THE EFFECTS OF A DREAMWORK TECHNIQUE ON CREATIVE POTENTIAL

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by

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"...the art of creative dreaming is not so much concerned with dreaming itself as with the art of *using* dreams. Tonight I may dream about a man who swallows a chemical and and turns into a fiend; but tomorrow its unlikely that I'll be able to write a seminal novel based on my dream. All successful creative dreamers must needs be artists in their own right; all artists are not necessarily creative dreamers; most creative dreamers are not artists, and therefore their creative dreams go for nothing.

Dreams do not provide a short-cut to genius."

John Grant (Grant, 1984)

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ABSTRACT

The aim of this study is to determine whether an awareness of unconscious processes, as elicited by a dreamwork technique, will increase creative potential.

In the present investigation, 54 undergraduate students were randomly divided into three groups. Each group was tested for creativity on two measures: (1) The Torrance Tests of Creative Thinking, and (2) The Rorschach Test (movement response). For three weeks all subjects completed a dreamwork assignment, which was systematically varied across the three levels of the independant variable. The experimental group recorded their dreams daily, and answered questions on a dreamwork questionnaire designed to stimulate associations and amplifications to dream imagery (Group A). One control group recorded their dreams and performed a logical task on their content (Group B), while the other control group collected dreams from other people, and performed the same logical task on their content (Group C). It was hypothesized that those subjects who had an opportunity to work with and amplify the unconscious imagery occurring in their dreams would be more likely to increase in their creative potential, than those subjects who did not have this opportunity.

Each subject met weekly with the experimenter for supervisory and motivational purposes. At the end of the study all subjects were retested with a parallel version of the Torrance and the Rorschach. Scoring on the Torrance yielded ten different measures, and six measures on the Rorschach.

Using a two-way analysis of variance of repeated measures, no significant changes occurred on the Rorschach scores, but on the Torrance Tests, highly significant changes took place in Figural measures of Fluency, Originality, Elaboration and Figural Totals, as well as highly significant increases on all four verbal measures of Fluency, Flexibility, Originality and Verbal Totals. Since no interaction occurred, t-tests were performed, to discover that the increases in creativity on the Torrance occurred not only to experimental subjects in Group A, but also to subjects in Group C. These findings are discussed in relation to previous theoretical and empirical work on the creative process, and it is suggested that the increase in creativity, as measured by a divergent thinking test battery (Torrance Tests of Creative Thinking), was produced, not by the actual content of the tasks involved, but by the establishment of a problem-solving mind set.

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Social scientists are becoming increasingly concerned about the extent to which the intellectual resources of society are being used and developed. The scientific and technological advances of the present century have necessitated invention at an ever-increasing rate. While this has resulted in unprecedented material advancement, it has at the same time created new and growing dangers. Nuclear power, space travel and the population explosion have created pressing problems, imaginative solutions to which have become an urgent necessity.

It has been suggested that the most important of our natural resources may lie in undiscovered human potentialities, not yet fully exploited. Schools tend to turn out conformists and stereotypes, rather than original thinkers, individuals whose education is "completed" rather than a continuous process. In the sciences, there is an ample supply of technicians, but very few who can creatively formulate fruitful hypotheses and theories. Advances in automation have led to an expansion in leisure time, but passive entertainment and regimented group activities increasingly predominate over creative activities. With increasing pressures towards conformity, people have fewer and fewer opportunities for realising their own potentialities (Getzels, J.W. & Jackson, P.W., 1962; Guilford, J.P., in

Anderson, H.H. (Ed.) (1959); McKinnon, D.D., 1962). A study led by V.H. Papanek was conducted at an American university to determine what was the so-called "drop-off" age, at which a person's creative ability starts to decline. The researchers began by studying 45-year-olds, and determined that 2% of them could be classed as being highly creative. In order to discover the "drop-off" point, they next studied 40-year-olds, and found 2% of them to be highly creative. Continuing in this fashion, they gradually worked their way down, until they reached 10-year olds - the same results were achieved - 2% of the populations studied could be classed as highly creative. Then an extraordinary fact emerged. At the age of 7 years, the figure rose to 10%, and at the age of 5 years, the figure leapt to 90%. The drop off point had indeed been discovered, between 5 and 8 years of age (V.H. Papanek, in Gale, 1984). Roger Gale, in an article titled "Over the hill at 8 years old", asks what the reason for this drop off could be and suggests that the high creativity level of the 5-year-old is a result of the unstructured, affectionate, play-oriented way in which the child has learnt about his/her world, in an atmosphere conducive to the development of divergent thinking. As soon as the child enters school, however, the system is geared towards teaching convergent thinking, and turning out conformists. In the pressure of learning the right answers, these children may forget how to ask the questions. New hypotheses are generated, new frontiers explored, not by a

passive acceptance of facts, but by the capacity to be puzzled, curious, capable of wondering. Teaching methods which stress acceptance of the known, rather than discovery of the unknown, can so easily destroy the natural curiosity of the child. The few non-conformists, who are generally not popular with the teachers, are the children who actually survive the system, and go on to become our creators and originators.

A type of creativeness exists in some measure in every individual - a special kind of perceptiveness, a heightened awareness and responsiveness, or quite simply imagination. These are qualities that exist in every child, but are frequently lost in adulthood. The purpose of this study is to discover a new way of allowing people to increase their creative potential, or perhaps simply to regain an ability lost a long time ago.

More specifically, the aim of this study is to determine whether an awareness of unconscious processes, as elicited by dreamwork techniques, will increase a subject's creative potential. Creativity will be defined in terms of creative potential, which is thought of as existing along a continuum throughout the population, rather than in terms of actual productivity or achievement.

This work has been suggested in part by the many documented anecdotes throughout history, and across many cultures, of famous men and women whose nocturnal dreams led them to creative discoveries or productions, whether scientific, artistic or literary (Davé, 1979; Dreistadt, 1971).

Over the past fifty years, much theoretical and empirical work on the nature and process of both dreaming and the creative process has taken place. However, very little empirical research has focused on the exploration of the relationship between creative problem solving and dreaming, with its potentially adaptive uses for humanity.

Because a review of the literature surrounding the topic of creativity has revealed many conceptual and definitional problems, the author will attempt to explore several different theoretical perspectives from which creativity has been viewed, in order to develop an operational definition for the purposes of this investigation. It will be seen that whether viewed from a psychoanalytic, Jungian or cognitive viewpoint, the process of creativity appears to be experienced as a continuous interplay between two major modes of functioning, one linear and rational, the other arational and intuitive. According to Ornstein, these two modes complement each other during the creative process, with the verbal-scientific intellect clarifying and communicating the ideas of the intuitive mode (Ornstein,

1972). These theoretical descriptions of the creative process will be shown to have a certain amount of empirical support.

Resulting from the research indications that the unconscious plays an important part in the creative process, has arisen a body of research exploring the use of techniques that remove subjects from their normal waking, conscious condition, and expose them to situations in which their consciousness is altered, for the purposes of stimulating the creative process.

Most of the creativity enhancement techniques using altered states of consciousness have used techniques such as hypnosis, hallucinogenic drugs, free association or meditation (Barr, Langs et al, 1972; Davé, 1979; Faber, 1978; Gowan, 1979; Gur & Reyher, 1976; Harmon, in C. Tart (Ed), 1969; Rosenberg, 1976).

The study of dreams developed, on the one hand from the theoretical formulations of Freud and Jung, based on their clinical observations, and from neurophysiological work on the nature and function of sleep, on the other. Out of these initial beginnings has arisen a vast body of facts, as well as many unanswered questions, in a variety of areas relating to the nature, process and purpose of dreaming.

It will be seen that although little formal, empirical work has been attempted to facilitate creativity through the use of dreaming, certain cultures, organisations and therapies specialising in dreamwork have apparently successfully used dreamwork techniques to enhance both mental health and creativity, which will also be shown to have strong connections.

Having explored and defined these two fields, i.e. dreams and creativity, and shown how these two fields have been related, both theoretically and empirically, the hypotheses for this investigation will be expressed. Briefly, it will be hypothesized that those subjects who have an opportunity to explore and amplify the unconscious imagery occurring in their dreams will be more likely to increase in their creative potential than subjects who do not have this opportunity.

2. RELATIONSHIP BETWEEN DREAMS AND CREATIVITY

2.1 Creativity

2.1.1 Definition of Creativity

In reviewing the literature, it is difficult to find a widely acceptable definition of creativity, as it seems to have different connotations for different authors.

Creativity may be defined in terms of socially useful products resulting from a process of associating one image to another (Barron and Harrington, 1981, p 441; Khatena, 1978). Creativity has occurred when the imagery resulting from the process becomes a finished product that is communicable to others (Khatena, 1978). Creativity may also be regarded as being intrinsically valuable - i.e. dreams, imagination of a child, without resulting in a socially valuable product.

In the Norms-Technical Manual of the Torrance Tests of Creative Thinking, Torrance defines creativity as "a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; searching for solutions, making guesses, or formulating hypotheses about the deficiencies: testing and retesting these hypotheses and possibly

modifying and retesting them; and finally communicating the results."

Newell, Shaw and Simon (1962), in Torrance's Norms-Technical Manual, state that problem-solving may be called creative "to the extent that one or more of the following conditions are satisfied:

1. The product of the thinking has novelty and value (either for the thinker or for the culture).

2. The thinking is unconventional, in a sense that it requires modification or rejection of previously accepted ideas.

3. The thinking requires high motivation and persistence, either over a considerable span of time (continuously or intermittently) or at high intensity.

