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TITLE: THE NAT MODEL: FACTORS IN NEUROPSYCHOLOGICAL ART THERAPY

SOURCE: American Journal of Art Therapy v34 p107-11 My '96

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AUTHOR ABSTRACT

Although the use of art therapy with individuals with traumatic brain injury (TBI) has generally been neglected, the application of art therapy in neuropsychological settings supports the development of a neuropsychological art therapy (NAT) model. The NAT model proposed here is based in cognitive-interaction theory, placing emphasis on environmental factors and the need to develop approaches that incorporate an understanding of cognitive, psychological, and neurological processes. A knowledge of developmental and behavioral approaches is also important in the use of art therapy with individuals with TBI; and social support and environment are seen as influential in the success or failure of therapy. The NAT model is intended to provide a foundation upon which art therapists can construct approaches relevant to the deficits of a given individual.

Traditionally, art therapy has had a strong allegiance to psychoanalytic and psychodynamic therapies (Wald, 1986). Even so, pioneers in the field of art therapy—Margaret Naumburg, Edith Kramer, and Elinor Ulman, among others—experienced great difficulty in being accepted as valid practitioners in the field of psychotherapy. The necessity of aligning art therapy with psychotherapy was probably due to the fact that the art therapy field was dominated by this attitude, which even now remains a strong force in intervention. Art therapy today, however, has evolved, as has the field of psychology, to encompass multiple points of view. Humanistic, gestalt, behaviorist, and cognitive approaches to psychological treatment have become increasingly influential in art therapy (Robbins & Sibley, 1976; Rubin, 1987).

Along with the expansion of the theoretical base of art therapy, there has been an expansion of the environments in which it is practiced. Today, art therapy is practiced not only in psychiatric hospitals and clinics but also in vocational and educational institutions. The practice of art therapy includes all ages of individuals, from nondisabled school-aged children to older adults with Alzheimer's disease in nursing homes. Psychiatric patients, individuals with mental and/or physical disabilities, and people with terminal illnesses have been treated in various art therapy programs (Achterberg & Lawlis, 1984; Robbins & Sibley, 1976). Nevertheless, art therapy remains a relatively small part of the health services and medical community (Cheyne-King, 1990), and art therapy programs in neuropsychological settings make up an extremely small part of the field (McGraw, 1989).

Important elements of a model that art therapists must consider in developing an approach to art therapy for individuals with TBI are addressed here. Psychological schools of thought applicable to the neuropsychological setting are included, and the need for research on the diversity of deficits due to brain injury is emphasized. The relationship between the individual and his or her environment is the basis from which the art therapist must interpret the abilities and needs of the client. Hence, the NAT model consists of art therapy components necessary in treating individuals with TBI.

NEUROPSYCHOLOGY AND ART THERAPY

Neuropsychology in the United States began to establish itself as a distinct discipline in the 1940s. This combination of neurology and psychology emerged as a rig-

orous method of determining brain dysfunction with the use of statistically based examinations. The Soviet clinician A. R. Luria, with training in neurology and psychoanalysis, was one of the first to use careful and intensive observations of clients with brain damage—an approach allowing for hypothesis testing and generalization of findings which correlated specific areas of brain damage with particular behavioral deficits (Lezak, 1983). His behavioral descriptions and collection of patients' writings and drawings formed the basis for understanding brain function and the development of treatment.

Yearly, hundreds of thousands of individuals incur head injuries. Most are young adults, of whom at least 50,000 will be permanently impaired, physically, cognitively, emotionally, and behaviorally (McGraw, 1989). Yet, study of the brain and its function is relatively new to psychology and medicine, and only within the last decade has such brain research and the development of new instruments and equipment allowed for the practical application of neuroscience.

Our increasing knowledge of the brain, its functions, and the effects of damage indicate that rehabilitation programs can improve and retrain mental deficits caused by brain trauma (Parente' & Anderson-Parente', 1991). The number of programs for rehabilitation of mental deficits due to TBI is growing throughout the United States, creating a fertile new frontier for the use of art therapy (McGraw, 1989).

Neuropsychological assessment commonly includes the evaluation of motor, visual, and spatial skills through the use of drawing and construction tasks (Lezak, 1983; Parente' & Anderson-Parente', 1991; Springer & Deutsch, 1989). Often, tests involve free-hand drawing, copying, and construction of three-dimensional designs (Cheyne-King, 1990). However, once these art-based tests have been used to establish the location and nature of brain injury, they are generally not used again. If art-based activities can be used to diagnose brain damage, it should follow that they also can be important in rehabilitation. Art therapy, therefore, can be useful for retraining or maintaining skills in individuals with TBI (Cheyne-King, 1990; Hendrixson, 1986; McGraw, 1989; Poldinger & Krambeck, 1987; Wald, 1986).

