

# Right brain to right brain therapy: how tactile, expressive arts therapy emulates attachment

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## Practice Commentary

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### Abstract

The impact of a manipulative art therapy technique combined with an attuned therapeutic relationship which aims to replicate the experience of nurturing touch in infancy is explored in this paper. The current literature will be reviewed in relation to the interface between attachment-related trauma and the use of expressive art and play therapy in the context of relevant clinical experience. Specific experiences of clinical practice with children and associated therapeutic outcomes are used to illustrate the potential of this combination. In addition, we argue for further investigation of therapeutic benefits inherent in manipulative art and play in replication of the regulating role of touch with children who have experienced early relational trauma.

## Introduction

The field of infant attachment has a significant research history, originating with Winnicott (1953), Bowlby (1958) and Ainsworth (1978) last century. The research field of attachment and its counterpart, early relational trauma (used interchangeably in this paper with attachment trauma), has developed and broadened in the last 20 years with the burgeoning of neuroscience and neuropsychiatry (Perry, 2001; Schore, 2001a; Schore & Schore, 2008). Creative art therapy, as a recognised, legitimate mode of intervention, is also a relatively new intervention (Allen, 1995; Malchiodi, 2015b). Expressive arts therapy and evidence-based interventions for trauma have become unlikely partners. The traditional medicalised model of treatment and intervention for mental health and behavioural issues often overlooks the arts as therapeutically relevant; however, the more contemporary developments in neuroscience at the forefront of traumatology and treatment do advocate for art therapy (Cook et al., 2003; Perry, 2009; Van der Kolk, 2015).

The missing scaffolding of implicit relational memory, due to attachment trauma, leaves its mark in human interactions that are played out and perpetuated throughout the lifespan. Right brain to right brain therapy is attachment-based and focussed on the use of discrete techniques to activate and re-wire early, implicit memories and their correlated behaviour patterns (Fishbane, 2007; Levy, 2017; Schore, 2000, 2015; Siegel & Bryson, 2012). Given the significant development of the right brain in infancy, and the fundamental role it plays in preverbal, emotional, tactual and visual processing of our lived experiences, it is a natural progression that therapeutic interventions for attachment trauma would focus on these neurological areas. With the intention of mirroring the neural connections created in infancy by the nurturing touch from an attuned carer, the implementation of a specific tactual therapy, in collaboration with an attuned, affirming therapeutic relationship, has all the hallmarks of right brain to right brain practice (Schore, 2014).

This article explores some of the research to date across the fields of neurological development in infancy, the impacts of attachment trauma and the relevance of manipulative art modalities in childhood to recreate missing neurological scaffolding associated with touch in infancy. In order to examine the commonalities between touch in infancy and tactual art and play in childhood, we have taken a broad literature review analysis across these areas of research. Keywords related to this literature review were infancy, attachment, early relational trauma, neuroscience, touch, implicit memory, dyad, right brain, affect regulation, expressive arts therapy, and play therapy. As a final point of analysis within the context of the literature, case examples are provided in order to make more explicit how the use of trauma-informed expressive arts therapy can be used in the treatment of developmental trauma and attachment challenges. These examples also illustrate the need for more exploration of what specifically the therapeutic benefits are and how to foster them.

## Expressive arts therapies and mental health practice – defining the terrain

*Expressive Arts Therapy* is a term often used to refer to a variety of creative and experiential interventions, including play therapy, dance and movement, drama and music therapy and visual art. The terms creative, experiential and communicative undertones make it ideal for describing the dynamic nature of the play and creation inherent in the sculptural qualities of manipulative art. Klorer (2000, p.24) claims 'Play and art materials are useful in the reconstruction of the mental representations as well as in the transformation of traumatic visual memories that cannot be easily verbalized. Art and play share the potential of linking the internal and external domains. The cross-over between play and art therapy can be seen as an organic development, particularly because both modalities rely heavily on the symbolic language of the individual.' Rather than defining creative haptic interventions with children as being strictly 'sandplay' or 'play therapy', or even pure 'art', a hybrid of all of them, acknowledging the interrelatedness of the arts and play, is captured by the term expressive arts therapy. Within the literature, however, there are myriad terms used by therapists ranging from *creative art therapy*, *art as therapy*, *expressive therapies*, right through to *the healing arts* (Allen, 1995; De Botton, 2013; Elbrecht & Antcliff, 2014; Malchiodi, 2007; Malchiodi, 2016; O'Brien, 2004). Clearly, there is some movement and flexibility in the defining terms in the field of therapeutic art and play, much like the work itself.

