higher-level functions. He also could use imagery of a difficult emotion or event and a more pleasurable image to oscillate between the two. If he was well-resourced and feeling safe, he could move into areas that were more difficult to process.

Even though David's NMT assessment indicated deficits in symbolization as well as in expressive and receptive language, he was able to reach into these domains and increase his abilities with them through the art therapy process. In addition, by using art, he could choose when he wanted to discuss the metaphor or whether he would prefer to leave the symbol's meaning obscure. This allowed him to feel safe enough to talk about an image without having to move directly into talking about its meaning or talking directly about himself. This allowed him to move freely between the bottom-up components of sensory integration and somatic regulation and the top-down components of relationship and cognition. This gave David the ability to have perceived control of his process as well as being able to remain in the bottom-up functions for safety and for his developmental levels as indicated by the NMT assessment. It also allowed him to stretch and move into the lesser-developed domains without harm or an extreme emotional response.

Case Study #2

John (pseudonym) was admitted to the residential program in December of 2015 (see Tables 4–6 for NMT assessment data). He was referred due to sexual acting out with several family members and a neighborhood girl. He had disruptive behavioral issues in school and typically exhibits anger in unhealthy ways.

Table 4

John's NMT Assessment, Overall

Assessment category	Result
Current relational health	Adequate

Cortical modulation ratio	2.73 (capacity for self-regulation and executive functioning; top-down approaches may be beneficial with coordination with bottom-up)
Developmental history	Low to moderate risk

Table 5

John's NMT Assessment, Functional Domain Recommendations

Functional domain	Value	Recommendations
Sensory integration	Above 85%	Sufficient somatosensory regulation but might still benefit from massage, sand/water tables, rhythmic activities, swimming, and martial arts.
Self-regulation	Above 85%	Adequate ability to self-regulate but could benefit from music and movement activities; proprioceptive activities such as pushing, pulling, lifting, or moving weighted objects; and building in sleep routines/rituals.
Relational	65–85%	Needs multiple positive adults in his life and involved in his treatment. Parallel play first with a trusted adult and then a peer would be best. Eventually, small groups could be implemented as well as animal-assisted therapy.
Cognitive	Above 85%	Relatively good cognitive skills; could benefit from storytelling, drama/theatre, art therapy, journaling, and CBT.

John's mother was an adolescent when she gave birth to him. His father and mother were married during the pregnancy; John also has a younger brother from this marriage. His parents were divorced; his father moved out of state where he has another family. John had little to irregular contact with his father. In 2013, his mother remarried and had two daughters with her second husband. John's stepfather also has three daughters from another relationship.

Table 6

John's NMT Assessment, Level of Functioning

Level of functioning	Frontal cortex	Cortex	Limbic	Cerebellum	Brain stem
Severe dysfunction	n/a	n/a	n/a	n/a	n/a
Undeveloped	n/a	n/a	n/a	n/a	n/a
Moderate dysfunction	n/a	n/a	Psycho-sexual	n/a	n/a
Mild compromise	Modulate reactivity, math/symbolic recognition, reading/verbal, abstract/ reflective cognition, values/beliefs	Self-awareness/ self-image	Reward, attunement/ empathy, relational/ attachment	n/a	n/a

Episodic/ emerging	Nonverbal cognition	Delayed gratification, communi-cation, expressive/ receptive, speech/ articulation	Short-term memory/ learning	Feeding/ appetite, sleep, dissociative continuum, arousal continuum, primary sensory integration	Temperature regulation/ metabolism, attention/ tracking
Typical range	n/a	Somato/ motorsensory integration, concrete cognition	n/a	Fine motor skills, coordination, neuro-endocrine/ hypothalamic	Cardio-vascular/ANS, autonomic regulation, suck/swallow/ gag

John's father did not provide any medical history but his mother stated that the father's family was chaotic, with substance abuse and bipolar disorder (John's paternal grandmother). John's mother grew up with an alcoholic father and little structure in the home. Her father became homeless when John was a child and there has been no contact since. She dropped out of school in eighth grade and traveled around the country until she became pregnant and sought support with her pregnancy.

The pregnancy with John was reportedly normal and was a turning point for his mother to begin living a life that would benefit her child. From birth to age 1, his mother stayed at home with him and his father was engaged in his life. John had to have breathing treatments at times and also had a bad burn on his hand at 9 months old. From ages 1 to 3, the family moved and John's father became less involved and more inconsistent. There were financial strains.

When John was a toddler, there was another move. He was diagnosed with respiratory syncytial virus, resulting in two hospitalizations. His brother was born; John was homeschooled for kindergarten. For first grade, John began attending school out of the home and there were several behavioral reports. When he was in first grade, his parents divorced and his father moved away. Contact was very little. At ages 8 and 9, he reportedly began being disruptive at home as well as at school, breaking things and being disrespectful.

In his pre teens, John was accused of several sexual offenses, resulting in counseling, but it did not appear that the sexual behaviors were addressed. As a result, he was sent to SaintA to work on problem sexual behaviors. Since he has been at SaintA, he has disclosed a strained relationship with his stepfather as well as possible physical abuse. John was also evaluated regarding his problem sexual behaviors; due to his guardedness while being interviewed, it was difficult to obtain information. The evaluations did indicate he was at high risk for recidivism.

Case Vignette: A Maze, a Bridge, a Dragon, Some Chess, and Definitely Hot Cheetos

When I first met John, he appeared reticent to attend art therapy and held his head down so that his face was covered by long bangs. He was shy, with a slight build. He was quiet throughout the session, spoke only when I posed a question, and had little motor movement until I introduced hands-on activities. I asked him to create a name embellishment and to include some of his favorite things. John chose *Titanic* as his favorite movie and drew a detailed image of the ship. After the session, his residential counselor informed me that this was a movie that had a part in John's sexual offending.

He did not share anything about the image during the session. It did seem notable given that *Titanic* is not a typical adolescent boy's favorite movie. Drawing about it did allow him to express something about himself and possibly why he was in treatment without being forced to verbalize this information.

In addition, John drew his favorite food as spaghetti with hot sauce. I discovered that he craves hot and spicy food and tends to like activities that involve risk or increased adrenaline. During the art making, John was quiet and his eyes remained downcast. I made attempts to connect with him, and he responded politely but only with the bare minimum of words. I introduced a Jenga game, and he played several times but then took the blocks and began making patterns with the blocks repeatedly, in silence. He did not include me in this exercise and seemed to forget that I was in the room. Lastly, the two of us shot several hoops on the small basket on the back of my closet door. For self-regulation during this session, I had introduced oil pastels and brightly colored blocks as well as squeeze balls. John used the blocks to build in a rhythmic, patterned fashion, which appeared to help him self-regulate. According to his NMT assessment, relational aspects prove difficult for him. I left the session a little confused and wondering if I had missed a moment where we could have connected more effectively. I also wondered about whether John might possibly be on the autistic spectrum due to his innate ability to make patterns and rhythms as well as his lack of change in affect and difficulty with connecting.

When I returned to see John, he initially refused to come to meet me; however, unit staff were able to convince him to attend art therapy. He came into session and did not respond to questions or comments. I offered several different building activities and

also asked him to use Legos; he refused participation. He asked to use the restroom, where he spent approximately 10 minutes; when he returned, his affect was significantly different. I interpreted extended time in the restroom and lighter and brighter affect upon returning as self-regulating through masturbation. I attempted other activities, which he refused. At this point, I said, “Well, this isn’t going so well, is it? Is there something I could plan or bring with me next time to make this better?” John responded with a smile, and said, “chess and hot Cheetos.” At this point, I was grateful for a small pathway into his world. I asked his residential therapist about John’s behaviors during the session; she confirmed that masturbation was his response to being dysregulated or dissociative, but that once he became more comfortable and engaged, this behavior tended to extinguish itself.

I was pleased that during the next session, John displayed a full range of emotions, from happy and laughing to tearful and sad to excited. I brought a chessboard and hot Cheetos, as promised. John began setting up the chessboard and then began eating the Cheetos in a rhythmic pattern while he taught me how to play in a very patient manner. He seemed extremely pleased when he could beat me. During the game, I asked him where he had learned to play chess. John stated that his father had taught him when he was little but that they never play any more and that his mother doesn’t play.

I asked if he wanted to do a little art, and he agreed (see Figure 8). I asked him to first draw an image of what "happy" looked like for him. John drew an image of hot Cheetos, a chess game, the word *checkmate*, and a gold medal. He smiled and laughed as he talked about the image and stated that he was happy he had beaten me at chess. He then drew "sad," which included a storm, a bike crash, and the word *crash*. John said that he had crashed two times, once busting open his chin and the other time his knee. He added that he felt sad "when mom and dad fight" and that this happened a lot; his eyes welled up and he quickly looked down, changing the subject. For "excited," he drew an image of himself winning a chess tournament in fifth grade, receiving a medal and a trophy. He said that he had not felt excited since arriving at SaintA and that the last time he was excited, he had beat his sister at checkers. He shared that he had won a chess tournament at school and that this was something he was proud of. During this session, the food and the chess game appeared to help John regulate to the point that the art activity was accessible. In addition, he could connect on a relational level by teaching me to play chess and through the back-and-forth nature of the game. I felt relieved that he was more engaged in this session and that he was able to feel more comfortable with me.

During our third session, I decided that we would begin with several regulatory activities. We started with a yoga

Figure 8. John, Feelings

pose (legs up the wall), and John laughed hysterically because he couldn't balance. He toppled over several times and each time, he giggled harder. He then showed me several magic tricks that he was very proud of. I praised him; these card tricks were difficult to accomplish and required coordination. We then did arm stretches to prepare for a scribble drawing. I chose this prompt because John had voiced to his residential therapist the day prior that he feared doing art with her, because he felt that it moved too quickly. I knew that a scribble could remove some of this trepidation because it reduced performance anxiety and fear of revealing more than he might want. Unlike some scribble drawings I had witnessed, John was meticulous in the creation of the image, never lifting the marker (following directions) and covering all areas of the page with a mazelike design (Figure 9). I was astonished; this was an extremely well-organized scribble. This also furthered my sense that John could be on the autism spectrum, given the nature of the patterns and the controlled, rhythmic presentation of the scribble.

Figure 9. John, Maze

As we continued to work together, it the Thanksgiving and Christmas holidays grew nearer. John did not indicate if he was going home or not. Although our relationship appeared to be growing during our sessions, he never indicated why he was at SaintA or provided any reasons for why he would or would not be going home. The art and the chess games continued to be a place for him to process on a nonverbal level; I believe that

John was able to accomplish what he needed to in the sessions without explanation. He was concurrently receiving therapy sessions that were focused on his problem sexual behaviors; we did not have to focus on this but could instead work on expression on a metaverbal level.