4. The problem as initially posed was vague and undefined, so that part of the task was to formulate the problem itself."

According to Guilford, the creative process makes use of divergent thinking, i.e. the thinking process involves much searching about and going off in various directions. The divergence may arise where there are several acceptable

answers to a problem, or freedom from a high degree of structuring of a situation. In contrast, convergent thinking involves almost always one conclusion or answer that is regarded as unique or correct, and thinking is channelised in the direction of that answer. This is the type of thinking necessary for success in the majority of items in the average intelligence test. However, what we recognise as creative ability is most clearly representative of the divergent type of thinking, which is less goal-bound than convergent thinking (Guilford, 1959, pp 469-479).

Mednick defines creativity as "the forming of associative elements into new combinations....The more mutually remote the elements of the new combinations, the more creative the process or solution" (Mednick, in Worthen and Clark, 1971, p 114).

In attempting to distil the essence of creativity, it seems that the process of creativity can be defined as involving the generation, implementation and communication of efficient strategies for acquiring new and useful information. In this process a creative impulse is transformed into a communicable product, new to the culture, through the use of technique and sign manipulation (Garrett, 1974, p 241; Gowan, 1979, p 39).

2.1.2 Theoretical Perspectives

2.1.2.1 Psychoanalytic Theory

The primary process, as outlined by Freud, emerges from the most primitive part of the id, occurring in dreams, infantile thought, and hallucinatory experiences. The secondary process, which develops later, is rational, logical and reality-oriented. Although Freud never integrated his ideas about creativity into a systematic theory, he recognised that artists differed from other people in their ability to gain access to their unconscious conflicts and to elaborate them into a form that is communicable to others, by way of cooperation between id and ego (Arieti, 1978, pp 227-9).

Suler conceptualizes the creative act as a "special form of interaction between primary and secondary process thinking in which a novel idea or insight is generated by the loose, illogical, and highly subjective ideation of primary process and is then molded by secondary process into a context that is socially appropriate and meaningful to others" (Suler, 1980, p 144). The creative person is not dominated by the contents of his/her unconscious, rather, he/she uses them. He/she is able to regress precisely because he/she knows he/she can return to reality (Kneller, 1965, p 30).

Kris also emphasized the importance of primary process mechanisms in the creative process. The primary process phenomena of displacement, condensation and substitution used in the creative process, he referred to as "regression in the service of the ego" (Suler, 1980, p 147; Tasman, 1976, p 259). Because this is a lowering of the ego's function to a more concrete level, that promotes adaptation, he calls it adaptive regression.

Arieti does not regard this as a regression, but as an "emerging accessibility or availability" of information normally unavailable, and suggests that when primary and secondary mechanisms combine in a creative way, a tertiary process mechanism comes into being (Arieti, 1976, p 12).

Arieti calls the logic of primary process paleologic or archaic logic, explaining that what appear to be schizophrenic forms of irrationality are rather re-emerging archaic forms of rationality (Arieti, 1978, pp 227-9). Some primary process phenomena, common to dreams and schizophrenia are concept concretization - e.g. a person who feels his wife is poisoning his life might have a delusion that she is poisoning his food - this could occur to a healthy individual in a dream; also changes in word significance, and allowing similarity to become identity (Arieti, 1978, pp 227-230).

Arieti suggests that in humour we perceive a situation as witty when we expect to react to logic and instead are confronted with paleologic logic - the comic response occurs when we perceive the discordance. However, the discordance must not be so great that no possibility of confusion can occur. In schizophrenic thought the language is often so far from reality that no possibility of confusion with logic is left. However, a primitive form of cognition can be changed into an innovation when a primary process mechanism is appropriately matched with a secondary process mechanism. The humorist uses the logic-paleologic discordance technique, the poet uses metaphor - showing his/her perception of the similar in the dissimilar. Art uses largely paleologic reinforcement - using a symbol identifies an abstract concept with a concrete example (Arieti, 1978, pp 230-239).

According to Suler, personality factors which assist a person to gain access to primary process thinking include flexible defences, a sense of interpersonal trust that supports an expectation that the creative work will be acknowledged, and a secure sense of identity that helps the person deal effectively with the affect-charged aspects of primary process thinking (Suler, 1980, pp 158-9).

In sum, the psychoanalytic view of the creative process is that of a regression or access to primary process thinking

for the generation of creative ideas, and then a return to secondary process thinking in order to synthesize the material (Suler, 1980, p 150). It is the secondary process that enables the artist to select, discriminate, integrate and control his/her associations into a formal expression, that can be considered a creative product (Roth, 1975, p 380).

2.1.2.2 Jungian Theory

Jung considered creativity to be a form of fantasy, which he divided into three types: (1) voluntary, as in an artificial concoction of conscious elements; (2) passive, as occurring in the dream or psychotic state; and (3) active, as the fantasy occurs when the experience is guided and altered consciously. In this experience of active imagination, which Jung developed as a therapeutic tool, there is a general movement from unconsciousness to consciousness. This leads to a subsequent elaboration and unfolding. Unconscious images motivate and provide a source of new images while the individual synthesizes and focuses on what is revealed (Casey, 1974, pp 2-3). In the process of coming to terms with his/her own unconscious material, the individual is helped by active imagination to begin, increasingly, to take responsibility for him/herself (Watkins, 1976).

Jung considered the Freudian explanation of symbol formation to be limited by the assumption that only personality dynamics can create images (McCully, 1976, p 68). He believed that this kind of creativity is produced by the extraverted artist, who remoulds his/her outward experience, whereas a different kind of creativity occurs in the introverted artist, who allows him/herself to be overwhelmed by imagery stemming not only from his/her personal unconscious, but from non-dynamic, collective sources, representing the eternal symbols of humanity, which he/she then elaborates and shapes into a finished creative product (Jacobi, 1962, p 24, McCully, 1976, p 68).

Jung saw the unconscious as having a purposive and creative function, in that as its symbolic messages become decoded by the conscious mind of the individual, that individual becomes increasingly responsible for him/herself, and can thus make more appropriately moral and responsible choices. The two modes of consciousness therefore complement each other; the unconsciousness provides the symbolic communications relating to the deepest needs of the Self; the consciousness becomes aware of, and translates, this communication, but is then responsible for carrying out the messages. This attitude, through which the conscious and unconscious combined their functions, Jung referred to as the "transcendent function" (Jung, 1971, in Watkins, 1976).

The question still remaining relates to the origin of the creative impulse, in other words, what is the source of creative potential. According to Jung, creative potential stems from both personal and collective sources, from the archetypal energy of mankind. (Jacobi, 1962, p 24; McCully, 1976, p 68).

2.1.2.3 Cognitive Perspectives

2.1.2.3.1 Hemisphericity

According to the research evidence of the neurological work of Bogen (1975); Gazzaniga (1975); Myers & Sperry (1956); and Sperry, Gazzaniga & Bogen (1969), over the past fifty years, the cerebral cortex of the brain is divided into two hemispheres, joined by the corpus callosum. The left hemisphere controls the right side of the body, and the right hemisphere, the left side of the body. Each hemisphere is in fact capable of assuming the functions of the other, but in fact the two hemispheres have specialised functioning. The left hemisphere is mainly involved with logical, analytic functioning, particularly in verbal and mathematical functions, operates in a linear fashion, and processes information sequentially. The right hemisphere is more holistic and relational, and operates in a simultaneous, rather than sequential, manner. It has limited language ability, being concerned rather with

spatial orientation, creative productions, recognition of patterns, faces, etc (Ornstein, 1972).

According to Ornstein, the neurological evidence of the specialization of the two hemispheres may help us to understand more about the duality of consciousness reflected many times in literature as between reason and passion, or between thinking and intuition. Another dichotomy is the split proposed by Freud, between conscious communication, which is verbal and rational, and unconscious communication, which is non-verbal and sometimes seemingly irrational, such as body movement, facial expression, gestures and tone of voice (Ornstein, 1972).

Ornstein refers to the split-brain research by Sperry in which the two hemispheres were surgically separated. In several studies on these patients it was shown that they were unable to respond to simple requests because the two hemispheres were no longer communicating with each other, so that the verbal mechanisms had no access to emotional information, and vice versa - i.e if a red or green light was flashed to the left visual field (controlled by the right hemisphere), the patient was unable to verbalise the answer. Ornstein suggests that a similar process may underlie the Freudian symptoms of repression and denial (Ornstein, 1972).

During the course of a creative act, a constant interaction is occurring, from left-hemisphere functioning (representing conscious activities such as language and reasoning), to right-hemisphere functioning (representing non-verbal activity that is more unconscious) (Gordon and Poze, 1981, p 8). Right-hemisphere functioning may be regarded as an altered form of consciousness, a deviation from the general norms of alert, waking consciousness (Krippner, 1968, p 149).

2.1.2.3.2 Altered States of Consciousness (ASC)

Ludwig defined altered states of consciousness (ASC's) as any mental state "induced by various physiological, psychological, or pharmacological maneuvers or agents, which can be recognized subjectively by the individual him/herself (or by an objective observer of the individual) as representing a sufficient deviation in subjective experience of psychological functioning from certain general norms for that individual during alert, waking consciousness " (Krippner, 1968, p 149).

This deviation may be an extreme preoccupation with inner mental processes or sensations, changes in formal characteristics of thought, or a change in one's usual reality set. In order to attend to internal mental processes, a person must have a cognitive style which allows

this to take place with minimal interference from external stimuli (Tasman, 1976, p 262).