A multimodal approach to engaging children in expressive therapies allows for a range of integrating and processing opportunities for children in therapy. According to Malchiodi and Crenshaw (2015), an integrated arts approach or intermodal therapy (also known as multimodal therapy) involves the use of two or more expressive therapies within session. 'Like play therapy, they [the creative arts therapies] are experiential, active approaches that capitalize on engaging individuals of all ages in multisensory experiences for self-exploration, personal communication, developmental objectives, socialization, and emotional reparation' (Malchiodi, 2015a, p. 3). This understanding of the therapeutic benefit of one or more creative interventions with traumatised children is advocated in other studies (Southwell, 2016). The focus is on the interrelatedness of the arts, working in collaboration, for a multifaceted, developmentally appropriate outcome. This understanding of the therapeutic significance of the arts in childhood supports the theoretical position of this practice commentary, and therefore, to best define the therapy discussed in this article, the term coined by Cathy Malchiodi, *Expressive Arts Therapy* (2015a), will primarily be used. Her definition relates to trauma-informed expressive arts therapy which she defines as 'an approach used to improve an individual's capacity to self-regulate affect and moderate the body's reactions to traumatic experiences'. Malchiodi further elaborates on this definition by describing expressive arts therapy as ideal for the treatment of attachment trauma as it is 'a means to address and enhance attachment, particularly in children who have experienced multiple traumas and losses' (Malchiodi, 2015a, p.10).

## The background to early relational/attachment trauma

Infancy is defined by acute vulnerability and therefore infants are dependent on caring, attuned adults. The preverbal nature of infancy means communication and engagement with the baby

occurs exclusively via the senses, with touch being the most primary of these. Linden (2015, p.29) states 'In humans, touch is thought to be the first sense to become functional *in utero*, at about eight weeks' gestation'. Brazelton (1990, p.6) claims touch to be 'the first important area of communication between a mother and her infant'. Touch is used to feed and nurture the infant and to soothe the baby if they are crying or distressed. Touch is required to dress the infant if they are cold or to take off clothes if they are hot, to change their nappy and move them from one place to another. In short, their preverbal developmental stage and complete dependence on others ensures touch as vital for an infant's survival.

Deprivation of touch not only means that these basic needs are not being met but also that the invisible consequences are invariably much more significant. The children subjected to the spartan conditions of Romanian orphanages, as discussed at great length in the 1980s and 1990s, displayed symptoms of markedly reduced growth indicative of 'failure to thrive', and at a more extreme level, high mortality rates (Purvis, McKenzie, Cross, & Razuri, 2013). Children raised in these contact-poor environments also showed signs of social behavioural abnormalities and significant impairment in interpersonal relationships across the lifespan (Lubit, 2015; Perry, 2002; Schore, 2001a; Schore, 2001b; Zeanah, 2000). Neurological Positron Emission Tomography scans discovered 'significantly decreased metabolic activity bilaterally in brain regions that process emotionally significant stimuli and respond to stress' in these children (Purvis et al., 2013, p.166). The development of this particular brain system is wholly contingent on 'sensitive and responsive caretaking' such as that found in the secure attachment relationship with a primary carer, but which was drastically lacking in Old Eastern Bloc orphanage settings (Purvis et al., 2013, p.166). Later in life 'persistent touch deprivation of infants is linked to significantly higher incidence of obesity, type 2 diabetes, heart disease, and gastrointestinal disease . . . Adult neuropsychiatric problems are also found at a much higher rate, including anxiety, mood disorders, psychosis, and poor impulse control' (Linden, 2015, p.27).

## Infancy, implicit memory and the right brain

Given that touch is very clearly 'the language of infancy' and is directly related to physical, social, emotional and relational health, the quest to somehow replicate the therapeutic qualities of touch has clinical merit (Hertenstein, 2002). Gerhardt (2004, p.15) describes the preverbal stage of infancy in the following way: 'We cannot consciously recall any of [our infanthood], yet it is not forgotten because it is built into our organism and informs our expectations and behaviour'. She further gives weight to this concept by quoting Doug Watt, who refers to the period of infancy as 'unrememberable and unforgettable' (Gerhardt, 2004, p.15). Siegel and Bryson (2012, p.72) describe this unconscious phenomenon particular to infancy as 'implicit memory' which is created and encoded throughout life; however, 'in the first eighteen months we encode *only* implicitly'.