During our sixth session, I introduced paint to use prior to our usual chess game. John asked what he should paint; I gave him a choice between something abstract and something concrete. He chose the concrete directive of painting a bridge with himself somewhere in the picture (Figure 10). He painted the bridge first: a road with a car on it and an arched trellis above. John painted himself on top of the bridge. He then added water under the bridge. I asked him what he was doing on top of the bridge. He stated that he was "freestyling" and then said he did not know the people in the car below. He added flames coming out of the car and painted the word *bully*, with an arrow pointing to the car, stating that a big bully was in the car, although he denied being bullied himself.

Figure 10. John, Bridge

We talked about the bridge as a metaphor for the treatment process, moving into symbolic language, a top-down process. John said that he felt like he was a bit more than halfway done and that his mother was his primary support. After discussing this session with John's residential therapist, she shared he had discussed his stepfather's physically abusive behavior and had discussed fear of his stepfather during the session the day

before this art therapy session. We discussed possible correlations with the bully inside the car on fire in his image.

In our seventh session, John shared a little bit about Christmas plans but did not answer regarding whether he had any plans with family. He chose to play a Monopoly game that had a credit card machine in it. He delighted in the sounds and lights on the machine and played the banker for both himself and for me. He was talkative and at times laughed and smiled. He denied cheating several times although I had not accused him of doing so. He also stopped himself when he was cheating and apologized.

I began discussing termination as our sessions continued in order to make sure that John was prepared for the change. We continued to play chess during our sessions, and I made sure to bring hot Cheetos for the remainder of the times we met. We also played basketball with the squeeze balls on the back of the closet door. There was also a breakthrough of sorts when John shared willingly about what happened at a court appointment and that he was relieved with the decision that he would not be removed from SaintA to go to a higher level of care for his offenses. This was the first time he had offered information without my asking questions.

During our last session, John created an image with chalk pastels with no directive (Figure 11), which was the first time he had created art without being asked to do anything specifically. Most notably during this session, he maintained eye contact throughout and responded to all questions. In addition, there were times when he made suggestions and initiated conversation. He chose a black chalk pastel and drew a portion of an image that looked almost like a bridge. Then he made the majority of the image black. At the bottom of the paper, John used red pastel to create a fire and, very faintly, he drew a figure in white near the fire. I asked him to tell the story of his picture if he could; he stated that what looked like a bridge was a dragon's teeth and that the dragon was a good dragon that was going to burn things. He said that the person was a hobo standing next to the fire. John had included fire in his imagery several times; he could tell a story about the imagery using symbols, remaining at a symbolic processing level rather than discussing how his imagery might relate to his life. The artwork allowed him to be able to choose how much he wanted to divulge or to discuss. During the last portion of the session, he requested to play basketball with me and did so for the remainder of our time together. Again, he was elated when he beat me and laughed often, was polite and mindful of taking turns, and also reprimanded me if I did not return his ball or if I went out of order.

Figure 11. John, Dragon

Outcome #2: The Bottom-Up Art Therapy Process Increases the Capacity for Relationship

While working with John, I knew from reading his assessment that for the most part he had the capacity for top-down, cognitive processes; however, due to his relational limitations, it was imperative to work with him in a way that would engage him. The interventions that tended to work the best were sensory in nature, with little usage of verbal language. John responded well to art therapy activities but also responded well to hands-on activities where the potential to create patterns or to play in a structured, orderly manner were most conducive. Because he was receiving cognitive-based therapies to address his inappropriate sexual behaviors, it was not necessary to directly discuss this in our sessions. In addition, he could use the art but was at times fearful of it, perhaps because he felt that he would dip into an emotion and become overwhelmed. We worked on "small doses" of art making interwoven with the chess games and Cheetos that assisted with self-regulation. Because we could formulate a rhythm through bottom-up activities and this rhythm could be at John's pace, this also increased relationship building and trust.

As indicated in his NMT assessment, John struggled with building and maintaining relationships and appeared to be mourning the loss of his father's presence in his life. He struggled with the relationship with his stepfather and seemed to feel bullied and disrespected. It was extremely important that he felt safe; he also was given opportunities to feel proud of himself and to increase his self-image, another area of deficit according to his NMT assessment. I recommended that John receive continued activities to promote self-awareness as well as ways to express emotions in small

controlled doses. Because he was reticent to build relationships and to express himself on a verbal level, it sometimes appeared that John was not involved or not listening. However, I did not feel that this was true; although he did have a tendency toward dissociation and when he was dissociated he was unable to focus, concentrate, or participate fully in activities, he appeared to desire inclusion as well as support.

Case Study #3

Jacob (pseudonym) was admitted to the residential program in August 2016 (see Tables 7–9 for NMT assessment data). He was referred to the residential program due to behaviors indicative of reactive attachment disorder, including physically aggressive behaviors and sexualized behavior toward others.

Jacob was adopted as a toddler. He came into care due to neglect and drug use by his birth mother and being raised in an unstable environment. There were also allegations of physical abuse by his birth mother's boyfriends; his birth parents have a history of mental health diagnoses, substance use concerns, and suicide attempts.

Table 7

Jacob's NMT Assessment, Overall

Assessment category	Result
Current relational health	Impoverished to low adequate
Cortical modulation ratio	1.13 (Poor or underdeveloped capacity for self-regulation and executive functioning; cognitive interventions will be less useful)
Developmental history	High developmental risk at intrauterine, infancy, and early childhood; moderate risk for perinatal and childhood

Table 8

Jacob's NMT Assessment, Function Domain Recommendations

Functional domain	Value	Recommendations
Sensory integration	65–85%	Patterned, repetitive somatosensory activities in home school, etc. in order to help with reorganization. Activities such as music, movement, yoga, drumming, or massage woven throughout the day would be useful.
Self-regulation	Below 65%	Poor self-regulatory abilities. Needs assistance transitioning from activities and needs routine/structure and patterned proprioceptive activities such as isometricic exercises in addition to weighted vests, blankets, ankle weights, deep breathing techniques, building structure into bedtime rituals, music and movement activities, animal-assisted therapy and eye movement desensitization and reprocessing therapy.
Relational	Below 65%	Needs interactions with multiple positive healthy adults invested in his life and treatment. Essential relational activities suggested such as: art therapy, individual play therapy, Parent–Child Interaction Therapy, dyadic parallel play with an adult, and, eventually, dyadic parallel play with a peer leading to supervised small group activities.
Cognitive	65–85%	Once fundamental dyadic relational skills have improved, therapeutic techniques can focus on more verbal and insight-oriented or cortical activities. Examples of therapeutic activities include: insight-oriented treatment, CBT, reading enhancements, and structured storytelling.

Table 9

Jacob's NMT Assessment, Level of Functioning

Level of functioning	Frontal cortex	Cortex	Limbic	Cerebellum	Brain stem
Severe dysfunction	n/a	n/a	n/a	n/a	n/a
Undeveloped	n/a	n/a	Psychosexual	Sleep	n/a
Moderate dysfunction	Nonverbal cognition, modulate reactivity/ impulsivity	n/a	Reward, affect regulation/ mood, attunement/ empathy, relational/ attachment	Arousal continuum/ primary sensory integration	n/a
Mild compromise	Reading/ verbal, abstract/ reflective cognition, values/beliefs	All functions of cortex fall under mild compromise	Short-term memory/ learning	Feeding/ appetite, fine motor skills, coordination/ large motor functioning, dissociative continuum, neuroendocrine /hypothalamic	All functions of brain stem fall under mild compromise
Episodic/ emerging	Math, symbolic cognition is age level appropriate	n/a	n/a	n/a	n/a
Typical range	n/a	n/a	n/a	n/a	n/a

During the summer of 2015, Jacob's adoptive parents divorced, which adversely impacted him; in addition, his adoptive mother suffered a stroke while Jacob was home. He was there when the ambulance arrived and when his mother was taken away. His adoptive father regained custody of him for one month, when Jacob went to live with his father's new family. As soon as his mother returned home, Jacob was returned to her care, although she was still weak and unwell. Although there has not been a clear indication of sexual abuse in Jacob's history, there is suspicion of some inappropriateness due to his interest in pornography and his intrusive sexual thoughts.

There was suspected drug and cigarette use during Jacob's birth mother's pregnancy with him. It is also suspected that he was left alone for days as an infant and was removed from his birth mother's care. Jacob was moved to his great-aunt's home but there were numerous children in her care and it is further possible that she had cognitive limitations. Jacob began placement visits with his adoptive parents and moved permanently to his adoptive family around pre-kindergarten. This home was stable up until the divorce and his adoptive mother's subsequent illness, which took place in 2015.

Prior to being placed at SaintA, Jacob lived in two therapeutic foster homes due to behaviors that his adoptive mother could not manage. He has a younger sister who lives with his birth mother; his birth father remarried and has had inconsistent contact. This has caused numerous issues in the treatment milieu. Jacob has had issues with self-harm, running away, dangerous behaviors, aggression, meal refusal, and suicidal ideation/gestures. He was hospitalized for unsafe behaviors during his stay at SaintA.

Case Vignette: Whales and Deadly Fish

I was introduced to Jacob by his primary therapist and by the SaintA clinical supervisor. His primary therapist let me know that Jacob needed assistance with transitioning into his first art therapy session. Jacob asked numerous questions about what he would be doing as well as where the session would be, while he seemed to be sizing me up. He was talkative and became very excited when he found out he could make choices and use art supplies. He laughed often, cracked jokes, and appeared to be soaking in the attention he was getting.

Jacob presented as bright, energetic, and enthusiastic. We used oil pastels on black paper (Jacob's choice) to work on a name embellishment where he indicated his favorite movie, food, activities, and animals. During portions of the session, he would begin to get overwhelmed; I would use breathing and counting with him as well as asking him to rub his stomach and pat his head, which made him laugh. The mood shifted when Jacob shared that "sometimes family is nice, sometimes they are mean," while talking about foster families versus "real families." He also stated that while he lived with one foster family, he had watched horror movies that were rated R and that he had bad dreams as a result. Jacob seemed detached from these statements, as they were randomly peppered throughout the session.

During our second session, Jacob transitioned easily and shared about having a visit with his mother; he stated that he had been sad that he could not see his dog. He brought his pillow pet that his mother had given him to the session. He asked me consistently during the session about how much time was left. I let him know that I would give him a warning when 5 minutes were left to help with the transition. I asked him to paint and to imagine a safe place (as a resource). Jacob enjoyed mixing colors; he

decided that he would paint the World Wrestling Entertainment (WWE) logo, as this was something he watched with his family and was important to him (Figure 12). He liked the logo when he had completed it and then experimented with the painting materials. He painted stars and then painted with his fingertips, drawing a smiley face. He began to get overstimulated with his hands in the paint, as evidenced by rapid motor movements and an inability to keep the paint on the paper; I helped him move to a more structured activity of Jenga. Jacob liked this game and then stated while playing that he had been with two foster families. He shared that foster care was terrible: “The first family cussed me out. The second one tried to kill me.” I worked on grounding techniques with him after he shared this information; when he was calmer in his body, I accompanied him back to the unit. It was interesting that a session based on looking at safety turned into a discussion of maltreatment at foster homes. It was hard to tell how connected Jacob was to the story; it appeared that although he showed symptoms of hypervigilance during the telling, he was also disconnected from his body because he showed very little emotion as he shared the horrible things that had happened.

