



Support for a neurobiological view of trauma with implications for art therapy

Linda Gantt, PhD, ATR-BC, Louis W. Tinnin, MD*

Intensive Trauma Therapy, Inc., 314 Scott Avenue, Morgantown, WV 26508, USA

ARTICLE INFO

Keywords:

Trauma
Art therapy
PTSD
Dissociation
Alexithymia

ABSTRACT

Three lines of research support the concept that trauma is primarily a nonverbal problem: (a) evolutionary survival responses; (b) brain imagery studies of human responses to trauma cues; and (c) the relation of alexithymia to posttraumatic dissociation. Based on these research findings the authors offer a neurobiological view of psychological trauma that points the way to use art therapy as a primary means of treating posttraumatic symptoms.

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A convergence of research findings and clinical observations suggests that posttraumatic disorders involve nonverbal mental activity that escapes or overrides verbal thinking. The idea that trauma is a nonverbal problem is supported by three lines of study. The first line is the study of evolutionary survival strategies that make up the instinctual responses to trauma in animals and humans. The second is the neuroimaging study of responses in humans to reminders of previous psychological trauma. The third comes from recent studies relating the psychological construct of alexithymia to posttraumatic dissociation. These findings support a neurobiological view of psychological trauma that points the way to use of a nonverbal treatment (art therapy) for the adverse effects of trauma.

The hypothesized mechanisms of art therapy

According to Naumburg (1950), the healing mechanism of art therapy was that it offered “a specialized additional nonverbal technique for releasing, through symbolic imagery, the unconscious, repressed emotions” (p. vii). Building on the psychoanalytic theories of her day, Naumburg dealt with intrapsychic conflict, wish fulfillment, fears, and fantasy as expressed in art. Kramer (1971), whose work was informed by later developments in ego psychology, saw art therapy “primarily as a means of supporting the ego, fostering the development of a sense of identity, and promoting maturation in general” (p. xiii) as well as sublimating instinctual drives (pp. 160–161) and providing a means of symbolic action (pp. 204–205). Ulman, building on the general merits of these formulations, stressed that art therapy helped people “organize their experience of their inner and outer worlds into a coherent form” (1980, p. 6).

However useful these ideas may have been in general, they do not contribute to a specific direction for the treatment of posttraumatic disorders. For, as we contend, posttraumatic problems are not those of internal conflict, impulse control, or insufficient maturation of the ego. Posttraumatic symptoms can occur at any point in one’s life; no one, however psychologically mature, is immune to the deleterious effect of an overwhelming, life-threatening event.

The seminal theories on which art therapy has been based gave scant recognition of the contribution that actual traumatic events make to the development of clinical symptoms. In large part, this stemmed from the lack of recognition of the trauma-related disorders in mental health in general. It is ironic that Freud supplanted his early theory based on what had *happened* to his patients with a later one that was based on unconscious *wishes*. Now, over a century later, theorists are again considering the effects of specific events.

The addition of posttraumatic stress disorder (PTSD) to the third edition of the American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1980) and its retention in the revised fourth edition (American Psychiatric Association, 2000), along with more recent events in the early 21st century (wars, terrorist attacks, large-scale natural disasters, and the like) crowding the news, encouraged revisiting our ideas about the means by which art making can be therapeutic. Art therapists have responded with studies and reports of using art therapy with a wide range of trauma including disasters (Andruk, 1996; Herl, 1992; Howie, Burch, Conrad, & Shambaugh, 2002), combat PTSD (Collie, Backos, Malchiodi, & Spiegel, 2006), childhood sexual abuse (Hagood, 2000; Murphy, 2001; Sweig, 2000), adults (Rankin & Taucher, 2003; Spring, 2004; Waller, 1992), physical and medical trauma (Appleton, 2001; Chapman, Morabito, Ladakakos, Schreier, & Knudson, 2001), the treatment of dissociative disorders (Engle, 1997; Mills, 1995), and suggestions for education of art therapists who work with trauma survivors (Gonzales-Dolginko, 2003).

Our growing experience with nonverbal intervention in the art therapy treatment of posttraumatic conditions prepares us to re-

* Corresponding author. Tel.: +1 304 291 2912; fax: +1 304 291 2918.

E-mail addresses: lgantt@literati.com

(L. Gantt), louis@traumattherapy.us (L.W. Tinnin).

examine our assumptions about what works and why. Art therapists are looking toward devising a coherent nonverbal model for post-traumatic problems that will lead to more effective treatment. Francis Kaplan supports a scientific approach to art therapy (Kaplan, 2000). She contends that art therapy has relied largely on “borrowed” theory. She looks at developments in biology, evolution, and brain science for a new view on the creation and interpretation of art.

Noah Hass-Cohen (2003) regards the image-making in therapy as a concrete sensorimotor activity that can safely modulate traumatic affect and provide specific feedback in the form of art therapy directives and interpretation. This is in line with the hypothesis of Ogden and Minton (2000) that this process quiets the amygdala (the brain’s alarm button) and promotes more effective coping responses. They suggest that a more optimal balance between the amygdala and the hippocampus can support improved control and well-being.

Cathy Malchiodi believes that areas of research that are particularly important to art therapy include image formation, attachment theory, and the placebo effect (Malchiodi, 2003). She contends that as additional research on neuropsychology and mind–body paradigms emerge we will learn why images and image-making are central to enhance health and well-being.