Many investigators have assumed that artists experience some type of ASC in which there is direct access to unconscious material. Throughout history many creative insights and illuminations have occurred to famous persons while in an ASC - sleeping, drugged, hypnotized or meditating (Tart, 1968, p 20). Many creative persons have been known to have used drugs to weaken the control of the ego and liberate the forces of the unconscious - however, this raw material must be brought under the control of the intellect to result in creative achievement (Kneller, 1965, p 55). Rothenberg suggests that creativity is the mirror image of dreaming, "is one of the highest, if not the highest, kind of adaptive mental process. It is not regressive, irrational, a concrete type of thinking, or even a radically altered state of consciousness" (Rothenberg, 1979, p 52).

Ludwig points out the diverse functions served by ASC's - maladaptive expressions include fugue states, acute psychotic episodes, escape into drug addiction or intoxication, demonic possession. Adaptive expressions include healing - e.g. trance states used in diagnosis, healing through prayer and meditation, exorcism, hypnotherapy; sleep and dreaming themselves help to maintain psychic health. Another adaptive expression would be the

search for new avenues of knowledge or expression - e.g. the areas of religion, passive meditation, revelatory experiences, mystical and transcendental experiences have helped many people reaffirm emotional values, resolve emotional conflicts and cope more effectively with their lives (Ludwig, 1966, pp 231-232).

2.1.2.3.3 Process of Creativity

The process of creativity has been divided into four phases by Graham Wallas.

(1) First, there is preparation - the academic discipline involved for a long period of time, working at a problem, but without solution - using left-hemisphere processes.

(2) In the second phase, incubation, the conscious efforts are relaxed, and logical, rational thought is abandoned by any relaxation technique that allows subliminal non-verbal, right-hemisphere processes to emerge.

(3) The third phase, illumination, usually occurs in a sudden burst of insight - the "aha" experience, often when the person's attention is furthest removed from the problem.

(4) In the remaining phase, verification, there is a movement back to left-hemisphere, logical, dialectical processes, and the work is actually completed.

In the healthy, creative individual, left and right hemispheres do not conflict, but operate in harmony, moving rhythmically back and forth, at various stages of the creative process (Wallas, in Gowan, 1978, p 23). Severe inner conflicts block the process, limiting the capacity for insight, creativity and growth (Gowan, 1979, p 39; Martin, in Simon, 1977, p 6).

Although it appears that major creative accomplishments occur during the temporary dominance of the right hemisphere - i.e. during an altered state of consciousness, both hemispheres must work together in the formation of a creative product. The right brain will generate the idea, the intuition, whereupon the left brain will use the tools appropriate for expression of the vision - i.e. colours, sounds, words, movement or scientific creation. Conscious ego functions are required during the first and fourth stages, but the second and third stages require the surrender of these functions.

Dreistadt shows how the four stages of creativity help to explain how creative work can occur in dreams. Artists such as writers, composers and painters use their dreams

literally, whereas scientists, philosophers and inventors use their dreams either literally or analogically to solve their problems (Dreistadt, 1971).

Gowan suggests that creativity can be classified along a five-point continuum from rational to psychedelic, with the highest form represented as a high degree of mental health, emphasizing non-conformity and openness to experience (Gowan, in Khatena, 1976, pp 337-338).

Garrett suggests that we all have the potential to use our right-brain strengths but it is the creative thinkers who are open to translating their visions and dreams into the communicable knowledge and creative works we can all enjoy (Garrett, 1976, pp 239-249).

If we look at dream interpretation in terms of the relationship of the two hemispheres, then "making the unconscious conscious" may involve the left hemisphere processing of visual, unverbalised constructs fed into it from the right hemisphere during the dreaming process (Stone, 1977, p 281).

Using Wallas' four-stage creativity model, it becomes possible to explain situations where solutions to problems occurred after a period of sleep. If a person goes to sleep after a preparation phase, then sleep or dreaming becomes an

to primary process thinking - leading to psychosis, are detrimental to creativity (Suler, 1980, p 159).

Arieti points out that creativity and mental illness are both transformations of reality, the former motivated to enrich lives, evoke a universal response or enlarge human experience, while the goal of the psychotic is to fit reality into his/her private world of feeling and delusional thinking (Arieti, 1978, p 225).

Many writers, e.g. Maslow, Rogers, Fromm, propose that highest levels of creativity can be linked to mental health, and that creativity potentially exists in everyone. Awareness of one's own unconscious conflicts appears to contribute to the growth of one's creative abilities (Rosen, 1975, pp 144-5). Simon argues that severely conflicted persons cannot cope with the experience of altered states of consciousness and are less creative than healthy persons (Simon, 1977, pp 3-12). Hammer concludes that the capacity to be in touch with deep unconscious forces without breaking down is crucial to the artist (Hammer, 1975, pp 173-5). The content of the imagery produced may appear just as pathological as that of the neurotic, but the artist's tolerance for this content is stronger and healthier.

2.1.3 Research

2.1.3.1 Jungian Research

In a study investigating the relationship between dreams and waking creative potential, Welman (1985) showed a significantly positive correlation between archetypality scores of nocturnal dreams and waking creative potential, as measured on the basis of M, FM, and m responses to Rorschach plates. Previous studies have shown the Rorschach to be a useful tool for the study of creativity, and there has been considerable support for the validity of the movement responses as a measure of creative potential (Dudek, 1968, pp 535-546; Rayachaudhuri, 1971, pp 113-132; Welman, 1985).

2.1.3.2 Altered States of Consciousness (ASC)

Most of the empirical research has focused on the effects of ASC's on creativity and includes work on dreams, hypnosis, imagery techniques and drugs. Using hypnosis to bring creative dreaming under experimental control, Davé induced dreams in subjects at an impasse in the course of working on an academic, vocational or personal problem. Within one week of treatment, a significantly greater number of subjects were able to overcome their "creative blocks", compared to a control group which received a rational-cognitive treatment (Davé, 1979, pp 293-302).

A series of studies conducted by Bowers et al on the enhancement of creativity by hypnosis has been criticized on methodological grounds. The main criticisms were that a demand effect can operate even in a hypnotized subject if he/she thinks his/her creativity is being challenged, and that no sufficient precautions were taken to prevent the control subjects from becoming hypnotized.

In an improved design, Gur and Reyher (Gur and Reyher, 1976, pp 237-249) administered the Torrance Tests of Creativity with modified instructions requiring subjects to wait passively for visual images in response to the test stimuli. Subjects were thirty-six highly susceptible males, divided into hypnosis, simulation and waking groups. A control group of twelve subjects received the same test under standard instructions. The hypnotized group scored higher than all control groups on over-all creativity and on Figural creativity, but not on Verbal creativity. The results seem to support the application of the ego-analytic concept of "adaptive regression" to both hypnosis and creativity. They also seem to confirm the association found between hypnosis and the activation of the non-verbal cerebral hemisphere (Gur and Reyher, 1976, pp 237-249).

In a study by Rosenberg, playwriting students hypnotized by the suggestion that they would be able to solve problems in

their writing discovered this intervention had a discernable effect on their work. In another experiment, the hypnotist was able to draw out richly evocative details of descriptions of people and situations, from the writer's personal store of memories (Rosenberg, 1976, pp 203-9). Of course, as Jane Simon points out, in hypnosis the encounter with the self and reality is missing, and by bypassing the inner conflicts necessary for the gaining of creative insights, a creative product cannot be achieved. The fourth stage of the creative process - verification, the hard work, using left-hemisphere analytical processes, is still necessary to integrate the right hemisphere manifestations (Simon, 1977, p 7; Suler, 1980, pp 150-3).

Freedman found that groups receiving "free association" training scored significantly higher on the Remote Associations Test administered after the training sessions (Freedman, 1965).

Gowan suggests that right-hemisphere imagery is apparently the vehicle through which incubation produces creativity. Imagery can occur under induced altered states of consciousness, e.g. hypnosis, dreams, trances, hypnogogic/hypnopompic, drugged states, as well as during more normal states of consciousness, e.g. daydreaming, fantasy, meditation, relaxation, sensory deprivation. Apparently right-hemisphere imagery goes on all the time,

but to become aware of it, two conditions are necessary: (1) a lowering of sensory input; (2) stopping the internal verbal chatter (Gowan, 1979, pp 39-51; Gowan, 1978, pp 23-32).

In a study by Harman et al, the effects of mescaline on creative problem-solving were investigated. A single drug-induced problem-solving session was structured with particular focus on establishing subjects' expectancies and a psychosocial milieu conducive to creative activity. Tentative findings, based on tests of creativity, on subjective reports and self-ratings, and on the utility of problem solutions, suggested that psychedelic drugs appear to facilitate creative problem-solving, particularly in the "illumination phase". Results suggest that increased creative problem-solving ability may continue for some weeks subsequent to the session (Harmon, in C. Tart (Ed), 1969, pp 271-290).

In a major study by Barr, Langs et al, reactions to LSD were found to be patterned and meaningfully related to the preexisting personalities of the subjects, as well as to other factors such as the situation and its expectations, and the dosage taken. The authors suggest that, while the drug may enhance creativity in certain already creative people, it will not have this effect on the average person. According to their study, the better adjusted subjects had

more positive experiences, while the less well-integrated subjects experienced a terrifying disruption in function and collapse of defences (Barr, Langs et al, 1972).

Another area explored has been meditation, defined as "an exercise which employs repetition to turn off the active mode of consciousness and allows 'by-pass' to be developed into the quiescent, receptive mode" (Simon, 1977, p 7). Physiological studies on meditation show that it leads to an increase in alpha rhythms and to other changes associated with relaxation.