Figure 12. Jacob, WWE

When I went to pick Jacob up for our third session, this time he was labile, dysregulated, disappointed, and overwhelmed. As we walked down the hall, he saw his group in the parking lot leaving to go to a basketball game and ran out of the office, down

the stairs, and across the yard. The group had already gotten into the van and were leaving the parking lot; when he realized this, he was able to respond to me and return to the building. He was able to process feeling left out; I gave him several packages of Model Magic clay in an effort to help with grounding. Jacob initially wanted to create a whale but let go of the need to create something recognizable and allowed himself to work the clay and to make colors by mixing different pieces. He asked about what colors he would need in order to make brown; I provided blue and yellow, which did not make brown. We added some red, which made a strange purple that caused him to laugh. After he was more settled, we created an image together where Jacob made snake-like pieces of hair and a face and I drew the body on the paper (Figure 13). He colored the body and face and then made dots all over the body, slowly and repetitively. The figure didn't have hands, and Jacob wanted the face to be two different colors, with a mouth that had two different expressions. He talked about how he had "been bad" and had run from the unit during the week. We talked about "being bad" as opposed to making a mistake. Jacob was then able to make a football and a basketball out of the purple/brown clay that he was pleased with; he showed these to his residential staff, wearing a big smile and appearing happy.

Figure 13. Jacob, Wild Whale Man

The next time I saw him, Jacob shared the crystals that he was growing, which his teacher had given him. He discussed how he

wanted these to grow big enough to "be a Christmas tree." He asked me to feel them; when I did, I was surprised because they were gummy. I made a face; he was happy that I was "grossed out" and tried to put them on my arm. Jacob then discussed how he had "AWOL'ed" and how the last time he had, he heard "five gunshots" and was scared enough that he said, "I will never AWOL again." We talked about other ways to try to cope with feeling sad, angry, disappointed, or fearful rather than running away. We tried the yoga "legs up the wall" pose; Jacob could not balance and then giggled too hard to balance. I laughed as well and then suggested a scribble drawing. I gave Jacob a black marker and asked him to scribble on the paper without lifting the marker until the paper was full. I asked him if he could see shapes or designs in the scribble. He asked for a scented green marker because he remembered the mint smell from a previous session. He colored on the paper with a lot of energy, eventually scribbling and jumping up and down (Figure 14). He then asked for red to outline the edges.

Figure 14. Jacob, Scribble

Jacob then drew on the door by accident and turned around with an "uh-oh," looking for my reaction. I had given a boundary of keeping the marker off of the door. I reminded him to be a little more careful. He then did it again and wiped the mark with his finger, saying, "See, it comes right off." Then he began purposely creating more marks on the door; I again reminded him of the boundary. He appeared to

be seeing how far he could push the boundary of his drawing as well as how far he could test our relationship. Jacob then asked for a yellow marker and said, “See, this one doesn’t even show up on the door,” and continued to color on the paper and some on the door. I asked him to stop and to look at me to check back in. I asked him how he was feeling; he appeared surprised when he said calm and a little tired. He had filled in nearly the entirety of the piece of paper and had expended a lot of energy in the process.

Jacob then asked about an image of a peer’s that was on the wall and said he wanted to do something similar. In this drawing, I asked him to draw three separate feelings, one in each rectangle on the paper (Figure 15). For “happy,” he drew stacks of money, gold, and silver; interestingly, the gold bricks ended up creating a protective shelter for the money and silver. For “sad,” he drew crosses because he felt that, “Jesus must have felt sad” and that he felt sad for Jesus. Lastly, for “excited,” he drew WWE and ultimate fighting and then added in an image of his house, stating that he would be excited to go home.

I had been informed that Jacob’s behaviors on the unit had become more destructive and at times dangerous. He was exchanging phone calls with his adoptive father, but there was little response from his father and Jacob was angry or sad after the calls. Our fifth session seemed different, because he gravitated between

Figure 15. Jacob, Feelings

making disrespectful comments toward me, apologizing, and destroying his own artwork as well as mine. I worked on helping him regulate with several different hands-on activities such as beads and pipe cleaners, crayons and paper, and building with blocks. All of these ended with Jacob feeling frustrated and throwing away materials or pushing his supplies onto the floor. We continued to talk and to breathe; he eventually appeared a bit calmer.

After this session, a meeting was held to discuss Jacob's continued behaviors that, though indicative of his diagnosis of reactive attachment disorder, remained difficult to contain in the unit. The treatment team discussed other ways to assist him with being more successful as well as determining possibilities for other placement if he was dangerous to himself or to others. The treatment team also discussed Jacob's adoptive father's lack of participation; his primary therapist was going to take him to his mother's home on a weekly basis so that he could have sessions with her there, reacquaint himself with his room, pet, and so on, and hopefully regain a sense of purpose in treatment.

I looked forward to seeing Jacob during our next session to hear about his progress and was hoping that the family session in his home would have proved helpful. I was informed that his week had been much better; I greeted him and let him know how proud of him I was. Jacob smiled broadly and seemed pleased; he didn't speak because he had a sore throat. He let me know this by writing in his notebook to me. He stated that his visit home had been really good; in writing, he asked me to make an ornament with him with beads and pipe cleaners. He then stated that he wanted me to make it for him; he became distracted by a voice barely audible from outside (my office is on the second floor). He recognized the voice of the staff member although I could barely hear the

voice. Jacob then stated that he had heard gunshots earlier and that he was worried about the staff member. I could reassure him and reengage him. I finished the ornament per his written specifications; we then played charades and practiced lip reading due to his sore throat. Jacob was able to regulate more effectively during this session but remained hypervigilant.

The next time I saw Jacob, he could only come for 30 minutes due to a change in schedule on the unit. He appeared wide-eyed, confused, and upset. I was unsure if this was due to the change in schedule, but I could see that he was having a difficult time with regulating; he appeared both on alert and difficult to engage. I offered several coloring sheets to help with regulation; he chose one with an anglerfish on it and wanted to know if the fish really existed. I showed him images of the species on my phone. Jacob talked a little bit about his week and wanted to know more about anglerfish as well as barracudas and piranhas; he shared that he had an aquarium at home. I was unsure of which home he was discussing. He asked questions about which fish would be the most dangerous and then talked about electric eels. He seemed very interested in which fish could protect themselves the best. Jacob shared that he had had his items removed from his room because he had been putting items in the electric outlet. He stated that a lot of his things had been taken and that he thought that they had been thrown away because they were put in a black plastic bag; he said he wanted his Bible back. Staff had informed me that he had been having significant behavioral issues that impacted his safety as well as the safety of staff and other residents. Jacob could talk about different events that had been concerning him in a calm, regulated, and serious fashion. He said goodbye at the end of the session and appeared sad.

During the next week, Jacob had a session with his adoptive father and during the last portion of the session he became dysregulated and inconsolable. It appeared that his adoptive father had voiced that he would not be involved in Jacob's life. On the unit, he was not able to be safe and continued to discuss killing himself. At this time, he was hospitalized and told the staff at the hospital that he could not remain safe. He returned briefly to SaintA but again stated he would harm himself and had a plan. He again was hospitalized and discharged from SaintA. I felt saddened by this news and also truly grieved for this incredibly bright and talented child; I also hated that there was no closure to our work together.

Outcome #3: Art Therapy Helps Individuals Who "Pump the Brakes and the Gas Simultaneously"

Jacob made gains at times during his stay at SaintA, but due to a lack of consistency from his adoptive father, his reactive attachment symptoms remained difficult to treat. His adoptive mother was consistent and offered support but due to her health issues there were concerns as to whether or not she would be able to give Jacob the kind of supervision he might require. He craved the attention of male figures as well as "imprinting" on a female staff member on the unit to try to get his emotional needs met. Sadly, his interaction with the female staff member increased in intensity, even to the point of screaming for her for hours and carving her name in the door of his room. It was difficult to see a child who was responding to care decompensate due to inconsistency with a primary attachment figure.

Although the interventions of SaintA staff and myself could not supersede Jacob's need for attachment repair with primary figures, I did observe gains while in session and

in moments in the milieu. Of the six participants in this study, Jacob was the one who appeared to become hypervigilant and dissociative simultaneously the most frequently. As indicated in his NMT assessment, he had deficits in primary sensory integration, nonverbal cognition, ability to modulate reactivity/impulsivity, affect regulation, and attachment. In addition, he often complained of not being able to sleep, and the staff had made repeated attempts at helping with his sleep routine. Because of these underdeveloped functions, particularly the problems with regulation, attachment, and literally sleeping with one eye open, Jacob responded quite frequently with fight, flight, and freeze simultaneously. He was constantly on alert for gunshots or for harm coming to anyone, but in his alert state he also would move into a state of not being present in his body. He would act on a fight or flight pattern without being conscious of his reactions.

We were able to work through several of these instances while in session due to the art materials, our relationship, and our time together as a "safe space." On the day that we used Model Magic, Jacob was both hypervigilant and dissociative. He saw that his group was leaving him, mimicking abandonment. He ran headlong down the stairs and into the parking lot in a flight response; in addition, he could not respond to my calling to him or to any environmental stimuli and appeared to be shut down while he was in motion. He was unable to "snap back" into reality until he saw that the van was out of the driveway and finally heard me calling his name. He came back to my office in almost a trance; I knew I had to help him return to his body. Hands-on repetitive actions were essential to accomplish this task. In addition, as he worked with the Model Magic, Jacob was better able to verbalize his needs as well as to move from simply rhythmic working of the clay to creating shapes which then morphed into recognizable objects such as hair,

a football, and a basketball. During this session, he was also able to transition from fear and frustration to pride in his work; he could move through a full range of possible maladaptive responses to then partnering with a trusted adult to work through these issues. In addition, he was able to pair the bottom-up work with the clay with the top-down storytelling when he completed the image with me.

When Jacob completed the scribble activity, he could transition into a calm and relaxed state after negotiating boundaries in a safe way. He used his body to work through moments of hypervigilance and remained present with his physical self, not dissociating. In addition, after warming up through a nonverbal activity, he asked to move into the emotional realm and worked on completing images of his feelings. This drawing process was calmer and controlled; in addition, there was a top-down narrative that joined the bottom-up process. He could shift from being hypervigilant and possibly dissociative to then being present and able to access his top-down functions.

Case Study #4

Terrell (pseudonym) was admitted to SaintA's residential program in March 2016 and is in his middle teens but presented as slightly younger due to an intellectual disability (see Tables 10–12 for NMT assessment data). He was referred to SaintA due to sexualized behaviors, verbal and physical aggression, and destruction of property. He had had approximately 20 placements outside of a permanent placement.