Implicit memory allows us to create expectations based on past experiences, thereby giving us a reliable blueprint for appropriate responses. If our past experiences have been distressful or traumatic, this blueprint for appropriate response is primed to respond in a certain way by triggering the sympathetic nervous system into automatic stress response. It becomes a survival reflex of the brain. If these triggers and responses 'remain in implicit-only form',

it is indicative of a lack of processing and integration by the hippocampus (Siegel & Bryson, 2012, p.77). They explain that this is the area of the brain that assimilates images, sensations and emotions and transforms what is implicit into explicit awareness, thereby allowing us to make sense of our experiences and effectively find resolution. Other attachment theorists refer to this implicit memory as an 'internal working model' – a direct representation of the interactional history inherent in the caregiver–infant dyad (Bowlby, 1958; Hertenstein, 2002; Svanberg, 1998)

Further, the right brain is primarily responsible for the processing of implicit memories. During the first 18 months of life, the right brain is developing almost exclusively (Schoore, 2000). The right brain is the powerhouse for synthesising emotions, images, sensations, behavioural social cues and relational information. Bessel Van der Kolk (2015, p.44) describes the significance of the right brain accordingly: 'The right [brain] is intuitive, emotional, visual, spatial, and tactual, and the left is linguistic, sequential and analytical. While the left half of the brain does all the talking, the right half of the brain carries the music of experience. . . . The right brain is the first to develop in the womb, and it carries the nonverbal communication between mothers and infants'.

With the emphasis of the right brain on preverbal, emotional, tactual and visual processing of our lived experiences, it is a natural progression that therapeutic interventions aimed at addressing attachment trauma would focus on accessing the right hemisphere of the brain. Right brain to right brain therapy is attachment-based and focussed on the use of discrete techniques to activate and re-wire early, implicit memories and their correlated behaviour patterns (Fishbane, 2007; Schoore & Schoore, 2008).

### **Clinical creativity – expressive arts therapies and neuroscience**

Neuropsychiatrists and other experts in the field claim that particular alternative interventions used at key therapeutic stages can address significant developmental gaps – particularly for children and young people whose developmental trajectory is still evolving (Perry & Hambrick, 2008; Solomon & Siegel, 2003). Research indicates that the missing developmental milestones in typically developing children are connected to neural pathways and areas of the brain that have been directly affected by environmental trauma and, in the case of infants, attachment trauma (used interchangeably in this paper with early relational trauma) (Carey, 2006; Ogden & Minton, 2000; Perry, 2002; Van der Kolk, 2015). Crenshaw (2006, p.25) claims 'creative arts therapies . . . offer considerable benefit to clients who have not fully benefited from traditional verbal therapies', particularly the 'mind-body integration' of creative art therapies that is beneficial in the treatment of trauma and mental health disorders.

*Haptic* is a term referring to the sense of touch, particularly relating to the perception and manipulation of objects using the hands. The benefits of haptic art have been explored by art therapists previously. In particular, Elbrecht, (2012), Malchiodi, (2017) and Proulx, (2002) have each discussed the application of haptic art from a neuroscience perspective to ameliorate the symptoms of mental illness and address the impact of trauma across the lifespan. The discrete area of attachment trauma and manipulative art and play has been mostly subsumed under the broader category of developmental trauma – that which occurs across the breadth of childhood. Analysis of the direct connection between the neural pathways created through touch in infancy, and those created

through therapeutic haptic art and play, would appear to be thus far largely unexplored.

The field of art and play therapy at first glance appears diametrically opposed to the world of medical science and psychological pathology. It does, however, have a significant interface with the engagement, intervention and treatment of children who have experienced developmental trauma. This interface is a good fit if we consider neuroscience as providing the diagnostics, and expressive arts therapy providing a child-focussed intervention. Various approaches to understanding the specific areas of developmental delay and suffering for children who have experienced trauma, have been developed, for example, the Neurosequential Model of Therapeutics (NMT) as developed by the Child Trauma Academy (Perry & Hambrick, 2008) and Briere's 'Trauma Symptom Checklist for Young Children' (Briere et al., 2001). The NMT is an approach to clinical work that incorporates key principles of neurodevelopment into the clinical problem-solving process. The NMT metrics are tools which provide a semi-structured assessment of important developmental experiences and a current 'picture' of brain organisation and functioning to guide intervention planning (Perry & Hambrick, 2008).

Perry (2012b, p.1) maintains that the 'NMT mapping process helps determine the unique sequence of developmentally appropriate interventions', depending on when and how trauma impacted on the child's developmental trajectory. He continues: 'Recommended therapies may include music, movement, yoga, drumming, therapeutic massage to more traditional play therapy, sand tray or other art therapies' (Perry, 2012b, p.1). Perry is a strong advocate for interventions of a repetitive nature, such as the drumming and movement mentioned here. He further adds, 'for children whose persisting fear state is so overwhelming' due to traumatic experiences, there would be no improvement 'until their brainstem is regulated by safe, predictable, repetitive sensory input' (Perry & Hambrick, 2008, p.43). The practice examples given later of bringing children, who have experienced early relational trauma, into a familiar room with a familiar therapist over several weeks to repetitively explore a manipulative medium are predicated on this philosophy. While emulating much of Perry's attention to rhythm and regularity, the tactual art and play therapy focuses more specifically on touch and haptic therapy as a possibility of creating key neural pathways for emotional regulation.