McNamee (2005) describes a neurologically based art therapy modality – bilateral art – that activates both the right- and left-brains in the process of creating images. In her article she offers a protocol and a case example.

Major guidelines for trauma therapy

The International Society for the Study of Traumatic Stress adopted guidelines for treatment (Foa, Keane, & Friedman, 2000) that emphasized evidence-based methods but included unproven treatments that have been used. Art therapy was described as a possibly helpful ancillary treatment. The established treatments are divided into two categories, those designed to improve coping and adjustment and those designed to process traumatic memories, the so-called “exposure” therapies. The former group included cognitive-behavioral therapy, dialectic behavioral therapy, psychodynamic therapy, and interpersonal psychotherapy. The exposure group included Prolonged Exposure Therapy (Foa, Hembree, & Rothbaum, 2007) and Eye Movement Desensitization and Reprocessing (EMDR) (Shapiro, 1995).

A major guideline for the treatment of dissociative disorders issued by the International Society for the Study of Dissociation (2005) supports a more cautious approach to the treatment of dissociative disorders, assuming dissociation to represent a more complex and unstable posttraumatic condition. The recommendations are based on a perceived clinical consensus rather than evidence-based methods. They emphasize a phase-oriented approach with great attention given to the first of three phases (stabilization, trauma processing, and integration). The stabilization phase includes formation of a therapeutic alliance and ego strengthening by means of relationship psychotherapy. This requires long-term therapy before the trauma processing is done.

Methods for treating PTSD usually assume the etiology and pathology to involve conditioning and/or an abnormally prolonged stress response. The assumptions about dissociative disorders involve the elaboration of ego defenses – including dissociation itself – to counter overwhelming emotions that were disowned during and following repeated trauma in childhood.

An emerging concept in the recent PTSD literature posits the traumatic state and the subsequent posttraumatic symptoms as consisting of evolutionary survival patterns experienced as non-verbal instinctual reflexes. This notion is taking shape almost simultaneously in Australia, the Netherlands, and the United States.

An Australian, Valent (2007), writes about universal survival behaviors that can be detected in human posttraumatic symptoms. Ellert Nijenhuis and Onno Van der Hart in the Netherlands in association with Kathy Steele in the United States have developed the most comprehensive explanation of the emergence of evolutionary survival patterns in their structural theory of dissociation (Van der Hart, Nijenhuis, & Steele, 2006).

The Instinctual Trauma Response (ITR)

Our understanding of the role of evolutionary survival responses in trauma led to the concept of the “Instinctual Trauma Response” as a universal reaction to trauma in animals and humans (Gantt & Tinnin, 2007b). The human brain retains the neural networks for instinctual survival strategies acquired over evolutionary time from the oldest reptilian freeze to the most recent primate cognition (MacLean, 1990). First there was the freeze, then the mammalian flight/fight response, and finally, human cognitive strategies. In the throes of trauma a human tries first to execute intentional action. If that fails consciousness yields to reflexive mammalian flight or fight; if that fails, the person responds with the reptilian freeze. In effect, higher cortical functions go “offline” as it were.

Cannon (1914) first coined the term “fight or flight” to describe the mammal’s survival strategy of neural activation, autonomic nervous system response, and hormonal exchanges between the brain and the adrenal glands, all to mobilize the individual to survive a life-threatening danger. Selye (1936) described a state of collapse following that alarm reaction. He considered this state a fatigued stress response. The animal lapses into anesthetic immobility. This state later was described as the freeze reaction (Scaer, 2005, pp. 44–49).

Contemporary studies show that the freeze is not a fatigue state. Prolonged immobility in the face of overwhelming threat is a fundamental adaptive response with presumed survival value that occurs throughout the animal kingdom from insects to man (Hofer, 1970). The pattern of the freeze state varies among species and an individual may experience shifting intensity of the freeze in a single episode. The most profound freeze state is torpor, a kind of suspended animation characterized by a marked decrease in metabolic rate and a fall in the core body temperature (Blackstone, Morrison, & Roth, 2005). In reptiles this is a primitive freeze escape that allows the lizard to dive to the bottom of a pool and wait out the predator. Extended bouts of torpor have been studied in hibernating animals. Similar states that are brief and can change rapidly occur in many small mammals (Heller & Ruby, 2004).

The freeze state of an animal or person usually involves some degree of numbness to pain. It is only after recovery that the prey animal licks its wounds. In the course of trauma processing our patients describe their own experiences as very animal-like. Some describe the freeze state as a minor stunned experience while others describe it as a near-death experience of being utterly helpless. We surmise that humans are prone to lose body orientation because of the freeze-related numbing and loss of proprioception (recognition of bodily position); they may feel they have lost all connection to the body as people do in the symptom of depersonalization (Simeon & Abugle, 2006). They might describe an out-of-body experience with the location of their awareness somewhere else in space. This altered state of consciousness confers a relief of pain but comes with a problematic distortion of perception.

While emerging from the freeze an animal may show extreme submissive behavior. The human, too, may respond robotically to others with automatic obedience. The sequence of survival responses to a traumatic event makes up the ITR (Tinnin, Bills, & Gantt, 2002), the components of which are summarized below.

If in the face of overwhelming threat a person’s intentional cognition is thwarted then that person’s normally dominant verbal

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