Terrell's mother was 13 when she became pregnant; his grandmother stated that this pregnancy was planned, because another girl was also pregnant with Terrell's father's baby. His mother reportedly had issues with marijuana and depression. It is unknown if there was substance usage during the pregnancy, but there were no

complications during the pregnancy or delivery. There is a history of alcohol, cocaine, and marijuana usage on Terrell's mother's side of the family; he has seen his father only one time. His father has been incarcerated intermittently.

Table 10

Terrell's NMT Assessment, Overall

Assessment category	Result
Current relational health	Low adequate
Cortical modulation ratio	1.62 (emerging but episodic self-regulation and executive functioning)
Developmental history	Low risk for intrauterine, perinatal, and infancy; moderate to high risk for early childhood, childhood, and youth

From birth to age 1, Terrell and his mother lived with his grandmother until the relationship became strained. He remained with his mother and his mother's paternal aunt. At one point, his mother threatened to kill his aunt; drug use was suspected. When Terrell was aged 1 to 3 years old, he and his mother moved in with his paternal grandmother, where he remained for 3 years. There was suspected neglect at this time and there were a number of moves. Child Protective Services removed him from his mother's care, and her rights were terminated due to neglect. He has remained in the state's custody ever since. Terrell was placed in foster care for 6 months in 2005 and then with his maternal great-aunt; however, he threatened to kill his aunt in 2008 and was placed at SaintA from 2008 to 2009.

Table 11

Terrell's NMT Assessment, Functional Domain Recommendations

Functional domain	Value	Recommendations
Sensory integration	65–85%	Building in patterned, repetitive somatosensory activities across settings in which he spends time (home, school, etc.). Activities such as music, movement, yoga, drumming or massage woven through his day recommended.
Self-regulation	65–85%	Might struggle with distressing feelings and emotions relating to immediate gratification of needs. He would benefit from structured, predictable, and nurturing activities provided throughout the day to build self-regulatory capacity. He needs proprioceptive occupational therapy activities as well as isometric exercises, breathing techniques, improving sleep, music and movement activities, and animal-assisted activities.
Relational	Below 65%	History of disrupted early caregiving characterized by chaotic, neglectful, and/or unpredictable parenting. He would benefit from relational activities such as art therapy, individual play therapy, Parent–Child Interaction Therapy, dyadic parallel play with an adult, eventually a peer, and then small groups.
Cognitive	Below 65%	Displays cognitive deficits that could be assisted with nurturing and enriching environments that center on healing and growth. Only in these environments could gains be made with cognitive growth through speech and language therapy, insight-oriented psychodynamic treatment, CBT, and family therapy.

Table 12

Terrell's NMT Assessment, Level of Functioning

Level of functioning	Frontal cortex	Cortex	Limbic	Cerebellum	Brain stem
Severe dysfunction	n/a	n/a	n/a	n/a	n/a
Undeveloped	Nonverbal cognition; modulate reactivity/ impulsivity; values/beliefs	Sense time/ delayed gratification; self-awareness/ self-image	Attunement/ empathy, psychosexual	n/a	n/a
Moderate dysfunction	Reading/ verbal; abstract/ verbal cognition	n/a	Affect regulation/ mood, relational/ attachment	n/a	n/a
Mild compromise	Math/ symbolic cognition	Concrete cognition; communi-cation, expressive and receptive	Reward	Feeding/appetite, dissociative continuum, arousal continuum, neuroendocrine/ hypothalamic, primary sensory integration	Temper-ature regulation/ meta-bolism; attention/ tracking
Episodic/ emerging	n/a	Somato/ motorsensory integration; speech/ articulation	Short-term memory/ learning	Sleep, fine motor skills, coordination/ large motor functioning	n/a
Typical range	n/a	n/a	n/a	n/a	n/a

During his first stay at SaintA Terrell had exhibited temper outbursts, destruction of property, aggression toward self and others, and stripping off his clothes. He was returned to his grandmother's care upon his discharge. His problematic behaviors then increased; he was running away, stealing, threatening his grandmother, ignoring his hygiene, and damaging property. His sisters were adopted by his great-aunt after his mother gave up parental rights. From age 12 to present, Terrell was intermittently in respite but was transferred to residential treatment from 2012 to 2013 due to mental health and behavioral challenges. He was again returned to his grandmother; after a couple of months, his grandmother requested his removal due to dangerous and threatening behaviors. He lived in a variety of foster homes, juvenile detention facilities, respite placements, and hospitalizations until his return to SaintA in 2016. Terrell has received resource classes as well as speech therapy for expressive and receptive language delays; his relationship with his grandmother appears to be strained.

Case Vignette: Whirlpools, Blobs, and a Grid

Terrell was identified as a good candidate for art therapy due to needing nonverbal and bottom-up interventions; however, his primary therapist later stated that due to his involvement in multiple therapies, he sometimes got overwhelmed with services. He refused several sessions due to activities on the unit that he preferred or being off campus with his case manager or crisis stabilization worker.

Our initial meeting was facilitated by Terrell's primary SaintA therapist, who assisted him with transitioning to the art therapy session from a family meeting that had not gone in the direction that he had desired. I was pleased that he could move past feelings of disappointment and that he engaged in the session. He surveyed the room and

the closet, asking questions about different items in the room. He said that he did not want to return to his grandmother's house and that things had been better at his mother's. We worked together on a name embellishment activity. Terrell struggled with the name portion and started over twice; he had a difficult time spacing his name so that it would fit on the paper. I suggested taping the pages together, but he decided to settle for writing his nickname, which he appeared happy about. We used scented markers, and he appeared to enjoy smelling the scented markers and guessing the different smells. He indicated that one of his favorite people was Beyoncé but he struggled with using symbols to depict his interests. Symbolism was also indicated as a deficit in his NMT assessment. Lastly, we used a question ball, tossing it back and forth. Terrell needed assistance with reading the questions on the ball but appeared to engage with the activity and the sharing of information.

The next time I saw Terrell, he was furious; a staff member had told him that his room was not clean, and he was yelling. He was able to come to art therapy; he shared that he knew that when he became angry he could not manage how he responded. I decided that using tempera cakes on large paper with big brushes might be a good option in order for him to regulate with the fluidity of the media (see Figure 16). He painted with wide, smooth brushstrokes, using blue paint to make water. The effect appeared to

Figure 16. Terrell, Whirlpool

be instant; he was smiling, appearing calm and relaxed with regulated breathing. Terrell then used his fingers to create several fingerprints in blue and red. He then painted with magenta on the upper portion but left the top half of the paper unpainted. He went back to the blue of the water and swirled the brush around with blue paint until he created what looked like a whirlpool. We then moved to a more structured, cognitive activity per Terrell's request; he wanted to play chess and seemed to enjoy beating me. He was grinning from ear to ear at the end of the session. Using a fluid bottom-up painting process and connecting this with a structured cognitive activity appeared to be helpful for him during this session.

During our third session, Terrell stated that he had been angry during the week and had "wrecked things" on the unit; he voiced excitement about going roller-skating with his crisis stabilization case manager. He shared that sometimes he is "super happy" and other times he is really angry and that he did not know how to be in the middle, which was corroborated in his NMT assessment regarding affect regulation issues. He came into session with an idea of what he wanted to do; he drew squiggles and filled them in until he became bored and saw the Spirograph in the closet. When he began using the Spirograph, he could slow down the motion but then became frustrated when he did not have control (see Figure 17).

Figure 17. Terrell, Blobs

I offered another option of creating a feelings drawing (Figure 18). Terrell began with “happy”; he drew a green squiggle because, he said, he loves green; he experienced happy “in his heart and then it spreads out.” “Sad” was a circle with red squiggles and two eyes; he couldn’t describe sad in his body or an experience of the feeling. He was able to use nonverbal language to express sad but not move to a narrative, top-down version of the feeling. He asked to move to drawing “angry.” He drew a checkerboard pattern in gray and stated that the anger was in the “spaces” between. He said he clenches his jaw and/or fists when he is angry, like the grey pattern. “Excited” was bright orange, which filled the whole section of the page. While drawing this feeling, he recognized his own dysregulation, as evidenced by shallow breathing and quickened leg movements. I offered Play-Doh, which he received gratefully, becoming calmer.

Figure 18. Terrell, Feelings

Terrell refused our next session, stating that there was a movie that the group had been watching and that he did not want to be interrupted. I worked with staff to try to convince him to come at least briefly; however, he remained adamant. The next time we met, he discussed several issues regarding family and his pass home. He stated that his grandmother didn’t listen and that she often disregarded his feelings as well as the feelings of the other members of his family. He also stated that his grandmother didn’t cook anything “traditional” and only made spaghetti for Thanksgiving. He said that the

pass did not go well but that he enjoyed seeing his younger siblings. I observed from our conversation that for Terrell, food was a sign of love.

Terrell shared that his crisis stabilization worker had been called to take him out for a little bit, because he had been having a difficult day. He asked to work on an ornament-making project with beads and pipe cleaners. He quickly engaged in the art therapy project and seemed to enjoy being able to teach me how to make the ornaments. We worked together, and through this partnership, Terrell could talk about some of the issues on the unit and the fact that he was becoming overwhelmed. Although he had been genuinely distressed while discussing his relationship with his grandmother, he was calmer in body language, facial expression, and verbal expression at the end of the session. I was surprised when he asked to stay longer, because he had set a boundary at the onset of the session that he wanted to be back in time for dinner at 5:00.

Terrell refused the sixth art therapy session, stating that he wanted to clean the unit because there was going to be an inspection the next day. It was apparent that when he felt he had a job, this highly motivated him. We talked a little bit about his week. He said that there had been ups and downs. I spoke with his primary therapist, who stated that he was refusing her sessions at times as well. She said that he had many services and because he had been in treatment there before, he was given more options.

For our seventh session, Terrell initially refused to come; however, he then asked to play Monopoly and to only stay for 30 minutes. I agreed; he appeared to enjoy the lights and sounds of the Monopoly credit card machine but interacted minimally with me and with the game itself.

Outcome #4: Art Therapy Can Engage Underdeveloped Areas of Functioning in the Brain

Although I had less opportunity to work with Terrell, I was able to observe that he had two major areas of interest, food and money, which were confirmed by the staff on his unit and by his primary therapist. Each time I saw him, he was usually eating a treat from his outside support people or wanting to sell something that he had made; this also confirmed the feeding/appetite deficit noted in his NMT assessment. Because Terrell was neglected and experienced many attachment ruptures, seeking safety through satisfying his basic needs and obtaining security via food and financial means were valid survival skills. Art therapy offered an opportunity to begin to target these areas that were dysregulated through alternative coping strategies. He could use paint and Play-Doh as regulatory tools; art on the bottom-up level was much more successful than attempting to pair it with top-down art therapy interventions.