### **Haptic art and play therapies within trauma-informed practice**

Allen (1995, p.36) describes tactile art with clay as 'a good medium for coming to know visceral experience. Strong, instinctual experiences lend themselves to expression in this simple material, which requires no tools but can be shaped directly with the pressure of your hands'. Malchiodi (2017, p.1) describes the medium of clay as useful for 'emotional regulation [and] as a foundation for other reparative processes such as attunement, attachment and self-expression'. Elbrecht has specialised in the discipline of working with clay to ameliorate the effects of trauma, particularly in childhood and into adulthood (Elbrecht, 2012; Elbrecht, & Antcliff, 2014, 2015). Elbrecht claims: 'Work at the Clay Field™ supports the body's own reality in coming into being by creating new synaptic connections in the brain through sensorimotor actions in the clay and within a secure relationship with the therapist' (Elbrecht, 2015, p.205). Based on her therapeutic practice,

Elbrecht has clearly made the connection between manipulative art and play, neural pathway creation and therapeutic recovery from trauma.

Children with histories of attachment trauma are more likely to be found in foster care, and as clients of child protection and child and family services (Alaggia & Vine, 2013; Carey, 2006; Klorer, 2000). These children may come to the attention of these services because their behaviour and mental health are causing risk and disruption to themselves and to others in their milieu. The primary author works with children from such backgrounds both in school settings and in her private therapy space. Frequently, the children's referrals include diagnoses such as Attention Deficit Hyper Activity Disorder, Oppositional Defiance Disorder or Autism Spectrum Disorder. Many of the symptoms associated with these disorders are commensurate with early relational trauma (Lubit, 2015; Perry, 2012a; Zeanah, 2000). The pre-verbal nature of infancy and the implicit, and often ubiquitous, memory created in the first 18 months of life means that children are unable to reflect on their early life experiences. The evidence is invariably communicated through their behaviour. The therapist's role is to read and decode the subtext of this behaviour and, where appropriate, provide the opportunity to re-enact the missing early positive experiences of touch in a safe environment with an attuned adult to bear witness to the process. So often in practice the task of the therapist is to replicate the experience of secure attachment with many clients – children and adults, right throughout the life-span (Kroll, 2010; Lee & Kligler, 2004; Sykes Wylie & Turner, 2011; Trevithick, 2003).

The expressive arts therapies, and perhaps more explicitly tactual art and play therapies, are uniquely placed to build a therapeutic alliance and shift internal relational working models for clients, particularly children who often use art and play as if they were a primary language. By replicating the ideal environment of infancy and childhood in the therapy space, the therapist is providing a replacement physical, verbal and psychological experience. The experience allows for positive, safe interactions and explorations in a contained, nurturing relational and physical space. Within this communal experience between client and therapist, the client is supported to process areas of relational incongruence, trauma or deprivation (Goldberg, Muir, & Kerr, 2016; Gomez, 2012). The multifaceted approach of haptic exploration, verbal discourse, unconditional positive regard and emotional nurturance assists with the embedding of these new experiences in new neural networks (Sweeton, 2019).

### Theory in practice – case examples

The following case examples have been taken from work in clinical mental health with primary school-aged children. Over this period of time, practice has yielded some interesting phenomena regarding observed emotional self-regulation and behavioural de-escalation when children engage with a tactual art and play medium. The medium of choice, particularly within the schools where therapy is often provided, is 'Kinetic Sand'<sup>TM</sup>. This sand has a consistency that is moist and pliable to the touch. It sticks together when under pressure or moulded. The creators of the sand state 'a bonding agent . . . causes the sand to stick only to itself in a soft clump. This sand-in-motion flows and shapes just like wet sand, but leaves surfaces completely dry and mess-free' (<https://www.kineticsand.com.au/>).

It is an ideal medium to use inside in a designated school therapy space as a visiting therapist.

Often the children being seen for this therapeutic work are being taken out of their classrooms where their concentration is tested by multi-sensory stimulation. In contrast, the therapeutic space involves one-on-one work with the children which is quiet with limited stimuli. The children have generally been referred due to backgrounds of trauma and adjustment. They often have numerous diagnoses, many of them mirroring the effects of attachment trauma. The observations of decreased psycho-motor activity and increased concentration and attention span over numerous therapeutic interventions have been compelling in terms of understanding what might have been happening neurologically for these children. It is this clinical observation coupled with an interest in the neuroscience behind childhood mental health that has led to our interest in further research into the neurological benefits of manipulative art and play.