For example, art therapy intervention following Cerebral Vascular Accident (stroke) can be designed to retrain gross and fine motor skills lost due to partial paralysis, and to recover memory functions as well as maintain emotional stability. In general, the flexibility and complexity of artmaking makes it well suited to address, simultaneously, the wide range of deficits often experienced by individuals with TBI.

Both the patient with TBI and his or her therapist benefit from the techniques of art therapy (Hendrixson, 1986). Through the use of art therapy, not only can motor skills, cognitive functions, and psychosocial skills be addressed (Poldinger & Krambeck, 1987), but rigorous research can be conducted with individuals who have documented physical injuries. Working with individuals with TBI can provide new opportunities to validate the efficacy of art therapy. In particular, retraining brain function with art therapy can allow for the accumulation of hard statistical data that documented the effects of treatment. Because brain scans and neuropsychological assessment can measure the physical nature and specific deficits involved in the injury, the amelioration of deficiencies can be statistically verified—a positive step in establishing the value of art with empirical evidence.

A NAT program should focus on diagnosis and retraining, with an emphasis on research neuropsychology covers the basis of brain architecture, function, and physiology, allowing for an understanding of the effects of damage and treatment (Kolb & Whishaw, 1990). Cognitive psychology aids in understanding the thought processes of the mind that involve attention, creativity, memory, and perception (Parente' & Anderson-Parente', 1991). Further contributions from developmental psychology can

assure a knowledge of the levels of development that the patient may have to achieve in order to return to normal functioning (Papalia & Olds, 1992). Drawing from these schools of thought and a knowledge of art, art therapy programming aimed at the specific deficits encountered in a neuropsychological setting can be developed.

COGNITIVE-FIELD INTERACTION THEORY AND NAT

Cognitive-field interaction theory focuses on the relationship or interaction of a person and his or her psychological environment or "life space." Life space encompasses what needs to be known about an individual to understand his or her behavior within a specified psychological zone at a certain time. In NAT, deficits that exist are perceived as altering the individual's interaction with the environment and, in turn, his or her ability to generate goal-directed behavior (Cheyne-King, 1990; Kinsbourne, 1982). Cognitive-field interaction allows for the development and testing of relationships and leads to the ability to predict behavior in a given psychological situation (Bigge & Shermis, 1992).

The stimulus-response associations of behavioral psychology are generally considered unimportant in cognitive-field interaction. There are, however, many instances in which mechanistic learning occurs. Many acquired skills, such as those used in sports or drawing, involve muscle movements that do not require deliberate cognitive operations. In fact, recent research indicates that learning occurs cognitively and habitually (Eccles, 1977; Mishkin, 1982; Thompson, 1988). Among individuals with TBI, their capabilities or deficiencies determine the type of learning or retraining that needs to take place.

The importance of neuropsychology in the understanding of learning also is de-emphasized in cognitive-field interaction theory (Bigge & Shermis, 1992). This oversight may be appropriate when dealing with nondisabled individuals; but in working with individuals with TBI, brain research findings cannot be overlooked (Cheyne-King, 1990). The concept of a biological organism interacting with an environment is the basis of neuropsychological and behavioral theories. "Only by living in a human world and having a biological organism of a unique type does a biological human emerge as a psychological person or self" (Bigge & Shermis, 1992, p. 176).

Overall, the appropriate cognitive-field interaction theory for the application of art therapy in a neuropsychological setting must stress the importance of the behavioral and neuropsychological aspects of learning. NAT reestablishes the balance of an individual's cognitive field while taking into consideration deficits that are neuropsychological and may be exhibited cognitively, behaviorally/emotionally, or both.

NAT AND THE INDIVIDUAL

The individual with TBI presumably comes to neuropsychological retraining with varying degrees of innate abilities as well as previously acquired learning and behavioral patterns (Prigatano, 1991). Groups of individuals with TBI consist more often than not of individuals with a wide variety of personalities, cultural and family backgrounds, and developmental levels (Prigatano, 1991; Wald, 1986). The task of NAT, therefore, can be quite complex. Learning patterns and mental deficits must be seen as being influenced by both environmental and psychological factors. Thus, NAT should be able to recognize and work with, and/or alter, existing cognitive and behavioral patterns (Prigatano, 1991).