Terrell's NMT assessment indicated that interventions that targeted sensory integration as well as assisting with regulation of the dissociative and arousal continuums were essential. He was able to self-soothe through painting and manipulation of Play-Doh. In addition, he seemed to gravitate toward sensory stimuli such as the credit card machine in the Monopoly game. He watched the lights and listened to the sounds repeatedly. Also, he smelled the scented markers over and over again. With his history of multiple transitions, attachment ruptures, and episodes of neglect, it would stand to reason that he would want basic comfort and stability reinforced with food and financial means. With small doses of art therapy focused on bottom-up interventions targeted at sensory integration throughout the day, Terrell could possibly be able to reduce his

reliance on food for emotional regulation. In addition, he voiced not being able to be in the “gray” area with his emotions; because both his arousal and dissociative continuums had some impairment, it would be helpful for him to have more opportunities through art therapy to have longer moments in the “gray” versus being highly aroused or shut down.

Case Study #5

Deon (pseudonym) was admitted to the residential program in August of 2016; he was in his early teens, but seemed older due to his height and presentation (see Tables 13–15 for NMT assessment data). He was referred to residential treatment due to sexual assault of his younger brothers, poor anger management, depression, issues with concentration and focus, and underachievement in school.

Deon’s mother was 14 when she became pregnant; his father was significantly older than his mother. He witnessed domestic violence in the home. His father is incarcerated due to sexual involvement with an underage woman. The family moved to Milwaukee in 2011; his mother married his stepfather at that time.

Table 13

Deon’s NMT Assessment, Overall

Assessment category	Result
Current relational health	Low adequate
Cortical modulation ratio	2.79 (adequate self-regulation and executive functioning)
Developmental history	Low risk for intrauterine, perinatal, infancy, and early childhood; moderate to high risk for early childhood to youth

Table 14

Deon's NMT Assessment, Functional Domain Recommendations

Functional domain	Value	Recommendations
Sensory integration	Above 85%	Sufficient capacity for sensory integration; could still benefit from activities such as music, movement, yoga, drumming, or massage woven through his day.
Self-regulation	65–85%	Issues with immediate gratification. Would benefit from structured, predictable, and nurturing activities provided throughout the day to build self-regulatory capacity. Needs proprioceptive occupational therapy activities as well as isometric exercises, breathing techniques, improving sleep, music and movement activities, and animal-assisted activities.
Relational	65–85%	History of disrupted early caregiving characterized by chaotic, neglectful, and/or unpredictable parenting. Needs relational activities such as art therapy, individual play therapy, Parent–Child Interaction Therapy, dyadic parallel play with an adult, eventually a peer, and then small groups.
Cognitive	65–85%	Displays cognitive deficits that could be assisted with nurturing and enriching environments that center on healing and growth. Only in these environments could gains be made with cognitive growth through speech and language therapy, insight-oriented psychodynamic treatment, CBT, and family therapy.

Table 15

Deon's NMT Assessment, Level of Functioning

Level of functioning	Frontal cortex	Cortex	Limbic	Cerebellum	Brain stem
Severe dysfunction	n/a	n/a	n/a	n/a	n/a
Undeveloped	n/a	n/a	n/a	n/a	n/a
Moderate dysfunction	Nonverbal cognition, modulate reactivity/ impulsivity, math/symbolic cognition, reading/verbal, values/beliefs	Self-awareness/ self-image	Attune-ment/ empathy, psycho-sexual	Dissociative continuum	n/a
Mild compromise	Abstract/ reflective cognition	Sense time/ delayed gratification	Reward, affect regulation/ mood, relational/ attach-ment	Coordination/ large motor functioning	Attention/ tracking
Episodic/ emerging	n/a	Somato/ motorsensory integration; speech/ articulation, concrete cognition, communication, expressive/ receptive	Short-term memory/ learning	Sleep, coordination/ arousal continuum	Temperature regulation/ metabolism

Typical range	n/a	n/a	n/a	Feeding/ appetite, fine motor skills, neuro-endocrine/ hypothalamic, primary sensory integration	Cardio-vascular/ ANS, autonomic regulation, extraocular eye movements, suck/ swallow/gag

From birth to age 1, Deon was raised by his mother, grandmother, and great-grandmother. At about 5 or 6 years old, he was diagnosed with ADHD, and at 8, he was diagnosed with depression. There was a suspicion that he was sexually abused or exposed to sexually explicit materials at some point due to sexual behaviors and sexualized language. There was a period of time when Deon was spending time alone with a male teacher. His mother tended to verbally escalate when she became overwhelmed. He had been in speech therapy for most of his educational career. He did not have any out-of-home placements, apart from a juvenile justice placement and SaintA.

Although Deon had been diagnosed with ADHD, the behavior that led to this diagnosis could have been a combination of hypervigilance and dissociation resulting from possible sexual abuse and witnessing of domestic violence. He tended to maintain a flat affect and appeared preoccupied. In addition, family members overheard him having full conversations when no one else was present. He had come to SaintA directly from a juvenile detention facility, where he had spent a longer period of time due to issues with placement. While at SaintA, Deon continued to attend an external school placement. Although recommendations were made for occupational therapy and speech therapy, the

family and social services providers felt that this was not necessary. In addition, there were additional safety measures and treatment recommendations for Deon to remain in treatment longer, but the court determined that he could return home sooner than expected. This did not allow for termination and completion of art therapy services.

Case Vignette: Play-Doh and More Play-Doh

When I first met Deon, he was getting his dinner; his residential therapist accompanied me to greet him. He presented with a flat affect and spoke minimally; when he did speak, there was evidence of a slight speech impediment. We walked to my office; Deon brought his dinner to the session. While walking down the hall, he spilled ketchup on his shirt; his SaintA therapist provided him with a stain stick. He needed instructions and seemed puzzled by how to use the stain stick. He initially was shy and voiced reticence regarding the art process, but seemed to warm up as we worked on a name embellishment activity. While working, Deon squeezed a toy that had a light in it; when he realized he had squeezed it to the point that the air had all leaked out, he looked at me and said “sorry.” I assured him that this was okay.

While he worked on the drawing activity, I noticed that he had a hard time drawing, especially with creating narrative imagery. In addition, his fine motor skills seemed lacking, as evidenced by his grip on the crayons and the impoverished figures. I asked him to include areas of interest, favorite movies, and favorite foods on his name embellishment; however, almost all of the drawings were of football and video games. These were his main interests. When discussing football or video games where football was involved, Deon appeared enthusiastic. We discussed our favorite football teams and joked back and forth about the teams.

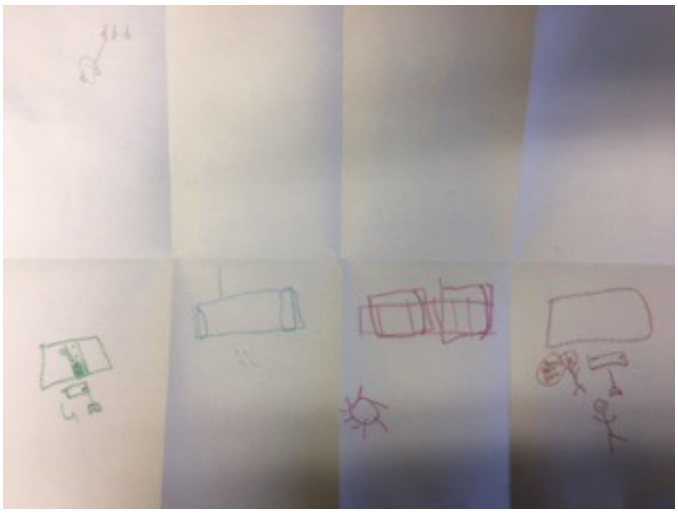

Figure 19. Deon, Feelings

When I met Deon the second time, he appeared tentative, again with a flat affect. We worked on feelings drawings (see Figure 19). For "happy," he chose to draw himself playing "Grand Theft Auto." "Sad" was a casket in blue; he chose blue because this was the color of sadness in the movie *Inside Out*. He stated that he had lost his great- and great-great-grandmothers. I asked him where he experienced sadness in his body; he stated that he felt sadness in his eyes. I felt that because he had used blue—because it seemed that it was something that he felt he should do—his response about where he felt the emotion of sadness also seemed to be his desire to "get the answer right." "Excited" was an image of a roller coaster and the feelings of climbing up and then plunging downward. Deon's "angry" image was of his mother telling him to stop playing a video game, "Because I didn't do something." "Calm" was gray, a face with headphones listening to music. All of his images were faint and slightly difficult to discern. Deon was quiet during this session with little change in facial expression until playing basketball at the end of the session, when he was slightly more animated; he specifically requested to paint during our next time together.

Deon ate his dinner again during our next session, eating quickly and asking about what we would do during the session. I showed him the paint and reminded him of his previous request. He appeared excited and painted his nickname on the paper. He seemed

pleased with the outcome. At this point, he requested to use the restroom. I waited for him outside in the hallway; I overheard sexualized and sexually abusive language. I asked through the door several times if he was okay. I also asked him if I should call unit staff, because I was concerned about him (at this point, he had been in the restroom over 10 minutes). I was relieved when Deon's primary therapist came out of his office on the same hallway and called to him. He came out of restroom at that point with his head down. He returned to my office, but remained with his head down and would not make eye contact. I offered squeeze balls as well as more paint. He attempted to paint briefly but then ripped up his painting, appeared angry, and did not respond to me. He did use Play-Doh for several minutes before returning to the unit and then asked if I could get the Play-Doh machine that made strings and different shapes. I told him that I would try to do so. I spoke to Deon's primary therapist after the session, who shared that Deon had left during one of their sessions to masturbate and that he suspected that that was what had happened during this session with me. Given that he appeared to need less fluid materials and media that would lend themselves to somatic regulation, I chose different activities for the following session.

In our third session I introduced a bead activity, which would offer repetitive movement and did not require Deon to decide on imagery. This was more structured, but he became frustrated due to not being able to pick up the small beads. Although his NMT assessment indicated that Deon's fine motor skills were for the most part adequate, I observed that he could not grasp the beads with his fingertips; when he was able to grasp them, he could not place them in the correct spot. We put the beads away, and I showed him that I had gotten the Play-Doh extruder. He seemed pleased and spent 35 minutes

with the tool; he needed assistance with it, struggling with his fingers and hands. He would begin with making a longer rope of Play-Doh and then pushing hard on the extruder with his tongue extended in intense concentration. I felt that there may have been dissociation during these periods, because he seemed unaware of anything else in the room, including myself. Deon did this steadily, at times admiring what he had made or showing me the different colors he had blended (see Figure 20).

Figure 20. Deon, Play-Doh

He seemed so much younger during this process; he went through four different tubs of Play-Doh and his seeking of approval reminded me of a very young child needing positive mirroring. In addition, rather than using masturbation for regulation and for release, it appeared that the Play-Doh process allowed him to mimic sexual behaviors in an appropriate way. At the end of the session, I asked him how he was feeling. Deon said he felt relaxed; he appeared to have released anxiety through this activity with very minimal verbal interaction with me; however, this appeared to meet his needs for the day. He liked to plan the next sessions as we were walking back to the unit; he asked for the newest Monopoly game with the credit card machine for the next session and then requested Play-Doh for the following session.

