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editorial

Introduction to the Neurobiology of Art Therapy: Evidence Based, Complex, and Influential

Lynn Kapitan, *Editor*

My nervous system trying to connect to and communicate with your nervous system, my heart to your heart, my brain to your brain—that’s what we’re doing when we’re making art. Well, maybe that’s not the whole of it, of course. But it’s what artist Garry Kennard (2007) means when he says we would do well to steer clear of the limiting idea of art as creative expression or object and see it within the age-old desire to communicate the experience of being human. Scientists explore the material world and offer their analysis of the evidence they find while artists report back their emotional connections to that world using artistic tools. Viewed this way, there isn’t any great divide between science and art; there is only a broad spectrum of distinct responses from different starting points. We love our frontal lobes but all that cogitation comes at a price: we can lose connection to the “full-blown emotion and vibrancy” of life (Kennard, 2007, p. 5). The arts fuel that vital connection and enable us to overcome what Kennard calls the “prison of reflective consciousness” (2007, p. 5) that is our inheritance as truly sentient beings.

On the hot topic of neuroscience, I would put Kennard on my layperson’s recommended reading list because he not only loves the subject as an artist but also knows how to sort out the real thing from all the hype and pseudoscience. No art therapist with even a cursory interest in research will have failed to notice that the brain is the next big thing. The field of art therapy is uniquely positioned in the art–science dialogue, which is why we called for research for this special issue. In these pages we explore art and the brain, and art therapy’s neurobiological impacts on trauma in particular. Among the articles featured are two intriguing empirical studies by art therapists collaborating with neuroscientists to examine how materials used in art therapy affect the brain. Utilizing advanced brain imaging technology, Kerry Kruk and coauthors compared how drawing and clay sculpting affect brain wave frequencies during art making, whereas Chris Belkofer and coauthors mapped brain wave frequency effects after drawing. The findings of both studies support therapeutic assumptions that such brain functions as self-regulation, relaxation, memory, and spatial-temporal and visual processing are activated when people make art.

Read their research for aspects of art therapy we have intuitively known only now translated into brain maps, fre-

quency bands, and areas lighting up inside the intricate communications of the brain’s 100 billion neuronal cells. Far beyond the simple “right brain–left brain” discussions of the past, the research makes clear that the human brain is staggeringly complex—hence, we must thwart the desire to simplify it into easily digested, naïve pronouncements. Although technology can reveal patterns of cells firing in the brain when drawing, we still don’t know exactly what is taking place nor can we go straight to making therapeutic claims from these experiments. As the authors themselves will tell you, art therapy “cannot be reduced conceptually ‘as a single, mental process or brain region’” (Belkofer et al., p. 61) and “shifts in brain rhythms vary by participant, artistic training, and numerous other variables” (Belkofer et al., p. 66).

Do you find these ideas awesome—or do they fill you with dread? Creating a drawing in a sterile laboratory with a couple dozen electrodes gelled to your scalp (while trying not to confound the EEG by moving too much) is not exactly conducive to creativity, I admit. But I don’t think there’s cause for alarm, either, for those who appreciate art in all its mystery. On this point I again defer to Kennard (in Hutton, 2010), who compared art and neuroscience to the night sky. Imagine looking up on a clear night to behold the Milky Way and its glorious billions of stars. How could you love this sky and have no interest in astronomy, believing that its study somehow diminishes such love? Kennard contends that neuroscience only expands our wonder at art; it doesn’t reduce it, it only gets bigger. The beauty of well-designed neuroscience is that it gets you intensely curious about the unsung power in human beings. And that is certainly a primary interest of art therapists. It’s empowering to understand the brain as it shapes and is shaped by art therapy.