The following are three case examples that are drawn from the experiences of a mental health social worker with many years of experience of working with children incorporating art and play in conjunction with conventional clinical therapy. Sessions often commence with children being allowed to explore a range of art and play mediums, including drawing, puppets, arranging a dolls' house, brick construction, figurines and toy machinery, such as cars and trucks. The sand tray, and often-times the plasticine box, is accessible to children within the space. From clinical observation, it is highly unusual for a child not to gravitate towards the manipulative medium for a period of the session. Invariably, children take toys from elsewhere in the room and use them in their play with the manipulative materials. Activities such as burying figurines then unearthing them, or 'saving' them from their dark fate, creating buildings and structures and constructing contained miniature worlds are all very common.

#### Maddy\*

An 8-year-old girl\* presented at school as disruptive, loud and displaying behaviour that was highly challenging to manage in a classroom of 28 children. When taken out of the classroom and into a comparatively low sensory stimulation therapy space, Maddy's behaviour and sensorimotor agitation de-escalated rapidly. On entering the room, she would seek out the kinetic sand and immediately immerse her hands into the medium and proceeded to create and explore. Maddy always kept the same routine in the therapy space, asking the author if they could 'play the hiding game again'. This involved Maddy finding a particular toy and burying it in new and creative ways to see if the author would be able to find it. While Maddy appeared excited as the researcher worked hard to find the hidden toy, there was invariably a clear sense of relief when the author's perseverance paid off when the discovered toy was brought into the light. As with an infant playing peek-a-boo or a child playing hide and seek, the thrill of being found is the joy of being seen and feeling cared for. The repetitive nature of this game for Maddy would allow her rhythm, consistency and predictability in her challenging world. O'Brien (2004) describes this process of rhythm, mirroring and finding the child in therapy as the therapist emulating that which the mother would do in early childhood; 'the therapist matches the rhythms of the patient in a similar way to maternal non-verbal holding . . . in which the patient gains a sense of self through feeling understood and contained' (p.9). Maddy's teacher and doctor's referral described her home life as chaotic, with high emotional expression among the many family members. Her parents had recently separated and Maddy and her mother had been homeless for a number of months. The narrative around Maddy's short life, including her infancy, was one of unpredictability and loss, which was likely compounded by her dual diagnosis of Autism and Attention Deficit Hyperactivity Disorder.

### Ben\*

Ben is a 6-year-old boy\* in foster care with a lifelong history of abuse and neglect. He returned to the same themes in the sand week after week. First, he would build a base to protect them both which he described as a battleship which was stronger than any attacking force. Then he would ask the researcher to contain the kinetic sand in their hands, forming it into a ball that grew bigger and bigger as Ben added more and more sand. Keeping the ball intact and in shape as Ben continued to add sand was challenging, and the researcher observed that sometimes this task was not as successful as Ben would have liked; certainly the metaphor of being able to 'hold' and 'contain' whatever was given to her by the child was incredibly significant from a therapeutic perspective.

Ben also like to cook with the sand. At his new foster home, he was being exposed to new fruits and vegetables all of the time. Given he had an approximate 3-year delay in his physical development, nutrition was a key issue for Ben. Ben struggled with the foreign tastes and textures of the food he was being introduced to, so he actively sought out opportunities to try new 'food' prepared by the researcher and himself with the sand. Ben seemed to take pride in his culinary exploits, inventing all sorts of fascinating combinations of foods. When feeling comfortable and playful in his creating, he would dish up ice cream with caterpillar legs or cake with chicken eyes hidden in the cups. He would take delight in watching the researcher's reaction to being told the hidden ingredients just as they were preparing to take the first pretend bite. Klorer (2000, p.24) claims 'Play and art materials are useful in the reconstruction of the mental representations as well as in the transformation of traumatic visual memories that cannot be easily verbalized'.

Ben equally enjoyed being cooked for – his carer confirmed this was a new experience of nurture and care for him since being placed at his new home. The researcher would create healthy meals for Ben from the sand, along with the beads and stones embedded in the sand. When she went through each of the ingredients, Ben would groan and pull faces indicating his disgust at the inclusion of a range of different vegetables. Nonetheless, he would pretend to scoff every mouthful and declare how delicious it was and how full he was feeling. This created the ideal time to provide Ben with some information about nurturing and nutrition for self and others, something he had been deprived of until his change of care.