2.1.3.3 Hemispheric research

The left hemisphere style of function emphasizes logical, sequential, linear processing of information and attention to verbal material. The right hemisphere style emphasizes non-linear modes of processing information: intuitive ways of solving problems, and attention to visual, spatial, kinaesthetic, and affective material (Torrance and Yun Horng, 1980, p 83). These findings have emerged from experiments with patients who have had their two hemispheres surgically separated to prevent grand mal epileptic seizures.

The right hemisphere is of particular interest in the study of creativity, being concerned with "spatial perception,

holistic understanding, perceptual insight, tactile sensation, musical ability, visualization and some intuitive ability" (Garrett, 1976, pp 239-240). The feeling of unity and harmony associated with creating a work of art or science comes from the integration of both hemispheres - the original vision of the right hemisphere is translated into something communicable by the skills and techniques of the left hemisphere (Garrett, 1976, pp 242-243). Support for this position has been found by West (1976), Brandwein and Ornstein (1977), who conclude that both modes of processing must be developed (Torrance and Mourad, 1979, p 45). The study by Torrance and Mourad showed a greater association with creative achievement among subjects having an integrated style of information processing, as well as a right hemispheric dominance, than among left hemisphere dominants (Torrance and Mourad, 1979, pp 44-54).

The neurophysiological research also suggests that the right hemisphere may be responsible for generating the visual imagery during REM dream formation. In other words, it appears to house "primary process" thinking, such as occurs in dreams, humour, creative illuminations and psychotic states.

2.1 3.4 Relationship between creativity and psychological health

Empirical evidence supports the view that creativeness and self-actualization may be the same thing. Generally, creatives appear to be less conforming, with a tendency to introversion, and registering high on self-esteem. While some may exhibit emotional instability, there is seldom evidence of overt psychopathology (Schubert and Biondi, 1977, pp 192-3).

In an attempt to relate the Rorschach M productivity to sex, creativity and test-identified psychosexual orientation of the respondent, the M responses of female and male normal, creative male and female, "non-masculine" male, and "non-feminine" female subjects were analyzed. It was found that (a) high M productivity was associated with creativity, femininity in males, and with the female sex; (b) sex differences in the creative subjects, as well as masculinity in females were not associated with statistically significant differences in M productivity (Raychaudrhuri, 1971, pp 113-132).

Creativity also appears to be highly correlated with femininity. In a study by MacKinnon on the personality correlates of creativity in a sample of American architects, a strikingly high peak on the MF (femininity) scale of the

MMPI occurred. MacKinnon's explanation for this finding is that high creativity encompasses traits predominantly considered to be feminine - openness to one's feelings, sensitive intellect and understanding self-awareness. In Jungian terms one could say that these creative males allow expression of the feminine traits of their animas (MacKinnon, 1962, in Vernon (Ed), 1970, pp 3055-6). Using a Jungian typology test, the Myers-Briggs Type Indicator, highly creative architects were found to be evenly divided between thinking and feeling, and to have a tendency towards introversion. The balance between thinking and feeling probably occurs because in architecture, more than in other professions, creative products are both an expression of the creator and thus a very personal product, and at the same time an impersonal meeting of the demands of an external problem (MacKinnon, 1962, in Vernon (Ed), 1970, pp 301-2).

Using the same test, Barron found creative writers to be more introverted than extraverted, more feeling than thinking, and more intuitive than oriented to sense experience. He also discovered these subjects to score superior scores on the ego-strengths scales of both the MMPI and the CPI (Barron, 1963, pp 237-244).

2.2 Dreams

2.2.1 Definitions of Dreams

According to Calvin S. Hall, a dream is "a succession of images, predominantly visual in quality, which are experienced in sleep. A dream commonly has one or more scenes, several characters in addition to the dreamer, and a sequence of actions and interactions usually involving the dreamer. It resembles a motion picture of dramatic production in which the dreamer is a participant observer" (Hall, in Lee & Mayers, 1973, p 361).

According to Jones (Jones, 1976, p 169) "dreaming, which tends to be governed by the primary process, may be seen as a recuperative response to the unavoidable conventionalizing influences of everyday life in literate societies - thus routinely reminding Man of his capacity for the unconventional, possibly creative, response."

Rosen (Rosen, 1975, p 137) suggests that art and dream work use the same processes, including condensations, displacement, substitution and symbolization. While the dream is private, art must be transformed into a "public" dream which the outside world can appreciate.

2.2.2 Theoretical Perspectives

2.2.2.1 Psychoanalytic Theory

According to biblical and historical sources, for many thousands of years dreams were accorded great significance in many cultures. It was only with the advent of the Renaissance that the search for knowledge was directed into exploration of the outer world, at great expense to the inner world, which was then neglected for several hundred years. It was Freud who revived the study of dreams, as a serious scientific study, and allowed the dreamer to recapture the importance and personal meaning of his/her dream for his/herself.

According to Freud, a dream is a repressed wish or desire presented to consciousness in a disguised form. These repressed wishes were able to emerge during sleep, because the ego, which during the waking state censored unacceptable material from consciousness, had at its disposal much less energy or libido during sleep. The purpose of the dream was seen as a compromise that enabled an expression of the wish, sufficiently disguised so as not to arouse anxiety that would disturb the sleep of the dreamer (Hall, 1977).

The apparently confused jumble of images appearing in the dream, referred to by Freud as the manifest content, was

considered by him to be the facade behind which the meaning could be discovered. According to Freud, the wishes that make up the dream-thoughts are never wishes which are permitted conscious recognition, being too painful to reach awareness. The dream disguises its repressed thought by means of the censor mechanism. This censor mechanism is the same mechanism that operates when resistance prevents a person from recognising the repressed wish in the dream in the waking state (Jung, 1974). Freud suggests that in fact even more distortion and detours occur in the reworking of the dream, since the experience of the dream has led to increased resistance on the part of the dreamer (Freud, 1983).

The technique that Freud employed for discovering what he considered to be the latent meaning of dreams, he called free association. In free association, the patient freely associates to the dream motif, then associates to that association, then to another, without censorship. It is presumed that this free flowing of associations will eventually lead to the repressed wish behind the disguised dream image, despite the addition and inclusion of new daytime material in the chains of interpretation. According to Freud, the apparent movement away from the original dream, in free association, may in part be due to resistance to the latent meaning of the dream (Freud, 1983). Freud believed that this method of free association, together with

relaxation, would help break through the patient's defence system (Hall, 1977). In addition, the patient is afforded an opportunity to totally immerse himself/herself in his/her fantasies, to indulge himself/herself, not for his/her usual neurotic purposes, but in order to confront his/her inner life from an objective perspective (Jung, 1974).

In free association, the patient is required to recline on a couch, while the analyst sits out of the patient's sight range, behind his/her head. According to Singer, what Freud was instinctively doing was placing the patient in a state of mild sensory deprivation. Normally distracting stimuli, such as furniture, pictures, the analyst's face and expression, scenes through the window, have been effectively removed, and the patient is forced into confronting his/her own imagery (Singer, 1974).

2.2.2.2 Jungian Theory

Unlike Freud, who saw the dream as a disguised representation of a wish, whose latent meaning had to be uncovered by means of the technique of free association, Jung believed that the imagery of the dream, as reported by the dreamer, was what was important. Dream images were not inferior types of thinking that needed to be translated into logical thought, but symbols, having both a personal and universal meaning for the dreamer. Jung distinguished

between symbolic and semiotic images, in that he referrred to Freud's use of images or fantasies as being merely semiotic, in the sense that Freud regarded the images to be signs for instinctive processes, similar, for example, to a traffic sign. The image is therefore, in effect, a token, representing or substituting for a known fact, such as an actual object or person. The symbol, on the other hand, is a formula chosen as the best possible description, under the circumstances, of a relatively unknown fact, which cannot be more clearly represented. Symbols only have meaning for those persons who are bent on considering them, and determining their meaning (Jung, 1949).

For Jung, the function of the dream was compensatory, allowing the dreamer to view conflictual areas of his/her life in a more exaggerated, possibly bizarre form, so that, with exploration, their symbolic meaning became clear to the dreamer (Hall, 1977).

The technique of active imagination, developed by Jung, requires the dreamer to re-live the dream with his/her therapist, to experience it imaginally, and to discover his/her overall reaction to the dream message, rather than breaking it down analytically, in the Freudian way. This method became the foundation of the mental imagery movement in psychotherapy today (Singer, 1974). Jung also encouraged his clients to work with their own dreams independently, in

order to deal with current problems and become alert to destructive tendencies emerging symbolically in the dream messages.

In active imagination, Jung made use of the technique of amplification. Unlike free association, which begins with the dream motif and leads away from it towards the supposed repressed wish, amplification begins with the dream motif and enlarges on it. Associations are made, but they are not allowed to wander too far from the original image. Amplification can take place on three levels: first, on a personal level, associations are made to memories and feelings from the client's personal unconscious; second, on the cultural level, associations in the larger culture are made; and thirdly, associations consisting of archetypal images are made, coming from mythology, folklore, religious traditions and other imagery not consciously known to the dreamer. The therapist would first begin with personal associations, and would only continue down to the second or third level, if the meaning of the dream remained unclear while dealing with it on a personal level. Amplification of dream motifs can uncover intense affective reactions (Hall, 1977).

According to Jung, images occurring in a dream or in active imagination may have reference to an actual person or situation, on an objective level, but of far more importance

than this, he believed that the image appeared because it symbolised an unrecognised or undeveloped aspect of the dreamer or imaginer. For example, dreams of a critical female figure might be literally related to the dreamer's mother acting this way towards him, but because this has such a powerful effect on the dreamer's life, the critical attitude is introjected and remains with the dreamer, even if the mother dies (Watkins, 1976).