The fourth time we met, Deon shared briefly about his Thanksgiving pass, saying that he was happy that his mother had cooked. He said, smiling and laughing, that the

ham was the best and that the food was much better than at SaintA. He ate his food quickly and wanted to play the Monopoly game. He was unaware that food was still on his hands; I gave him a tissue to help him clean up. He was a little frustrated when he could not get a screwdriver to open the battery pack for the credit card portion of the game; his fingers appeared to not cooperate with him, and I assisted him. We worked on reading the instructions; he enjoyed showing me how to play. Deon seemed to enjoy the different sound effects as well as the different figures and houses in the game. He struggled when it came to reading the numbers on the dice and adding them together but he did not want me to notice, as he would quickly cover his mistakes and work to regroup. At the end of the session, he thanked me for having the game and playing it with him. He seemed to appreciate that I had followed through on a promise and that I was willing to interact with him through the game.

The next time I saw Deon, he was excited to talk about his Christmas break. He was receiving more than 2 weeks of leave to visit with his family; I did not know it at the time, but this would be our last session together. After Deon came back from break, he had a court hearing where he was sent home immediately. During our last session, we played Hangman, and there was a give-and-take in the relational aspect of the game. Deon was given an opportunity to get ahead to tie and won this opportunity; he was pleased regarding this. We talked a little bit about his upcoming Christmas break. He discussed his two younger brothers, his stepfather, and his mother. When I asked about who would be with him for Christmas, he initially answered that only his mother would be. After talking further, he then offered that his stepfather, uncle, and two younger brothers would also be there. Deon said he got along okay with his stepfather and that he

had been in the picture after his father left, approximately 6 years before. He did not share anything about the sexual behaviors that took him out of his home or that his siblings were his victims. He did not opt for art materials or Play-Doh during this session, but he did talk and share much more on a verbal level.

Outcome #5: The Art Therapy Process and Relationship Can Create Room for Transition From Maladaptive to Adaptive Responses

Deon was referred to SaintA due to his maladaptive response of inappropriate sexual behaviors. Although he appeared developmentally appropriate in many of the domains of the NMT assessment, he showed moderate dysfunction with regards to values/beliefs, impulsivity, self-awareness/self-image, attunement/empathy, psychosexual functioning, and the dissociative continuum. This combination spoke specifically to the reasons that he was acting out sexually. If his values and beliefs were impoverished, his self-awareness and self-image were compromised, his ability to empathize with his siblings was impaired, and his proclivity toward dissociation remained present, this could be a perfect storm for recidivism. Creating the capacity for empathy was an essential part of treating Deon's psychosexual issues as well as increasing his window of reaction time to reduce impulsivity and increase healthy decision-making. Because he also appeared to be dissociating through sexual activity, whether appropriate or inappropriate, it was important in his treatment to find alternative opportunities for him to satisfy these urges and to allow for coping through healthier means.

Though our work together was brief, there were several opportunities to begin addressing Deon's maladaptive responses. I followed his requests, which appeared to meet his needs on a developmentally appropriate, bottom-up level. These activities

aligned with the regulation recommendations from his NMT assessment, which called for repetitive pushing and pulling movements that also allowed him to receive the mirroring from me that he requested. Because he felt proud of his work, this allowed for opportunities for repair of his self-image as well as of his relational capacities. Although there may have been dissociation during the process of art making, the art therapy session was a healthy venue for the dissociation without harm and with greater control. In addition, Deon did not use masturbation to regulate when experiential activities were provided to replace this behavior.

Deon had described "excitement" in his feelings drawing as a roller coaster, a dramatic pattern of building energy and then quickly expelling it. Because masturbation and sexual activity seemed paired with his dissociation, it was essential to provide other processes that would also follow the pattern of the roller coaster on a somatic level. I would recommend that Deon continue to have opportunities to work with clay, Model Magic, Play-Doh, and other building materials. Building media paired with a relationship with a trusted adult could assist in repair of fine and gross motor skills, increased attunement, decreased impulsivity and dissociation, and promotion of healthier coping strategies.

Case Study #6

Marcus (pseudonym) was admitted to SaintA's residential program in June 2015 and is 11 years old (see Tables 16–18 for NMT assessment data). He was receiving in-home and outpatient care; however, he was hitting, kicking, and threatening others as well as himself. These behaviors increased to the point that residential care was the safest option. He reported sleep disturbances and feelings of fear and anxiety.

Marcus's maternal grandmother was reported to have paranoid schizophrenia exacerbated by trauma. His maternal grandfather was an alcoholic who did not help with the children; Marcus's mother was the oldest and provided most of the childcare. She was placed in the foster care system from age 12 until she graduated from high school. Reportedly, Marcus's father came from a family affected by substance abuse and physical abuse, but little else is known.

Table 16

Marcus's NMT Assessment, Overall

Assessment category	Result
Current relational health	Low adequate
Cortical modulation ratio	0.98 on initial assessment; increased to 1.39 (emerging but episodic self-regulation and executive functioning)
Developmental history	High to moderate risk for intrauterine and perinatal stages; low risk during infancy due to relational buffer during this period; moderate risk for early childhood and childhood

Marcus's mother had gestational diabetes. She fell off of a ladder 4.5 months into the pregnancy; domestic violence increased as well. Marcus's father was against the pregnancy and stabbed his mother seven times. She had to have an emergency cesarean section after 13 hours of labor. Marcus had a liver infection at 3 months old and was in the hospital for some time. Upon returning home, one of his lungs filled, and he had to go by ambulance back to the hospital, flat lining in the ambulance. He had to have a feeding tube. He cried often and was colicky.

Table 17

Marcus's NMT Assessment, Functional Domain Recommendations

Functional domain	Value	Recommendations
Sensory integration	65–85%	Some difficulty in somatosensory functioning. Requires patterned, repetitive somatosensory activities across settings of home, school, extracurricular activities such as music, movement, yoga, drumming, or massage.
Self-regulation	65–85%	Struggles with distressing feelings and emotions relating to immediate gratification of needs. Would benefit from structured, predictable, and nurturing activities provided throughout the day to build self-regulatory capacity. Needs proprioceptive occupational therapy activities as well as isometric exercises, breathing techniques, improving sleep, music and movement activities, and animal-assisted activities.
Relational	65–85%	Relational activities such as art therapy, individual play therapy, Parent–Child Interaction Therapy, dyadic parallel play with an adult, eventually a peer, and then small groups. Animal-assisted therapy would also be useful.
Cognitive	65–85%	Needs nurturing and enriching environments that center on healing and growth. Only in these environments could gains be made with cognitive growth through speech and language therapy, insight-oriented psychodynamic treatment, CBT, and family therapy.

Table 18

Marcus's NMT Assessment, Level of Functioning

Level of functioning	Frontal cortex	Cortex	Limbic	Cerebellum	Brain stem
Severe dysfunction	Modulate reactivity/ impulsivity	Self-awareness/ self-image	n/a	n/a	n/a
Undeveloped	Math/ symbolic cognition, reading/ verbal, abstract/ reflective cognition	Sense time/ delayed gratification, speech/ articulation	Reward, affect regulation/ mood, attunement/ empathy	Arousal continuum	n/a
Moderate dysfunction	Values/beliefs, nonverbal cognition	Communi-cation expressive/ receptive, concrete cognition	Psychosexual, relational/ attachment	Fine motor skills	Attention/ tracking
Mild compromise	n/a	Somato/ motor-sensory integration	Short-term memory/ learning	Feeding/ appetite, dissociative continuum, neuroendocrine/ hypothalamic, primary sensory integration	Cardio-vascular/ ANS, suck/swallow/ gag, autonomic regulation
Episodic/ emerging	n/a	n/a	n/a	Sleep, coordination/ large motor functioning	Temperature regulation/ metabolism, extraocular eye movements
Typical range	n/a	n/a	n/a	n/a	n/a

Marcus attended playgroups and Head Start. His mother had a boyfriend during this time; when they broke up, due to Marcus's apparent positive relationship with him, Marcus was allowed to go with him for weekends. When he returned home, he stated that he had been made to touch the ex-boyfriend's genitals. There was a forensic investigation; however, no charges were filed.

Marcus began having tantrums and increased episodes of hitting and kicking. These became worse when he was in first grade and his father returned. Again his mother had to leave due to the physical abuse. His mother and Marcus lived with a family friend, then in a homeless shelter, and lastly in an apartment. He struggled with trying to keep everyone happy, but when he could not get his way, he became dysregulated and violent. He would hit other kids when he felt that they were staring at him. In fourth grade, police were called to his school because Marcus was throwing chairs and could not be calmed down. He was only attending school for 45 minutes each day at this point. Reportedly there was an altercation with the police that resulted in Marcus being hospitalized. From 2013–2015, he had a number of emergency psychiatric short-term placements. He had also been prescribed several different medications. He was admitted to SaintA after in-home interventions were not productive. In 2015, his mother remarried; the discharge plan was to return Marcus to his mother and stepfather with support services for the school and home environments.

Case Vignette: A Sequoia, a Volcano, and a Boa Constrictor/T-Rex Combo

Marcus had already been at SaintA for over a year prior to the time of this research study, and had received art therapy services prior to my interventions. This was evident by his ability to use metaphor and symbolism as well as to understand abstract

concepts through his art making. I was aware that our time together might be shorter due to the discharge plan for Marcus, which was based on his improvement as well as his family's increased ability to support him appropriately. In addition, the school system had been involved and had prior knowledge of his behaviors; there would also be in-home and school therapeutic services provided for the transition. Marcus was comfortable with art materials and appeared to enjoy art therapy.

When I met with Marcus for the first time, he was happy during much of the session, enjoying the one-on-one attention and making jokes and funny faces. We worked on a name embellishment exercise, a rapport-building activity. He chose oil pastels and seemed to enjoy drawing his favorite food, which was a birthday cake (red velvet with chocolate icing) that had the number 11 on it (his birthday age). He drew himself kayaking and talked about how much he loved the water but that he did not know how to swim. This appeared to bother him. He made up his own category, which was a magical power. Marcus drew the ability to move things with his mind. He stated that this would be helpful when one of his peers irritated him so that he could retaliate without anyone seeing. He discussed feeling frustrated and somewhat picked on. He enjoyed the scented markers, making exaggerated faces to match his response to the smell of each marker. I laughed often in response to his jokes and facial expressions, which seemed to please him.

Marcus presented with some sadness, anger, and hope, according to his self-report as well as his presentation. He greeted me warmly and seemed happy to be able to do art. He was engaged in the session and used the art-making process to help with processing a recent meeting with his family and his treatment team. He directed the session and could

ask for what he needed and wanted in the session. He found out prior to this session that he might be discharged in the next 2 to 2.5 months; he wanted to discuss the mixed feelings that he had. I gave him a large piece of paper and tempera paint; the directive was to create an image of a landscape that reflected his feelings (see Figure 21).