### Yusef\*

For another young client also in foster placement, aged 12, the sandplay was a safe retreat, and even a regression for him, when the themes of his therapy sessions became too overwhelming. This particular boy would commence a conversation about his grasp of his developing sexuality on reflection of his lengthy history of abuse, including sexual abuse, and then would invariably hastily change the topic and play in a quiet, immersive way with the sand. On observation, he appeared to be using tactual and kinaesthetic soothing by manipulating the sand much like a very young child with a favourite soft toy or cuddly rug. While engaged with the sand, his speech became quieter and slower and his affect was calmer. Malchiodi (2017, p.1) echoes this sentiment: 'the self-soothing characteristics of clay may enhance self-regulation through interaction with the medium – smoothing, pounding, building and shaping, among other ways clay can be manipulated and experienced'. Developmentally, his behaviour and presentation oscillated from a boy on the cusp of adolescence to a small frightened child, trying it seemed, to internally make sense of a torrid past.

These case studies provide an illustration of the ways in which expressive arts therapy of a tactual nature may, in some way, replicate sensory experiences for children living with the consequences of attachment trauma. As stated previously, touch plays a vital role in infant regulation and creating secure attachment between carer and child. The extension of this knowledge is that tactile art and play can, in some way, replicate the sensory experience of nurturing touch for children living with the consequences of attachment trauma. In the spirit of further expansion on this work with vulnerable children, if a clear pattern emerges between early relational trauma, tactual creative intervention and positive behaviour change, then it may be clinically optimal for increased use of this medium by child trauma therapists. With a combination

of practice wisdom and neuroscience, a cogent argument for further exploration of the interface between attachment trauma and haptic art and play is created. The aim would be to produce clear connections between manipulative art processes, emotional regulation and positive behaviour change for children who have experienced trauma, due to a lack of secure, nurturing attachment, in this critical period of their lives.

The missing scaffolding of implicit relational memory, due to neglect and trauma in infancy, leaves its mark in human interactions that are played out and perpetuated, literally from the cradle to the grave. With the intention of replicating the neural connections intrinsic to infancy, the implementation of a specific tactual therapy, in collaboration with an attuned, affirming therapeutic relationship, has significant implications for right brain to right brain intervention. It is hoped that further research into this area will provide evidence of a particularly valuable, easily replicated, therapeutic tool to use with children who have experienced attachment trauma.

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### References

- Ainsworth, M. D. S. (1978). *Patterns of attachment: A psychological study of the strange situation*. Lawrence Erlbaum Associates.
- Alaggia, R., & Vine, C. (2013). *Cruel but not unusual: Violence in Canadian families*. Wilfrid Laurier University Press.
- Allen, P. B. (1995). *Art is a way of knowing* (Vols. 1–1). Shambhala Publications Inc.
- Bowlby, J. (1958). The nature of the child's tie to his mother. *International Journal of Psycho-Analysis*, 39, 350–373.
- Brazelton, T. B. (1990). *The earliest relationship: Parents, infants, and the drama of early attachment*. Addison-Wesley.
- Briere, J., Johnson, K., Bissada, A., Damon, L., Crouch, J., Gil, E., Hanson, R., & Ernst, V. (2001). The Trauma Symptom Checklist for Young Children (TSCYC): Reliability and association with abuse exposure in a multi-site study. *Child Abuse & Neglect*, 25(8), 1001–1014. doi:10.1016/S0145-2134(01)00253-8
- Carey, L. (2006). *Expressive and creative arts methods for trauma survivors*. Jessica Kingsley Publishers.
- Cook, A. P. D., Blaustein, M., Spinazzola, J., & van der Kolk, B. M. D. (2003). *Complex trauma in children and adolescents*. [http://www.nctsn.org/nctsn\\_assets/pdfs/edu\\_materials/ComplexTrauma\\_All.pdf](http://www.nctsn.org/nctsn_assets/pdfs/edu_materials/ComplexTrauma_All.pdf)
- Crenshaw, D. (2006). Neuroscience and trauma treatment, Implications for Creative Art Therapists. In L. Carey (Ed.), *Expressive and creative arts methods for trauma survivors* (pp. 21–38). Jessica Kingsley Publishers.
- De Botton, A. (2013). *Art as therapy*. Phaidon.
- Elbrecht, C. (2012). *Trauma healing at the clay field a sensorimotor art therapy approach*. Jessica Kingsley Publishers.
- Elbrecht, C. (2015). The clay field and developmental trauma in children. In C. A. Malchiodi, (Ed.) *Creative Interventions with Traumatized Children* (pp. 191–210). Guilford Publications.
- Elbrecht, C., & Antcliff, L. (2015). Being in touch: Healing developmental and attachment trauma at the clay field. *Children Australia*, 40(3), 209–220. <https://dx.doi.org.ez.library.latrobe.edu.au/10.1017/cha.2015.30>
- Elbrecht, C., & Antcliff, L. R. (2014). Being touched through touch. *Trauma treatment through haptic perception at the Clay Field: A sensorimotor art therapy*. *Formerly Inscape*, 19(1), 19–30. doi:10.1080/17454832.2014.880932
- Fishbane, M. (2007). Wired to connect: Neuroscience, Relationships, and Therapy. *Family Process*, 46(3), 395–412. doi:10.1111/j.1545-5300.2007.00219.x
- Gerhardt, S. (2004). *Why love matters: How affection shapes a baby's brain*. Brunner-Routledge Taylor & Francis Group.