2.2.3 Research

2.2.3.1 Psychoanalytic Research

In section 2.2.2.1 above, it was suggested that the reclining position used by Freud was effective because it placed the patient in a position of sensory deprivation. Support for this point of view comes from several studies indicating that subjects who free associate in the reclining position show more freedom, spontaneity and vividness of imagery than subjects who were sitting up (Berdach & Bakan,(1967); Bertini, Lewis & Witkin, (1964); Kroth, (1970); and Morgan & Bakan, (1965). In a study by Segal and Glicksman (1967), using the Perky phenomenon, reclining or sitting subjects were encouraged to project specific images onto a blank screen. In effect, actual images were being projected by the experimenter on to the screen. It was shown that the reclining subjects were much less likely

to recognise that these images were externally generated, apparently because the vividness of their own imagery blocked their awareness of the actual external image (Singer, 1974).

Other factors associated with the recumbent position must also be mentioned. Because it is the position assumed in preparation for sleep, it is already associated with an increase in fantasy productions. According to evidence, the greatest amount of fantasy and daydreaming occurs at this point (Singer, 1966). Also, as Singer points out, the recumbent position is likely to generate other associations, namely, illness, dependence, and many experiences of a childlike nature, particularly in the light of the child-like, dependent relationship the patient has assumed with the analyst (Singer, 1974).

2.2.3.2 Jungian Research

A study by Hawkins of observed relationships between different dreams on the same night by the same subjects, suggests that a process is occurring dealing with conflictual areas for the subject. This finding does not seem to support the Freudian defensive model of the dream, but rather lends support to Jung's hypothesis that dreaming is a purposive and creative activity (Hall, 1977).

In support of Jung's conceptualization of archetypal energy as the source of all creative potential, Welman's exploratory investigation revealed a positive correlation between archetypality scores of nocturnal dreams and waking creative potential, as measured by the Rorschach M, Fm and m responses (Welman, 1985).

2.2.3.3 Cognitive Research

While studying the sleep patterns of babies, Aserinsky & Kleitman (1953) made the accidental discovery that the infants' eyes moved rapidly during sleep. In order to discover the possible significance of such movement, the research was extended to adult subjects, and, in addition, eye movements were monitored by means of an electroencephalograph or EEG machine, using electrodes placed around the subjects' eyes. From this study emerged much information concerning the cyclic nature of sleep, the rhythmic patterns of alternating REM (rapid eye movement) and NREM (non rapid eye movement) sleep, and the different stages of sleep through which all sleepers pass during a night's sleep. It appears that the greatest number, and the most vivid dreams occur during the stages of REM sleep. Some dreams do occur in NREM sleep, but these seem to be shorter, less visual, and less vivid than those reported

from REM periods, and subjects often seem to consider that they have been thinking rather than dreaming (Faraday, 1972).

Cohen's findings (1975) support the growing evidence that the left hemisphere is specialized for verbal, logical processing, while the right hemisphere specializes in holistic, analogical processing, and notes that this fact holds as true in sleep as in waking. He noticed that in the early hours of sleep, verbal activity, evidence of good ego-function, and high-quality recall were low, whereas toward the end of the sleep cycle, these features had increased to a large degree in a high percentage of subjects. He interpreted this finding to mean that the left hemisphere began to exert an increasing degree of influence as the dreamer moved towards returning to waking consciousness (Stone, 1977).

Stone suggests that right hemisphere functions may contribute heavily to various human activities and capabilities, such as meditation, biofeedback, dreaming and hypnosis.

In his overview of the study of imagery and daydreaming, Singer notes that an important implication of the evidence of the large degree of internal activity during sleep is that, possibly, a constant stream of internal activity is

occurring during waking, conscious activity, but at levels of awareness not always within reach of the individual. Support for this position has been found in the sensory deprivation studies, as, when sensory demands of the environment were reduced, subjects were able to attend to internal processes more readily (Berdach & Bakan, 1967; Morgan & Bakan, 1965).

Singer also suggests that practised daydreamers, i.e. those individuals who pay attention to this constant ongoing stream of thought, are more likely to easily decode the symbolic messages of their fantasies and dreams, and can relate them to the unfinished business of the previous day's activities and thoughts (Singer, 1974).

The ability of the individual to pay attention to these inner processes may depend in part on social learning within the family setting, encouraging or discouraging creative expression of inner experiences. Age, as well as adult responsibilities may also serve to distract the individual from awareness of his/her inner processes, and this results in a gradual filtering out of consciousness of the person's fantasy activities. Consequently, circumstances that promote a reduction in consciousness, or a shift to an altered state of consciousness, such as dreaming, hallucinogenic experiences, or sensory-deprivation

experiences, may be experienced as frightening by persons not accustomed to encountering their own imagery. (Singer, 1974)

2.3 Dreams and Creativity

2.3.1 Anecdotal Support

Many documented anecdotes exist, which record the scientific, artistic and inventive creativity that has occurred in dreams, leading to important creative accomplishments. For example, Wagner's opera "Tristan and Isolde", and Tartini's "The Devil's Sonata", were reportedly first heard by these composers in dreams. Beethoven, Mozart and Schumann reported similar experiences. Robert Louis Stevenson's "Dr. Jekyll and Mr. Hyde" was stimulated by a dream of three of the scenes of the novel that followed, and Thackeray first heard the title of his novel "Vanity Fair" in a dream, after the novel's completion, having been fruitlessly searching for a title. Other writers and poets who used dream material include Voltaire, John Masefield, J.B. Priestley, Charlotte Bronte, Dantė, William Blake, Shelley and Tolstoy. Playwrights such as Strindberg and artists such as Paul Klee have used dream material. Otto Loewi, a Nobel prizewinner, arrived at his idea of the chemical mediation of nerve impulses through a dream. Kekulė's discovery of the ringlike structure of the benzene

molecule was prompted by a dream image of a snake biting its own tail. Elias Howe, inventor of the sewing machine, was having great difficulty in figuring out where to put the hole in the needle, when a dream provided an analogous solution. He dreamed of being attacked by savages whose king threatened him with death if he did not complete his design. Suddenly he noticed that the heads of the spears held by his guards had eye-shaped holes near their points! (Dreistadt, 1971, pp 24-34).

2.3.2 Research

The idea that creativity is facilitated by access to primitive modes of thought is a fundamental aspect of the psychoanalytic theory of creativity, and as such has been the focus of considerable research.

2.3.2.1 Descriptive studies

Adelson (Domino, 1982, p 113) discovered creative college women to be more absurd, pre-logical, varied and exotic in their dreams. Domino (Domino, 1976, in Domino, 1982), used a primary process scale to assess the dreams of creative male high school students compared to a control group, and showed that the creative group used a greater proportion of condensations, unlikely combinations and symbolism. In addition to these apparent content differences in the dreams

of creative persons, Domino hypothesized that the attitude of creative individuals is likely to be that of an openness to their inner psychic workings, including the use of dreams as sources of creative ideas. An attitudinal questionnaire about dreams was administered to a creative group of high school students and a control group. A modest relationship between attitudes to dreams and creativity was demonstrated (Domino, 1982, pp 112-122).

2.3.2.2 Altered States of Consciousness

In a study by Faber, the dreams of habitual meditators were found to have a significantly higher occurrence of archetypal imagery than those of the control subjects. Faber suggests that meditation compensates for the one-sided, left-hemisphere emphasis in Western culture, allowing meditators to develop their right-hemisphere mode. This superior development appears to generalize to their dreams, since a significantly larger proportion of the dreams of meditators reflect more right hemisphere functioning - i.e. symbolic, irrational, non-linear processes, than did non-meditators (Faber, 1978, pp 13-14).

In a later study by Faber, sequences of waking fantasy were repeatedly induced in 13 subjects under controlled laboratory conditions, and the archetypal content of their nocturnal dreams was compared to a matched control group as

well as to their own baseline levels. A significant increase in archetypal content was noted in the induction-phase dream reports compared to that of the control group (Faber, 1983). Compared to other consciousness-altering techniques, this would seem to be a highly economical and low risk approach, requiring a short training period, and producing changes in nocturnal dream reports comparable to those produced by long-term meditators.

Although research evidence is not conclusive, creative ability does appear to be related to the extent to which secondary process exerts an integrative control over primary process manifestations (Suler, 1980, pp 150-153). In particular, the projective test studies have confirmed that artistic people have greater access to an expression of primary process than others. Dream reports of highly creative subjects were rated by clinical psychologists as exhibiting greater primary process thinking than the dream reports of matched controls (Domino, 1976, pp 929-932).

Adelson's study showed that highly creative dreamer's dreams were more exotic, showed the dreamer in more unusual roles, and had a greater prevalence of humour, sexuality and colour, than the dreams of controls (Adelson, in Krippner, 1979, p 15).

Schechter found that art students remembered their dreams more than science or engineering students, and found a significant relationship between dream inaginativeness and scores on creativity tests (Schechter, in Krippner, 1979, p 15).

2.3.2.3 Attempts to facilitate creativity through dreams

2.3.2.3.1 Jungian-Senoi Institute

At the Jungian-Senoi Institute in Berkely, founded and directed by Strephon Kaplan Williams, a Jungian analyst, the work focus is aimed at developing dreamwork methodology and training both lay and professional people in dreamwork and Jungian psychology (Williams, 1984).