Developments in the Neurobiology of Art Therapy and Trauma

Although still preliminary, these astute collaborations of art therapists and neuroscientists demonstrate something important to the field: Brain imaging can offer tangible information about how a person is processing stimuli that cannot otherwise be observed or self-reported. For people who

are suffering from traumatic experience, such knowledge can advance effective treatment aimed at rebalancing brain functions that have been compromised. An article by Noah Hass-Cohen and coauthors is immensely informative, giving art therapists a guided tour of brain functions and showing us how and where trauma impacts and distorts the neural pathways that are necessary to safely navigate the world. We know, for example, that a highly reactive amygdala (in the brain's fear center) damages emotional and cognitive functioning whereas overactive prefrontal cognitions inhibit the limbic system, leaving the person feeling detached and disoriented. Artists themselves have confirmed that their practices not only quiet or distract waking consciousness but also seem to provide a natural way for the brain to keep the lines of communication between the frontal cortex and the limbic system "open and in good running order" (Kennard, 2007, p. 10).

Hass-Cohen and coauthors walk us through an evidenced-based treatment protocol that is grounded in neurobiological theory and clearly illustrated with a case of a trauma survivor. Readers will do well to study how the process of recontextualizing trauma memories can be carefully managed, along with potentially damaging missteps that could occur. Clients who face complex histories of trauma piled upon trauma can be particularly difficult to treat. In support of Hass-Cohen's principles of trauma treatment Kristina Naff presents a small-scale study that documents how art therapists actually are working with cumulative trauma. With these data Naff constructed grounded theory in answer to the question: What does an experienced art therapist's practice look like when these principles are put into action?

All of the researchers herein cite the groundbreaking work of Vija Lusebrink and her Expressive Therapies Continuum (ETC) as a cornerstone in developing the neurobiology of art therapy. As an art-based assessment tool the ETC is distinctly valuable; it relies not on projective interpretations of symbolic content but rather on empirical-clinical observations of how different art materials may be affecting a person's cognition, affect, visual spatial processing experiences, and behavior. We are especially fortunate to have Lusebrink's own contribution to this special issue that considers emerging research on the neural basis of imagery in light of her own early studies of brain imaging that led to the development of the ETC. Because art obeys the laws of the visual brain, such studies are invaluable for observing how art making reveal those laws to us (Zeki, 2001). Readers will witness art therapy research coming full circle as a new generation of clinician-researchers dialogue with the work of an art therapy founder, and confirm and build upon her influential role in constructing a neurobiology of art therapy.

What does neuroscience add to our understanding of art therapy? For those who hold out hope that brain re-

search will unveil deep truths about art therapy or even justify its practice, we must remember that the research is still quite young and unspecific in its ends. However, brain science does shed light on subjective experience and offers new vocabulary for examining practice. In her sensitively written viewpoint Annette Shore exemplifies this thinking by contemplating the "divided brain" as both an informative metaphor and a clinical reality for a child who experienced early relational trauma and disrupted attachment. Shore cites McGilchrist's (2009) allegorical conception of the right hemisphere as the side of the brain that sees itself connected to the world and the left hemisphere as standing aloof from it. When dominant, the latter can rob us of our capacity for empathy, reciprocity, and creativity. Perhaps above all else, art therapy fosters this essential emotional connection without which we cannot have an empathetic relationship to our surroundings nor even be able to construct a sense of self (Kennard, 2007).

Zeki (2001) proposed that artists, in a certain sense, have always been neuroscientists in their infinitely variable attempts to influence the perceptions of viewers and thereby activate changes in their brains. My brain is interpreting your brain when I behold your art creations and seek to understand you. Neuroscience reveals the relevance of our own reactions to art (Kennard, 2007) and hands our experience back to us, as if to say "here is your brain and your nervous system—this is where it's all happening for you." As this special issue demonstrates, the practice of art therapy can powerfully influence our human desire to communicate experience with all our faculties. When it comes to the complex beauty of the human brain, art has much to tell us about how the mind and the brain work. Despite the fact that there is so much more to learn and to discover, we enrich art therapy by adding a new dimension to its study and opening ourselves to its great potential.

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