Figure 21. Marcus, Sequoia

Marcus asked if he could use a crayon to divide the paper in half. He worked with intensity; he created an image of fire with red paint and then wanted to know how to mix paint to make the color brown. He created several trees being burned in the fire and then painted a large tree close to the center of the page that he said was a sequoia. He talked about the strength of the sequoia and gave a general history of the tree; he said that although the sequoia was close to the fire, it was not being burned. He stated that he was the sequoia and that he knew he could get angry without being burned up by his anger. On the other side of the paper, he created a pond with rocks around it and green grass. He said that this was his hope. He stated that he had hope that he would go home but also talked about how he had grown close to the staff at SaintA and that he was used to it there. Marcus talked about his hope of going home mixed with his sadness around leaving and also the fear that somehow, he would sabotage his discharge. He talked about how he had been able to get through many difficult things and that he knew that he could move forward. He concluded the session

by using Model Magic to create a snail. We talked about Gary from *SpongeBob SquarePants,* made meowing sounds, and joked about the snail.

Marcus presented as happy and calm during our next session. He was conversational throughout the session although, at times, he appeared to be performing to elicit reactions from me. He made different faces, told stories, and made faces at his reflection in the window and pretended to be having a gun duel with his reflection. He worked on a feelings drawing with crayon on paper using no words or faces (see Figure 22). He drew "happy" first but then decided that that one was "excited" instead. It was an image of himself returning home, surrounded by flowers and the sun. The second image was of "angry" depicted by a volcano and then an aerial view of the volcano. The third image was for "funny," which was Marcus's idea for an emotion; he drew a face with a wide-open mouth and huge eyes; this resembled the face that he often made when he was trying to make me laugh. The fourth image was of "sad" and the last was of "happy," which was a calmer version of the excited image. Marcus did more storytelling during this session than in previous meetings; he continued to surprise me with his ability to use symbolism, to connect to abstract concepts with his artwork, and to create stories with his artwork and then interpret the artwork for himself.

Figure 22. Marcus, Feelings

I asked Marcus about his holiday during the following session; he responded minimally and changed the topic. He also avoided conversation regarding his home; I took his cues and moved to neutral conversational topics. He requested to play Monopoly. He was careful to follow all of the rules and often reminded me how to play. He used the game to help with structure and seemed to enjoy having control and the container of the game for safety. The game had sensory elements such as lights and sounds as well as a tactile element.

During our last session, Marcus seemed slightly anxious but could process about his discharge. He was polite and engaged and was able to work on saying goodbye and talk about his plans for when he went home. He wanted to show me where he lives on the map app on my phone. He asked me what he should draw. I asked him to draw a road, to put himself somewhere in the picture, and then to draw three things that would help him on his journey (see Figure 23). This was an activity that I chose specifically to connect bottom-up and top-down processing. Marcus drew the road and then he wanted to create the environment around the road. Initially, he drew himself off the road and in the grass. Then, he became a person who had fallen off of a cliff into lava. Then, he decided that the person was just "some guy." He said that what he wanted was a Tyrannosaurus rex and a huge boa constrictor to help him on his trip. He seemed to struggle

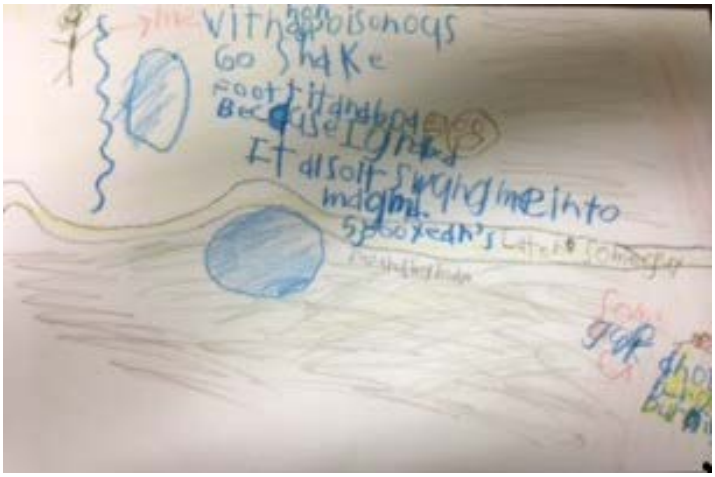

Figure 23. Marcus, Boa Constrictor/T. Rex Combo

with knowing where he was in his image and negotiated different positions. He wanted to write the story of his picture on the image. It was interesting that Marcus felt that he needed protective elements on his journey but chose to draw protective elements that could also be dangerous to him. We discussed areas of safety and lack of safety in the image, which fit with Marcus's lack of certainty about what his future could look like. In addition, given that he had been at SaintA for over a year and a half, returning home and to school was a process fraught with anxiety and excitement.

Outcome #6: Art Therapy Increases the Potential Capability for Metaphor and Symbolism by Creating a Bridge Between Concrete and Abstract Cognition

Out of the six participants in this study, Marcus was the one who created his artwork with symbolic intention; he knew that when he was painting the sequoia, he wanted this image to represent himself and the strength that he felt that he needed. He was creating a self-portrait, metaphorically. I felt that he could do this because he was supported in our relationship. He was given media that assisted with grounding, enough so that he could then move between concrete and abstract cognition. On the concrete level, he was painting a tree or drawing a road or coloring a volcano. On the abstract level, the tree was himself and his process, the road was his journey through treatment and to home, and the volcano (complete with an aerial view) was his anger.

Marcus was often crying or screaming in the hallway while I was working with other clients. He reacted strongly to unfamiliar sensory experiences and had a very low threshold for discomfort. While working with different artistic media and sensory experiences at his pace, we were able to increase windows of distress tolerance regarding immediate gratification or discomfort with unfamiliar sensory experiences. Marcus's

NMT assessment indicated that symbolic, verbal, and abstract cognition were areas of underdevelopment for him. Because he had had art therapy prior to working with me, I believe that through prolonged exposure to art therapy and to the one-on-one relationship, he had been able to experience repair in these areas.

In addition, Marcus often operated as the peacekeeper and the entertainer during our verbal interactions; however, when he used the art media, he could drop these facades and become more authentic. I believed that because he could talk about himself through metaphor, he did not feel the pressure to please or to entertain. He could use the obscurity of the artwork in order to connect on a deeper level. He also could use the concrete drawing of a road to then mimic his own abstract journey of repair in treatment as well as preparation for his ultimate return home.

CHAPTER 5. DISCUSSION

Art Therapy and the NMT Assessment's Four Functional Domains

Perry (2009) wrote: "The organization of higher parts of the brain depends upon input from the lower parts of the brain" (p. 242). Because the brain's functions are interdependent, it also rings true that the functions are on a spectrum. If the bottom-up processes are not accessible, then the top-down processes generally are not either. In order for the top-down process to function properly, the brain stem, cerebellum, and limbic system also need to be regulated or in a repaired state. The goals of this study were to use art therapy interventions as a primary modality in the neurosequential model recommendations in order to research the impact on cumulative trauma repair, specifically addressing the four functional domains: sensory integration, self regulation, relational capacity, and cognitive functioning.

Sensory Integration

Recommendations for the sensory integration component of the NMT assessment stipulate small doses of patterned, repetitive somatosensory activities at home, school, and in extracurricular activities. I used art therapy with the six youth I worked with at SaintA in a way that would allow for sensory-enriched and rhythmic qualities; what often surprised me was that if this was not initially planned for inclusion in the session, the youth would often find it for themselves. For example, David would use oil or chalk pastels in a rhythmic manner and then smear the materials with his fingers; he enjoyed the experience of the media on his fingers and on the paper. John created a maze out of a scribble, creating order out of something chaotic and doing so in a rhythmic, repetitive fashion. In addition, he would eat his hot Cheetos rhythmically, which then allowed him

to work on his art pieces. Jacob used Model Magic by squeezing the material and making shapes, repeatedly squeezing and pulling, enjoying the changes in color. In addition, when painting, he would initially use a brush and then move to using his fingers and making dots on the paper, enjoying the sensation of the paint on his fingers but also working to his body's own rhythm. I consistently noticed throughout the study that the flexibility of art therapy as a modality allowed the space for individual participants to utilize the art and the art therapy session to address sensory integration through their own exploration and at their own pace. I found that their bodies and somatosensory functions could find what they needed if the correct materials, a safe space, and a trusted adult were present.

Self-Regulation

While working with the youth at SaintA and knowing their histories of cumulative trauma, I understood that their functioning could be in flux and that they would not simply be hypervigilant, dissociative, or regulated. It was apparent that with all six participants, there were moments when each one was able to stretch and to experience safety in the art therapy process and relationship I found that when they had an opportunity to use art media in a safe place with a safe person, they could gravitate from fight, flight, and freeze states to upper-level functions of the brain. Although many times they might revert to the familiarity of hypo- or hyperarousal, they could decrease the frequency, intensity, and length of these experiences as they received "doses" of repair. For example, I noted that with Deon, his stress response was primarily on the dissociative continuum as indicated on his brain map in the NMT assessment, whereas masturbation had become a survival skill, probably at young age, to help regulate his body. He was

able to draw a roller coaster and the process of racing upward only to plunge down as his image for excitement. He could replace a maladaptive response with an adaptive response for self-regulation using the Play-Doh and the extruder tool to fulfill the somatic needs he had. In addition, he could be witnessed and supported in this process.

Marcus experienced physical pain when he became dysregulated due to his level of sensitivity and the amount of medical trauma as well as physical, sexual, and emotional trauma that his body had sustained. We were able to work together to reduce dysregulation, which then allowed Marcus to momentarily master a bottom-up function of regulation in order to connect to the top-down functions of metaphor and symbolism. David could use an image of "calm" he had created, paired with an image of the sadness around his mother's abandonment, to begin working on regulation as well as reducing the grief and anger around his relationship with his mother. I placed his two images on opposite sides of the room and had him walk between the images very slowly, noticing the subtle shifts in his body when he was closer to calm versus closer to sad. This helped him to oscillate at a very slow rate between the states. Marcus could experience how modulation of reactivity in his body could work when he was supported and had imagery that would enhance this experience.

Working with self-regulation and helping individuals become trained to internalize regulation tends to be a slow process It would advantageous to have longer periods of time and greater frequency of art therapy sessions to obtain mastery with this bottom-up domain; however, in this study I was certainly able to see gains. I could sense that a seed had been planted. For example, David had moved from frequent aggression to fewer aggressive incidents; he was able to make gains from our individual sessions and

generalize these in the milieu by carrying his art supplies around with him and using these in times of crisis.

Relational

Perry (personal communication, April 6, 2015) stated that by using the neurosequential assessment lens, treatment teams could "quantify developmental adversity versus resilience-related factors." The youth at SaintA had not had the benefit in their lives of developing many known resilience-related factors. Perry also discussed the importance of the intimacy barrier; having stable, consistent, attentive, and loving caregivers could create a protective barrier for a child from the impact of cumulative trauma in order to garner resiliency.