The Institute considers their approach to be Jungian because of the emphasis they lay on the central importance of the dream in revealing potentials for a person's journey toward wholeness, or individuation. They recognise Jung's teleological principle in the Self to be operating, in that each person seems to have a drive to realize his/her deepest self. The methods used, such as symbol inherency, symbol linking, and evoking a spontaneous flow of unconscious images, are derived from the Jungian methods of, respectively, amplification, association, and active imagination.

The key aspect of their dreamwork methodology,however, is based on the Senoi approach to altering the dream, and using dreams to make constructive changes in the lives of individuals and communities (Doyle, M.C., 1984, pp 467-474; Stewart, K. in C. Tart (Ed), 1969, pp 159-167).

2.3.2.3.2 Senoi

The Senoi people of Malaya, according to Kilton Stewart's research, were a people who used their dreams constructively to create harmony in their culture. Although their culture has today been largely destroyed by outside influences, it had, previously, an extremely low rate of psychopathology and crime.

Family breakfasts in a Senoi home are like a dream clinic, with each family sharing their dreams, interpreting them, and frequently re-entering them and shaping them to produce satisfactory resolutions.

Dream images are believed to be part of the personality, psychic forces disguised in external forms. Children are taught from a young age to master these internal forces, by attacking or confronting hostile dream figures, calling for help from dream friends or allies, if necessary. They believe that if the hostile dream image is defeated, its

spirit will emerge as an ally; dream characters are only bad if we retreat from, or fear them. Children are also taught to return from the dreamland with a creative idea, a dance, song, poem or drawing to contribute to the culture (Faraday, 1972; Ornstein, 1972).

The two most essential ways in which the Senoi people worked with their dreams were: (a) to change the dream state while dreaming, and (b) to do dreamwork projects using dream materials, to improve their lives.

Of course, many cultures around the world have used dreams as a basis for cultural and personal guidance. The Iroquois Nation had a dream-sharing gathering annually. In ancient Jerusalem there were professional dream interpreters, and in the Islamic culture dream interpretation was an everyday practice (Williams, 1984).

In our modern, materialistic culture, however, the inner life has been sadly neglected in our pursuit of the outer life. According to Kilton Stewart many of the difficulties of our modern civilisation have arisen because people in our culture have failed to develop "half their power to think. Perhaps their most important half" (Stewart, in Ornstein, 1972, p 166). Presumably, the half he is referring to is the irrational, intuitive right-hemisphere. Ornstein suggests that if we had a psychological or cultural

mechanism for allowing the dream to reach consciousness and be explored, we could greatly enrich our lives.

Some of the Senoi principles that have been incorporated in the Jungian-Senoi dreamwork methodology are as follows:

- Dreams are the expressions of external forces internalized. If these internal forces are not harmonized, the person's internal and external life is adversely affected.

-Anyone can learn to become master of his/her dream universe and use all the beings in it.

- One can change one's dream state towards enjoyment and spiritual power by changing one's fearful attitudes into ones of assertion and acceptance.

-Negative behaviour on the part of the dream ego is changed to positive behaviour in the outer situation.

-Our most creative powers and deepest self are revealed when our psychic processes are freed from outer world focus.

-One can make decisions and arrive at resolutions in one's night-time thinking as well as in that of the day. Thus,

one can assume a responsible attitude towards all of one's psychic reactions and forces (Williams, 1984, pp 302-3).

2.3.2.3.3 Gestalt Therapy

Gestalt therapy was originated by Fritz Perls, and chiefly consists of a process of concentrated meditation, in which the client is encouraged to relinquish attention to the thinking process, called "computing", and to focus instead on the here-and-now, the immediate present. The Gestalt technique makes use of the verbal-intuitive split that frequently occurs in consciousness, both in the healthy and pathological sense. Clients are taught to become aware of their body language, and discrepancies between verbal statements and body cues are pointed out. If a strong emotion, such as anger, is seen to be expressed in the body, such as a clenched fist, the client will be encouraged to focus on what the fist is saying and feeling, thus becoming more in touch with repressed feelings (Ornstein, 1972).

Perls' method of dealing with dreams, (also with life situations, memories and fantasies) is to regard every image, whether object or person, as an alienated portion of the dreamer, which has been projected outward on to a dream image. The dreamer is asked to successively act out the part of each of these images, reexperiencing the events from each of the different perspectives. When conflicts occur

between two images, the dreamer conducts a dialogue between them, and attempts to resolve the problem. In this way, the different parts of the personality, previously in conflict, are brought into harmony with one another. The dreamer discovers that by re-integrating these various aspects, he/she can rechannel much of their energy, previously directed towards inhibiting growth (Watkins, 1976). The clients work through their dreams, either with the therapist, or in a group. The presence of the therapist or group members is helpful, as they can point out the visual cues, such as body language, that often serve to highlight conflictual areas of the dream (Faraday, 1972).

2.3.2.3.4 Faraday's approach to dreamwork

The dream therapist, Ann Faraday, has combined several approaches to dreamwork into a format such that the lay person can work with his/her own dreams on his/her own. Faraday suggests that when attempting to interpret a dream, the dreamer first decide what type of dream it is according to three types she outlines.

The first kind of dream, the 'looking outward' type, (Faraday, 1981, p 159) is that which contains objective truth about the outside world, e.g 'reminder' dreams, which are simple, direct reminders to the dreamer to attend to some practical detail in their waking lives. 'Warning'

dreams, warning the dreamer of some danger, observed at a subliminal level, also fall into this category. Even apparently clairvoyant and precognitive dreams, according to Faraday, usually turn out, upon examination, to fall into this category, since, although the dreamer insists he/she was never aware at any time of the events which later occurred similar to those in his/her dream, in actual fact, the clues were usually present, but repressed or ignored by the dreamer.

In the second type of dream, the 'looking-glass' type, (Faraday, 1981, p 189) when, as in Alice's looking-glass, many things were reflected as they were in reality, but other things were distorted, Faraday suggests an application of Calvin Hall's technique, of looking at the dream as a picture of what the mind is thinking during sleep, and trying to relate the dream to the dreamer's life circumstances. To illustrate this approach she focuses on four of the commonest dream images; people, animals, houses and vehicles, and shows how to determine when an image is obviously related to the dreamer's current life situation, and when, in the absence of such a reference, it must be treated as a symbol.

In the third type of dream, the 'looking inward' type, (Faraday, 1981, p 224), Faraday illustrates how to use the powerful techniques of the Senoi and the Gestalt methods, to

allow the dream images to speak for themselves, in order to give the different aspects of the personality, disowned by the individual, an opportunity to communicate with each other, express their needs, and resolve lifelong conflicts (Faraday, 1981).

3. HYPOTHESES

The present study, therefore, was designed to test the hypothesis that awareness of unconscious processes, as elicited by dreamwork techniques, will increase creative potential. In order to do this, three groups of subjects were exposed to different levels of awareness of their unconscious processes, as elicited by dreams. In Group A, a high level of awareness was stimulated in the subjects who used the dreamwork amplification technique. In Group B, hypothetically, a minimal level was stimulated by the subjects who simply recorded their dreams, and the lowest level was expected in Group C, by the subjects who did not record their own dreams at all, but instead collected dreams from other people. The independent variable in this study is therefore the three levels of exposure to the amplification technique. Two dependent variable measures were used, i.e scores derived from the Torrance Tests of Creative Thinking, a test of divergent thinking, and movement scores elicited by the Rorschach Ink Blot Test, used as a measure of creative potential.

3.1 HYPOTHESIS 1

The means on the Torrance Test of Creative Thinking for Group A will be significantly higher than the mean scores for Groups B and C.

3.2 HYPOTHESIS 2

The means on the Rorschach Test for Group A will be significantly higher than the mean scores for Groups B and C.

4. METHODOLOGY

4.1 Subjects

4.1.1 Selection

An invitation to participate in a dream project was advertised in the following manner. Notices (see Appendix 1) were pinned to various noticeboards on the campus, stating that student volunteers were required to participate in a Psychology Masters project relating to personality factors and dreams, which would last for a four week period. First year Psychology students who participated could obtain credits towards their Practical programme. At an initial screening, 87 students completed a Personal Data Questionnaire (see Appendix 2). After further individual screenings, using the Symptom Sign Inventory (Foulds & Hope, 1968), 60 students, 14 male and 46 female, were selected for participation in this study. During the course of the study, six students withdrew for various personal reasons, leaving a total of 54 subjects, 12 male and 42 female, from whom the final results were obtained. Subjects ranged in age from 18-23 years ($\bar{X}$ = 19.76 years) No subject had a history of psychiatric disorder. No subject had ever been intensely involved in the recording and analysis of dreams. No subject meditated on a regular basis. A dream report question (adapted from Cohen, 1973), question number 9 (see

Appendix 2), was included in the Personal Data Questionnaire, in order to determine frequency of dream recall.

4.1.2 Assignment to Groups

Subjects who reported that they could recall, on average, 4 or more dreams per week, were considered to be good dream recallers, and were randomly divided into two groups, Group A and Group B, balanced for age and sex. A flipped coin determined that Group A would be the experimental group and Group B, a control group.

Since they would not be required to recall their own dreams, the remaining subjects, those who could recall less than four dreams per week, were placed into an extra control group, Group C. There were therefore three treatment groups:

Group A (Experimental): Dream recording of own dreams and dreamwork technique

Group B (Control): Dream recording of own dreams

Group C (Control): Dream recording of other people's dreams.

The mean ages for subjects in Groups A, B and C, were, respectively; 19.89 years, 19.77 years, and 19.61 years. The mean number of dreams recalled by subjects in Groups A,

B and C, were, respectively; 5.94, 5.94 and 2.83. There were 15 females in Group A, and 3 males; 14 females in Group B, and 4 males; and 13 females in Group C, and 5 males.