- Goldberg, S., Muir, R., & Kerr, J. (2016). *Attachment theory: Social, developmental, and clinical perspectives*. Routledge.
- Gomez, A.M. (2012). *EMDR Therapy and adjunct approaches with children: Complex trauma, attachment, and dissociation*. Springer Publishing Company.
- Hertenstein, M. J. (2002). Touch: Its communicative functions in infancy. *Human Development*, 45(2), 70–94. <http://www.karger.com/DOI/10.1159/000048154>
- Kinetic Sand. (2018). (<https://www.kineticsand.com.au/>). Retrieved 30/07/2018. from <https://www.kineticsand.com.au/>
- Klorer, P. G. (2000). *Expressive therapy with troubled children*. Jason Aronson.
- Kroll, B. (2010). Only Connect . . . building relationships with hard-to reach people: Establishing rapport with drug-misusing parents and their children. In D. Turney & Ruch, G. (Eds.), *Relationship-based social work: Getting to the heart of practice* (Chpt. 4; pp. 69–84). Jessica Kingsley Publishers.
- Lee, R. A., & Kligler, B. (2004). *Integrative medicine: Principles for practice* (1st ed.). McGraw-Hill, Medical Pub. Div.
- Levy, T. M. (2017). *Attachment, trauma and the brain*. <https://www.linkedin.com/pulse/attachment-trauma-brain-terry-levy-ph-d-b-c-f-e>
- Linden, D.J. (2015). *Touch: The science of hand, heart, and mind* (Vol. 1). Viking Penguin.
- Lubit, R. (2015). *Attachment Disorders*. Medscape. <http://emedicine.medscape.com/article/915447-overview#showall>
- Malchiodi, C. A. (2007). *The art therapy sourcebook* (2nd ed.). McGraw-Hill.
- Malchiodi, C. A., (2015a). Creative arts therapy approaches to attachment issues. In C. Malchiodi & D. Crenshaw (Eds.), *Creative arts and play therapy for attachment problems* (pp. 3–18). Guilford Publications.
- Malchiodi, C. A. (2015b). Neurobiology, Creative Interventions, and Childhood Trauma Creative Interventions with Traumatized Children. In C. Malchiodi ed, *Creative interventions with traumatized children* (2nd ed., pp. 3–23). Guilford Publications.
- Malchiodi, C. A. (2016). Child art therapy: How it works. It takes more than coloring for reparation to happen. *Psychology Today*. <https://www.psychologytoday.com/au/blog/arts-and-health/201601/child-art-therapy-how-it-works>
- Malchiodi, C. A. (2017). Clay art therapy and depression: Can clay be the way to mediate depression? *Psychology Today*. <https://www.psychologytoday.com/blog/arts-and-health/201707/clay-art-therapy-and-depression>
- Malchiodi, C. A., & Crenshaw, D. A. (2015). *Creative arts and play therapy for attachment problems*. Guilford Publications.
- O'Brien, F. (2004). The making of mess in art therapy: Attachment, trauma and the brain. *Inscape*, 9(1), 2–13. doi:10.1080/02647140408405670
- Ogden, P., & Minton, K. (2000). Sensorimotor psychotherapy: One method for processing traumatic memory. *Traumatology*, 6(3), 149–173. doi:10.1177/15347656000600302
- Perry, B. D. (2001). Attachment the first core strength. *Scholastic Early Childhood Today*, 16(2), 28–29. <http://ez.library.latrobe.edu.au/login?url=https://search-proquest-com.ez.library.latrobe.edu.au/docview/217919123?accountid=12001>
- Perry, B. D. (2002). Childhood experience and the expression of genetic potential: What childhood neglect tells us about nature and nurture. *Brain and Mind*, 3(1), 79–100. doi:10.1023/A:1016557824657
- Perry, B. D. (2009). Examining Child Maltreatment Through a Neurodevelopment Lens: Clinical applications of the neurosequential model of therapeutics. *Journal of Loss and Trauma*, 14, 240–255.
- Perry, B. D. (2012a). Stress, Trauma and Post-Traumatic Stress Disorders in Children, adapted in part from “Maltreated Children: Experience, Brain Development and the Next Generation” 2002. Located in *Reading Materials for Australasian Speaking Tour “School Is In! Working from a Developmental and Trauma Perspective with Children and Young People Within Schools.”* Berry Street. Melbourne.