My work with John spoke most to the relational capacity of art therapy. Skaife (2001) detailed that there is an intersubjectivein the subjectively experienced space between therapist and client, client and art, and therapist and art, there is potential for creating. There is a safe container in the therapeutic relationship and in the art. There is the abilityclients may feel freer to express feelings and experiences that are too terrible to talk about, allowing the individual to process them without having to verbalize (Skaife, 2001). In my study John was the most challenging youth to engage in the session; however, as the relationship developed, he became open and willing to express emotional experiences that were too terrible to talk about. Through the intersubjective spaceIn the relational container of art therapy, he created imagery that told of a bully and of a "hobo," of fire and dragons, all of which alluded to something possibly horrible that did not have to be verbalized. John had the choice to leave these images to obscurity. However, he left with a felt sense of "telling" without being forced to discuss something that he could not

say. His primary therapist reported that he was also able to utilize what had happened in the art therapy session to then go to her and relay more of his trauma experience. This is reasonable because she had had a longer-term relationship with him and had worked with him on the cognitive level.

The relational domain felt like the middle ground where exciting things could happen in art therapy sessions. I could feel that as the relationships developed between myself and the six participants in this study, there was growth and the ability to tap into metaphor and symbolism; there was a safe place where stories could be drawn and possibly told. In the relational domain, there was a safe container for repair. I did experience that there were the beginnings of repair happening in the art therapy sessions and relationships.

Cognitive

"The maturation and strengthening of the cortex occurs through mastering the bottom-up and then introducing the addition of the acquisition of language, interacting in social situations, and other top-down processes" (MacKinnon, 2012, p. 215). This was evident in the art therapy sessions. I witnessed this particularly with Marcus, who had experienced long-term art therapy interventions throughout his period at SaintA. When I began working with him, he was able to create a self-portrait with himself as a tree; he could talk about his feelings by using the tree in a first-person narrative to describe his own process. When we worked on his termination image, he wanted to write down the story of the picture so that he could remember it. He also could go back to the unit and tell his story to the other youth that he would be leaving soon.

Although the cognitive domain was not reached by all six boys in this study, there were moments of tapping into it. I believe that there was an interplay among the four domains and that there were moments where, by achieving some mastery in the bottom-up areas, the youth were able to move into the cognitive. For example, Terrell could play chess and discuss strategy after working on a bottom-up intervention. David could talk about art media and how to use them properly; he also would check in during each session with a verbal report of his week as he was working on an art piece. Art therapy could certainly be used to integrate cognitive processes after achieving momentary mastery of the bottom-up and relational processes.

Limitations of the Study

One of the challenges of this research study was that I could only meet with participants two times per month; I believe that this is also one of the challenges overall with residential treatment environments. Due to the amount and variety of programming that was needed at this level, as well as required treatment depending on the reason that a youth was in treatment, it was difficult to administer the doses of treatment that the NMT assessment suggested. I believe it would be highly beneficial to have art therapy once per day if not small moments throughout the day, especially in working with children who are new to art therapy or are evaluated as functioning below 65% on the NMT assessment in the sensory integration domain.

In addition, the sample size was quite small and it was not possible to control the length of time that the clients would remain in the facility. It would also be useful to be able to have a larger study including several different facilities or levels of care.

Future Research Implications

Due to the time constraints as well as sample size, location at one facility, and challenges with amount of time and frequency that was possible, I would very much hope that future research could include a larger sample size as well as a longer length of time, greater frequency of sessions, an age range to include adults, and a spectrum of levels of care of treatment. The outcomes showed potential for more connection between the NMT and art therapy as a primary modality for treating cumulative trauma.

Conclusion

I began this research study because I wanted to learn the "why" and the "how" of using art therapy with cumulative trauma repair—why and how art therapy works in this context. I knew that I had been utilizing art therapy for years and saw continual progress, but I had difficulty in explaining what I already knew as a felt sensation. Through reading the literature on trauma as well as studying Perry's Neurosequential Model of Therapeutics and being able to access the NMT assessments, I was able to better understand the inner workings of art therapy as it applied to the brain and the body.

I learned through my case studies that although development of the brain may be sequential, the repair of trauma and its effects does not occur in an orderly fashion. It became apparent to me that the four domains—sensory integration, self-regulation, relational, and cognitive—occur on a spectrum, just as the arousal continuum occurs. Art therapy activities lent themselves to the NMT assessment recommendations because they too operated on a continuum. As Lusebrink (2010) detailed, there are four levels for art therapy in the Expressive Therapies Continuum: the kinesthetic/sensory level, the perceptual/affective level, the cognitive/symbolic level, and creativity, which is

introduced or reintroduced at any of the previous levels. A client could be able to simply work on the kinesthetic/sensory level or the client might be able to incorporate all four levels simultaneously. There is fluidity in the art therapy process as well as in the art therapy relationship. Most of the participants in this study lacked attunement and empathy due to the repercussions of cumulative trauma. I followed their emotional states as well as their somatic responses in order to provide the level of intervention and media that would best address their needs. Art therapy granted me the ability to work with the youth on their level and then allowed room to expand on each one's progress. It is my sincere hope that utilization of art therapy becomes an essential component of treatment planning and intervention in cumulative trauma repair.

The benefit of this study for art therapists is that it illustrates how art therapy can function as a primary modality for cumulative trauma repair; too often, art therapy is seen as an adjunct component of an overall treatment plan. With the six outcomes of this study, these can become building blocks for the potential for art therapy with the NMT framework. In Outcome #1, it began apparent that art therapy could be used not only to address the bottom-up processes that are impacted with sensory integration and self regulation but that art therapy could impact the relational and cognitive by connecting the four domains. In Outcome #2, it was apparent that when a client was well regulated, their capacity for relationship expanded. Using sensory components and self regulatory interventions laid the groundwork so that the relational domain was more accessible. I found that with Outcome #3, when a client is dysregulated and is fluctuating between or is in both hypervigilance and dissociation, art therapy had the capacity to not only ground the client but to allow the client a window of time to access logic on the cognitive level.

For Outcome #4, with several of the clients of this study, though the NMT assessment reflected that the capacity for relationship and cognitive ability was episodic or even impoverished, there were moments were the art therapy interventions allowed for access and potentially growth in these areas. Outcome #5 was that though maladaptive responses were present, with utilizing art therapy, often clients could make alternate choices that were more appropriate and more beneficial to them. Carrying around and art notebook and supplies to use versus regressing with violent behaviors demonstrates important progress. Lastly, with outcome #6, metaphor appears to exist on a spectrum. Though it is an abstract concept, all six participants were able to understand and to utilize metaphor in order to bridge self regulation and sensory interation with relational and cognitive domains. Given the ability to use metaphor freely within art therapy interventions, this indicates the potential for expanding the capacity for growth and for repair in clients who have experienced cumulative trauma.

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APPENDIX A

RESEARCH WITH HUMAN SUBJECTS CONSENT FORM

Study of: Art Therapy as a Bottom Up Processing Intervention for Attachment and Trauma Repair

Dear Research Participant:

I am conducting a study of Art Therapy as a Bottom Up Processing Intervention for Attachment and Trauma Repair as part of my Doctoral Degree in Art Therapy at Mount Mary University in Milwaukee, Wisconsin. The purpose of my research is to utilize art therapy as a bottom up processing intervention in order to apply this knowledge to the repair of attachment rupture and trauma issues in the context of the Neurosequential Model of Therapy. Information about this research project will impact modes of treatment of attachment/trauma in a developmentally appropriate fashion through the lens of the Neurosequential Model.

During this study, you will be asked to participate in art therapy interventions and to allow observations and interactions by/with this therapist. The study will involve 24-52 therapy sessions over a period of 6 months-1 year. The sessions will be documented through detailed case notes and you will be asked to create artworks that will be photographed and used as part of the research outcomes. The results of the research may be presented to others for their information. However, all responses will be kept confidential and your name or any direct or indirect identifying characteristics will not be used in any report regarding this research. You are free to decline to participate at any time and this will not affect any other services you are receiving. If you choose to withdraw from the study your information will be destroyed. After the research is completed you may request a summary of my findings if you so choose.

The following are possible discomforts or risks that may be reasonably expected: Participants who are unaccustomed to creating artworks may feel uncomfortable. Some images remind people of good or bad memories, and may stir strong or unpleasant feelings. The benefits that may be expected (although they may not occur and unexpected feelings also may develop) include reduction in symptoms stemming from trauma/attachment issues; acquiring several new coping skills that can be generalized to experiences outside of the therapeutic milieu; and increased ability to regulate emotions.

If you have any questions about this study, please feel free to contact me at jenalbr@bellsouth.net. If I am not immediately available, I will return your email as soon as possible. If you have concerns regarding your privacy and rights, you may contact Dr. Marmy Clason at Mount Mary University.

Sincerely,

Jennifer G. Albright, MA, ATR, LPC/MHSP

I, _____consent to participate in the study of art therapy as a bottom up processing intervention to address trauma/attachment issues being conducted by Jennifer G. Albright, MA, ATR, LPC/MHSP. I have reviewed and fully understand the contents of this consent form. I understand that I may refuse to participate or withdraw from the study at any time. I understand that all my responses will be kept confidential. I have been given a copy of this consent form.

Signed:_____ Date:_____

Parent or guardian if (participant is a minor or not able to sign for other reasons):

_____ Date:_____

Witness to participant's signature:_____

Date:_____

APPENDIX B

CONSENT FORM TO USE AND/OR DISPLAY ART

CONSENT BETWEEN: Jennifer G. Albright, MA, ATR, LPC/MHSP and _____

I, (artist/participant)_____; (Signature of Legal Guardian if under 18 years of age)_____, agree to allow (art therapy doctoral student) Jennifer G. Albright, MA, ATR, LPC/MHSP to use and/or display and/or photograph my artwork for the following purpose (s):

- Reproduction, presentation, and/or inclusion within confidential academic assignments currently being completed by the art therapy student.
- Reproduction and/or presentation at a professional conference.

It is my understanding that my name and all identifying information will not be revealed in any presentation or display of my artwork. This consent to use or display my artwork may be revoked by me at any time. I also understand that I will receive a copy of this consent form for my personal records.

Signed _____Date_____

Legal Guardian _____Date:_____

I Jennifer G. Albright, MA, ATR, LPC/MHSP agree to the following conditions with the use of artwork:

I agree to keep your artwork safe, whether an original or reproduction, to the best of my ability and notify you immediately of any loss or damage while your art is in my possession. I agree to return your artwork immediately if you decide to withdraw your consent at any time. I agree to safeguard your confidentiality.

Signed (Art Therapy Doctoral Student)_____Date_____

APPENDIX C

ART THERAPY PROGRESS NOTE

Name:_____
Date:_____

Axis I:
Session goals/objectives:

Data:
- Emotional:
- Social:
- Behavioral:

Current issues/topics/stressors:
Art therapy interventions:
Observations:

Assessment (progress/effectiveness of interventions):
- Sensory integration:
- Self-regulation:
- Relational:
- Cognitive:

Plan:

Time started:_____ Time finished:_____
Next appointment:_____
Therapist's signature:_____