4.2 Procedure

4.2.1 Design of Study

After two practice runs with the dreamwork technique and the testing, to familiarize herself with the administration and the scoring of the tests, and to iron out problems in the phrasing of the questions on the dreamwork questionnaire, the experimenter ran a pilot study on a female subject of 21 years. It was observed that certain of the questions in the dreamwork technique were not clearly understood by the subject, and these were clarified for the purposes of this study.

After selection subjects were told that the purpose of the study was to investigate the relationship between dreaming and personality types. Appointments were set up for two individual testing sessions per subject, i.e. a pre- and post-experimental session. Approximately a four week period was to elapse between testing sessions, as set out below.

	PRE-TEST	POST-TEST
GROUP A (Exp)		
GROUP B (Control)		
GROUP C (Control)		

Since testing sessions lasted approximately two hours each, four pre-experimental testing sessions were held each day for a three week period, until all 60 subjects had been tested. (The six subjects who dropped out of the study, either did not complete the work required, or were unable to attend the second testing session). Then followed a week of no testing, after which began a three week period of post-experimental testing, also consisting of four testing sessions per day.

As each subject's pre-test session came to an end he/she was given his/her dreamwork booklet and instructions. He/she was asked not to discuss any aspect of the study with any other participant in the study, in order to prevent subjects discovering that the three groups were doing different tasks, which might have led to the formulation of hypotheses regarding the purposes of the study.

Female subjects were retested at the same stage in their menstrual cycle as they had been tested at the first session. (See section 4.2.4.3.2 below, for further explanation).

4.2.2 Dream recording procedure

At the end of the first testing session, each subject was handed a booklet containing Dream Diary Instructions (Appendices 3,4 and 5), Dream Record Sheets (Appendix 6), and Dream Questionnaires (Appendices 7 and 8) for a period of one week. The experimenter set up five-minute appointments, weekly, for three weeks, with each subject, for the ostensible purpose of showing the experimenter completed work and collecting a new batch of forms. The underlying reasons for these meetings, however, were as follows. It was noted in the pilot study that there appeared to be a tailing off of interest in the project during the third week, and possibly this was due to decreased motivation on the part of the subject. It was therefore decided that an important part of this project would be to maintain a high level of motivation on the part of the subjects. The experimenter used this weekly opportunity for the following purposes: to read through the dreams recorded in the previous week; to allow for feedback on how the subjects were experiencing the study; to motivate and encourage the subject's participation in the study; and also to record any significant events occurring in the subject's lives. This encounter with the subjects therefore also afforded the experimenter an opportunity to ensure that subjects were adequately performing the tasks required of

them. Subjects recorded dreams for a 21-day period, after which their folders containing all recorded dreams and dream questionnaires were handed in to the experimenter. Re-testing took place within seven days after folders were handed back. A post-experimental enquiry was administered at the post-testing session.

Instructions to the three groups were varied as follows:

Group A (Experimental)

In their Dream Diary Instructions (Appendix 3), subjects were asked to record their dreams each morning, upon awakening, on their Dream Record Sheets (Appendix 4) and to complete the dream questionnaire (Appendix 7) on that dream on the same day. Appendix 7 (the Dreamwork Technique) was a list of thirteen questions designed to stimulate subjects to relate emotionally to the subject content of the dream, to make associations between the dream imagery and waking life situations, which would hopefully lead subjects towards resolutions of conflictual waking situations symbolised in the dream. The questions are more fully described and their derivations explained, in section 4.2.3 below.

Group B (Control)

In their Dream Diary Instructions (Appendix 4), subjects were asked to record their dreams each morning upon awakening, on their Dream Record Sheets (Appendix 4) and to complete the Dream Questionnaire (Appendix 8) on that dream on the same day. Appendix 8 consisted of two rating scales; the Hedonic Tone Scale, requiring subjects to rate the dream along a 7-point continuum from very pleasant to very unpleasant, and the Active Participation Scale, requiring subjects to rate their participation in the dream along a 5-point continuum, from not present, through passive, to actively determining events in the dream. This task did not require any subjective involvement of emotional issues for the subjects, but was a purely cognitive task.

Group C

In their Dream Diary Instructions (Appendix 5), subjects were asked to collect dreams from other people, and to record them on the Dream Record Sheet (Appendix 4) provided for this purpose. Subjects were told to collect at least 4 dreams per week, and to record them in as full detail as they could gather from the dreamers they were interviewing. Subjects could collect dreams from any person they wished, the only restrictions being that they were not to use their own dreams, or the dreams of any subject participating in

this study. The latter precaution was taken to prevent subjects from discovering that subjects in the different groups were performing different tasks. Having collected and recorded the dreams required, subjects were then requested to complete the Dream Questionnaire (Appendix 8), rating the dreams collected on the Hedonic Tone Scale and the Active Participation Scale.

At the end of a 21-day period, folders containing dreamwork were collected by the experimenter. Approximately 28 days after the first testing session, each subject was retested with the same ten Rorschach cards, and the parallel form of the Torrance Test. At the re-testing session, each subject was required to complete a post-experimental enquiry. (Appendix 9) to determine if any subject had formulated any hypotheses about the purpose of the study. In no case had this occurred. However, six subjects hypothesized that the project had something to do with creativity or divergent thinking, because they recognised the Torrance as being a test of divergent thinking. Two subjects in Group C thought that they were members of a control group. One subject in Group C mentioned that collecting other people's dreams had led to an increase in his own dreams, as well as to a greater awareness of his dreams and their possible meaning.

4.2.3 The Dreamwork Technique

This dreamwork technique was designed with the intention of helping the waking subject to understand his/her dream more fully, in order to facilitate creativity in daily living. The method involves a technique of directed association and amplification that requires quite a bit of work on the dream on the part of the waking subject, in order to identify the problem(s) the dream may be highlighting in the dreamer's life. The technique, in effect, was designed to facilitate the translation of the dream content, experienced in an altered state of consciousness, in the language of imagery and metaphor, into the rational language that the conscious ego can understand. The method derives from some of the theoretical ideas and techniques mentioned in section 2.3.3.3. above (Faraday, 1972; Hall, 1966; Perls, 1969; Tart, 1969; Williams, 1984).

According to Strephon Kaplan Williams of the Jungian-Senoi Institute, a person who is committed to dreamwork tries to write down his/her dreams in a journal and takes steps to re-experience the recorded dreams in certain significant ways. Such a person then enters his/her waking life from a base in his/her inner world, because the dream has made this person more conscious of outer actions and choices (Williams, 1984). According to Williams, re-experiencing

the dream is more important than attempting to analyse it in a rational fashion, which succeeds in distancing the person from the dream. Instead, he suggests that the meaning of a dream becomes clear by actualizing or re-experiencing it, thus bringing the person closer to the dream (Williams, 1984, p 23). Actualization refers to "gaining meaning from a dream by doing specific outer-life projects which embody some part of the original dream. Thus we include under the term 'actualization' both re-experiencing the dream in itself and transforming the dream into specific outer-life experiences" (Williams, 1984, p 29).

Some of the following dreamwork experiences have been reported by Williams:

Learning to fall asleep after awakening from a dream, and continue the same dream; dream incubation (producing a dream on a given subject); enabling non-recalling dreamers to acquire the ability to remember dreams; changing the nature of the dream ego's actions in future dreams; confronting enemies and establishing more satisfactory relationships with them in future dreams; ending recurrent dreams and nightmares, by bringing their conflicts to resolution; and changing personal and archetypal patterns which had previously dominated both the person's inner, as well as his/her outer life (Williams, 1984, pp 30-31).

Some of the dreamwork methods are the following:

Direct Dream Re-Entry: in a meditative state, the person re-enters the dream, and both emotionally and visually, re-experiences the central conflicts and dynamics involved, thus bringing about profound personality changes.

Following the Dream Ego: an analysis of the dream ego's attitudes underlying the dream behaviour, in order to apply this knowledge to the waking behaviour and attitudes.

Rewriting the Dream: Attempts to rewrite the dream with a more creative ending, or successful resolution of the central conflict. This method seems to evoke changes in future dreams, consistent with the direction of the dream rewriting.

Dream Incubation: pre-sleep preparation is used to evoke a particular topic or theme in a dream.

Since many of these techniques are extremely time-consuming, most of them require a certain amount of practice or training, and, at least initially, most of them require a teacher or guide, or a group leader if the dreamwork is to be done in groups, the technique was of necessity restricted. However, according to Williams, if a person

only has half an hour for working with a dream, using one or two of the following methods seems to work the best:

Key Questions: Simply list the most important questions or issues raised by the dream.

Dialogue: Pick the dream symbol, whether character, animal or object with the most energy for you, and ask it any questions that come to mind, writing down any answers that come to mind, letting ideas flow freely.

Dream re-entry: Sit quietly, in a meditative state, with eyes closed, concentrating on that part of the dream which has the most energy for the person.

Outer life Dream Task Actualization: Choose some dynamic or specific conflict area from your dream, and make a specific commitment to action in that area.

According to Williams, dream re-entries can be quite emotionally overwhelming, and are probably therefore safer and more effective with a guide, or in a group.

By combining these suggestions, using a simplified dream re-entry, as well as key questions, provided by the experimenter, the following technique was devised:

In the instructions, subjects were asked to read through their dream again, concentrating on how it felt to be back in the dream, and to answer the questions as fully as indicated. The questions were as follows:

1. Which character/s in the dream seemed to be the most important to you? Describe the character/s and elaborate.

This question was included to help the dreamer focus on the area of the dream which had the most salience for him/her.