Although the behavioral view is effective in evoking a given behavior through reinforcement, it is only partially valid (Poldinger & Krambeck, 1987). The inability of the behavioral techniques to deal with individual variation may be one reason for the apparent lack of emphasis, until recently, on retraining (Diller, 1987; Stein, 1988).

The cognitive school of thought, because of its flexibility, is far superior in dealing with and accounting for the individual natures of people with TBI. Considering the importance of mental and personality variation in an individual's ability to perform, NAT must take a flexible approach to retraining, basing methods not solely on what works best for the average.

Individual variation is now a growing area of study within neuropsychology and cognitive psychology. However, it is not without its shortcomings (Stein, 1988). In any group where the retraining is dependent upon one method, some individuals are bound to be incompatible with that method (Poldinger & Krambeck, 1987; Wald, 1986). Therefore, in dealing with retraining following TBI, many approaches are required (Prigatano, 1991). The brain is extremely adaptive and resilient; and if appropriate retraining approaches are used and individual differences addressed, people with TBI should eventually be assimilated satisfactorily. This is the role and the challenge that art therapy may assume.

NEUROPSYCHOLOGICAL ART THERAPY (NAT) MODEL

A comprehensive model of NAT has been developed (Figure 1). This perspective views the goal or outcome of NAT as the transfer of progress made in the therapeutic environment to the individual's daily life.

Impairment is generally seen as a result of changes due to neurological damage, which yields psychological and cognitive aberrations in combination with premorbid personality traits (Prigatano, 1991). It is the tension between the individual's premorbid functions and functions following TBI that the art therapist seeks to resolve. Based on this objective, and incorporating the importance of environmental factors within the life space from cognitive-field interaction theory, a top-down model of NAT has been delineated.

There are three primary factors within the individual that the art therapist must influence, and perhaps compensate for, if therapy is to be effective: the cognitive, psychological, and neurological functions. The individual's cognitive aspects consist of his or her orientation ability, attention and concentration, and memory functions, which form a basis for developing higher-level skills such as reasoning and judgment (Parente' & Anderson-Parente', 1991). The psychological component involves the individual's emotional state, which may vary from depression to mania and can include conditions such as personality disorders (Prigatano, 1991). The cognitive component, concerned with processes related to acquiring and using information, is distinguished from the emotional context of the psychological component (Papalia & Olds, 1992). Within the NAT model, the neurological focus is on the type of physical damage to the brain and its correlation with specific deficits. These primary components are overlapping, interactive, and seen as dependent upon one another. Therefore, if a NAT program is to be effective, one area cannot be approached without some consideration of the other two. NAT approaches should be specifically designed to include diagnostic as well as retraining capacities.

Cognitive, psychological, and neurological factors are exhibited by and have direct influence upon behavior and emotion. Behavioral observation is, therefore, important in revealing difficulties not detected by neuropsychological assessment (Kaplan, 1988). It is in this aspect of the model that behaviorist theory is important. The identification and use of effective rewards can be influential in obtaining satisfactory results in the client's ability to control the behavioral and emotional aspects of his or her personality. Hence, the control of behavior and emotion may be a prerequisite to achieving treatment goals related to higher-level primary factors (Parente' & Anderson-Parente', 1991).

The triangular structure of the primary mental factors, along with the behavioral and emotional components outlined above, is the focal point of NAT. Using art to effect alteration in these elements, the art therapist's goal is to facilitate the transfer of learning that takes place in the NAT environment to the individual's external environment or daily life. The environmental interface represents the individual's relation to or ability to relate to the external world. The capacity of the environmental interface is directly controlled by the individual's mental abilities and determined by two factors—social support of immediate family and friends, and developmental level, that is, the framework within which the individual encounters the external world.

The sphere of the client's immediate existence, as illustrated in Figure 1, consists of two halves. The upper half of the sphere is the realm of the therapeutic environment and direct intervention. The lower half is a gauge of the effectiveness of therapy. The positive effects of treatment are revealed through growth in both the environmental interface and developmental level. Thus, successful therapy will yield an expansion of the lower section, due to transfer, with a corresponding reduction in the area of the upper section. Although the return of all premorbid functions may never occur, stabilization and growth are possible.

CONCLUSION

Art therapy and neuropsychology have developed to allow new possibilities for treatment that are just beginning to be realized. Research points to a natural union of these two fields that can yield benefits for both.

The NAT model put forth here is intended to give art therapists an understanding of the major factors involved in working with individuals with TBI. There is a great need for more research in this area; but the possible benefits in using art therapy for understanding brain function and retraining skills are long overdue.

Added material

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Figure 1

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WBN: 9612204653004