- Perry, B. D. (2012b). Brief Description of the Neurosequential Model of Therapeutics (NMT) in *Reading Materials for Australasian Speaking Tour : “School Is In! Working from a Developmental and Trauma Perspective with Children and Young People Within Schools.”* Berry Street. Melbourne.
- Perry, B. D., & Hambrick, E. (2008). The neurosequential model of therapeutics. *Reclaiming Children and Youth*, 17(3), 38–43.
- Proulx, L. (2002). *Strengthening emotional ties through parent-child-dyad art therapy interventions with infants and preschoolers*. Jessica Kingsley Publishers. <https://ebookcentral-proquest-com.ez.library.latrobe.edu.au/lib/latrobe/detail.action?docID=290780>
- Purvis, K. B., McKenzie, L. B., Cross, D. R., & Razuri, E. B. (2013). A spontaneous emergence of attachment behavior in at-risk children and a correlation with sensory deficits. *Journal of Child and Adolescent Psychiatric Nursing: Official publication of the Association of Child and Adolescent Psychiatric Nurses, Inc*, 26(3), 165. doi:10.1111/jcap.12041
- Schore, A. N. (2000). Attachment and the regulation of the right brain. *Attachment & Human Development*, 2(1), 23–47. doi:10.1080/146167300361309
- Schore, A. N. (2001a). The effects of early relational trauma on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, 22, 201–269.
- Schore, A. N. (2001b). Effects of a secure attachment relationship on right brain development, affect regulation, and infant mental health. *Infant Mental Health Journal*, 22(1–2), 7–66. doi:10.1002/1097-0355(200101/04)22:1<7::AID-IMHJ2>3.0.CO;2-N
- Schore, A. N. (2014). The right brain is dominant in psychotherapy. *Psychotherapy*, 51(3), 388–397.
- Schore, A. N. (2015). Understanding the basis of change and recovery early right brain regulation and the relational origins of emotional wellbeing. *Plenary Address, Australian Childhood Foundation Conference Childhood Trauma. Children Australia*, 40(2), 104–113. doi:10.1017/cha.2015.13
- Schore, J. R., & Schore, A. N. (2008). Modern attachment theory: The central role of affect regulation in development and treatment. *Clinical Social Work Journal*, 36(1), 9–20. doi:10.1007/s10615-007-0111-7
- Siegel, D. J., & Bryson, T. P. (2012). *The whole-brain child*. Random House.
- Solomon, M. F., & Siegel, D. J. (2003). *Healing trauma: Attachment, mind, body, and brain* (1st ed.). W.W. Norton.
- Southwell, J. (2016). Using ‘expressive therapies’ to treat developmental trauma and attachment problems in preschool-aged children. *Children Australia*, 41(2), 114–125. <http://dx.doi.org.ez.library.latrobe.edu.au/10.1017/cha.2016.7>
- Svanberg, P. (1998). Attachment, resilience and prevention. *Journal of Mental Health*, (Dec 1998), 7(6), 543–578. <http://ez.library.latrobe.edu.au/login?url=https://search-proquest-com.ez.library.latrobe.edu.au/docview/215283209?accountid=12001>
- Sweeton, J. (2019). EMDR Skills Training: Effective Techniques for Trauma Recovery. *Proceedings of the EMDR Skills Training: Effective Techniques for Trauma Recovery*, Byron Clinic, Melbourne.
- Sykes Wylie, M., & Turner, L. (2011). The attuned therapist: Does attachment theory really matter? *Psychotherapy Networker*, 35(2), 18–49.
- Trevithick, P. (2003). Effective relationship-based practice: A theoretical exploration. *Journal of Social Work Practice*, 17(2), 163–176. doi:10.1080/026505302000145699
- Van der Kolk, B. A. (2015). *The body keeps the score: Brain, mind, and body in the healing of trauma*. Penguin Books.
- Winnicott, D. W. (1953). Transitional objects and transitional phenomena — A study of the first not-me possession. *The International Journal of Psycho-Analysis*, 34, 89. <http://ez.library.latrobe.edu.au/login?url=http://search.proquest.com/docview/1298189342?accountid=12001>.
- Zeanah, C. (2000). Disturbances of attachment in young children adopted from institutions. *Journal of Developmental & Behavioral Pediatrics*, 21, 230–236.