2. If the dream character/s were unfamiliar to you, did they remind you of anyone you know in reality? Elaborate.

The purpose of this question was to prompt the dreamer to see a connection between his/her interaction with the dream character and his/her interaction with certain types of people in reality, including certain aspects of the dreamer him/herself.

3. If the dream character/s were familiar to you, did the character/s, or some aspect of them, remind you of anyone else you know in reality?

The purpose of this question was the same as that of 2 above.

4. How did these dream character/s make you feel, in the dream?

This question was designed to lead the subject away from a conscious, analytical state, into a more emotional, less rational state, hopefully loosening the conscious/unconscious flow.

5. Have you ever felt like this in reality? How long ago? Describe fully.

This question was supposed to trigger connections in the dreamer's mind between the dream situation and an outer life situation, not literally, more in a general sense.

6. Which situation/s in the dream seemed to be the most important to you? Describe fully, explaining why you consider them to be important.

The situations focused on would hopefully be recognised by the dreamer as representing central conflict areas in their lives.

7. How did these situation/s make you feel? Describe fully.

Making the dreamers more aware of their feelings in these situations might help them get in touch with repressed feelings related to outer life situations, currently unresolved.

8. Do these situation/s remind you of anything in reality in your life? Elaborate.

The purpose of this question was to stimulate the dreamer to make the connection between the dream conflict and dynamics and current outer life conflicts and dynamics.

9. Imagine that this dream is a short story, and you could re-write the ending. How would you change it?

This question was included to see whether subjects were able to rewrite the dream using more creative responses on the part of the dream ego, as well as to translate this resolution into an outer life situation.

10. Can you see any connection between a character, scene or situation in this dream and any other dreams you have had? Please describe and elaborate.

This question was included to ascertain whether subjects were able to detect trends and themes, both in their dreams, as well as in their lives.

11. Does any image or scene in the dream strike you as particularly strange or bizarre? Elaborate and briefly explain why.

This question was included to attempt to discover whether any particular image had more than a personal meaning for the dreamer, and could therefore be seen as an archetypal image.

12. Do you feel that this dream, or any part of this dream has had any effect on your waking life? Describe and elaborate.

This question attempted to encourage the dreamer to integrate his/her experience and translate it into his/her waking life experience.

13. If you recalled more than one dream from last night, can you see any connection between these dreams? Please elaborate briefly.

This question was simply an attempt to see if dreamers could detect a pattern or theme in their night's dreaming, other

than obvious content similarities, something related to the central dynamics of the dream.

4.2.4 Assessment

All volunteer subjects completed a Personal Data Questionnaire (Appendix 2) and a Symptom Sign Inventory (Fouldes & Hope, 1968) to screen out psychopathology, subjects in therapy, subjects with experience in dreamwork and habitual meditators. At the testing sessions, selected subjects completed two tests, the scores of which constitute the measures of creativity to be used in this study. The tests used were as follows:

1) Torrance Tests of Creative Thinking - a test measuring divergent thinking. Alternate forms of this test were administered to all subjects pre- and post-experimentally (Torrance, 1966).
2) Rorschach Ink Blot Test - the M, FM, mF, Fm, and m responses were used to measure creative potential.

All ten cards were administered to all subjects pre- and post-experimentally.

In addition, all subjects completed the following measure:

3) Eysenck Personality Inventory - embedded in the design to mask the purpose of the study, and to control for perceived demand (Eysenck & Eysenck, 1976).

4.2.4.1 Torrance Tests of Creative Thinking

4.2.4.1.1 Description

The Torrance Test battery comprises two parallel verbal forms and two parallel figural forms. The Verbal Tests consist of seven parallel tasks, each battery requiring a total of 45 minutes to complete, excluding administration time. According to Torrance, each task draws on somewhat different mental abilities, all of which require the subject to think in terms of possibilities, using divergent thinking. In an example of a verbal test, the 'Ask-and-Guess' test, a picture is shown to the testee of a figure kneeling down and looking at his/her reflection in some water. In the first task the testee is asked to list, on paper, what he/she guesses is happening in this scene, in the form of questions. In the next task he/she is asked to list what he/she thinks must have transpired in the past leading up to the present situation, i.e. the reasons for the current scene. In the third test, the testee is asked to guess what might take place in the future, either near or distant, resulting from what is happening in the picture. In the alternate version, the same tasks are required, but

the stimulus picture consists of a boy and girl, apparently fleeing from something or someone unseen. The boy is holding what appears to be a toy elephant, and in the background are several strange objects, vases, symbols on the wall, a bird in a swinging cage. In the 'Product Improvement' activity, the testee is shown a picture of a toy monkey in one form, and a toy elephant, in the parallel version. The task is to think of as many different ways as he/she can to improve the toy so that it would be more fun for a child to play with. In the'Unusual Uses' task, modified from Guilford's Brick Uses Test, the testee's task is to think of as many different and unusual uses as he/she can for a cardboard box, and in the parallel version, for a tin can. In the 'Unusual Questions' activity, the testee has to think of as many different unusual questions to ask about cardboard boxes (tin cans) as he/she can. The seventh activity, called 'Just Suppose', requires the testee to consider the possible outcomes of an improbable situation, in one version, that a great fog covered the earth so that all one could see of others was their feet, and in the other version, that clouds had strings attached to them, that hung down to earth.

The Figural Tests consist of three activities, each battery requiring 30 minutes to complete. An example of a Figural test is the 'Picture Construction' activity. The testee is given a gummed-back shape (pear-shape in one version, bean-

shape in the other version), and asked to think of a picture he/she would like to draw using the shape as part of the picture. When he/she has planned what he/she is going to draw, he/she is to stick the shape on the paper and complete the picture he/she had in mind. In the 'Incomplete Figures' activity, adapted from the Drawing Completion Test, ten incomplete figures are supplied, and are to be completed in pencil by the testee. The third Figural task is the 'Repeated Figures' activity, containing parallel lines in one version, and circles in the other. Testees are told to add lines to the lines (circles) to complete their pictures (Torrance, 1966). Each of these subsections can be used individually. It was decided to use the entire battery.

4.2.4.1.2 Rationale

Although there is no universally accepted definition of creativity or of its measurement, the definition and battery of tests developed by Torrance have been widely used. In developing his rationale for measurement tasks, Torrance laid great emphasis on mental imagery in his definition of creativity, referring to imagination as being the power of forming a mental image of something not present. His intention in the construction of his test was to model the creative process in both figural and verbal modes (Torrance, 1966).

This test battery is scored on four aspects of creativity: fluency, flexibility, originality and elaboration, factors found by Guilford to be highly related to creativity (Guilford, in Dudek, 1975). According to research indications, elaboration is not a reliable indicator of creativity (Hargreaves & Bolton; Wallach, in Shaw & Demers, 1986); however, this score was included out of interest.

The 'Ask' activity described above was designed to test the subject's ability to ask questions to fill out gaps in his/her knowledge. The 'Guessing' activities were designed to test the subject's ability to formulate hypotheses concerning cause and effect. The 'Product Improvement' activity, according to Torrance, is interesting to subjects, because it allows them to "regress in the service of the ego", (Torrance, 1966, p 12), and to play with ideas. The 'Unusual Uses' activity tests the ability to free the mind of a well-established set, whereas the 'Unusual Questions' task measures what Burkhart referred to as "Divergent Power" (Burkhart, in Torrance, 1966, p 113). The 'Just Suppose' activity, adapted from Guilford's consequences test, tests the subjects ability to consider, evaluate and play around with unusual ideas simply out of curiosity. Thurstone was said to have selected his graduate students by using a similar technique (Torrance, 1966).

The 'Picture Completion' activity is an original one devised by Torrance to evaluate the testee's ability to think up an original response to the same stimulus. The 'Incomplete Figures' activity, developed by Kate Franck and used in creativity studies by Barron et al (Torrance, 1966) is based on the Gestalt assumption that an incomplete figure sets up tension in a subject, requiring him/her to complete it in the easiest way possible. In order to produce an original or creative response, the subject must delay the impulse towards closure, thus controlling his/her tensions. In the 'Repeated Figures' activity the ability to make multiple associations to a single stimulus is tested. All four types of divergent thinking are stimulated and thus a conflict is supposedly set up among these various response tendencies.

4.2.4.1.3 Reliability

Extremely high interscorer reliabilities were attained by comparing the scores of trained Torrance scorers with the scores of classroom teachers who scored a sample of 25 booklets completed by children at the grade level they were teaching. The teachers were untrained, and simply followed the scoring guide. Correlation coefficients ranged from 0.80 to 0.99 (Torrance, 1966).

Test-retest reliability studies that have been conducted on Verbal and Figural forms A and B of the Torrance Tests of

Creative Thinking, show adequate reliability coefficients. The alternate forms of both the verbal and the figural tests were administered to pupils in Wisconsin and Minnesota, and showed reliability coefficients ranging from 0.50 to 0.93 (Hagender, in Torrance, 1966). Other studies have not used the complete batteries, but have obtained similarly adequate correlation coefficients (Eherts; Goralski; Grover; Mackler; McGreevey; Sommers; Wodtke; Yamamoto, in Torrance, 1966).

4.2.4.1.4 Validity

As far as content validity is concerned, Torrance has been criticised by Wallach and Kogan, Vernon, Thorndike and others for the lack of inter-correlations among the various tasks in these batteries. The author defends this absence of a correlation, by explaining that the tasks were deliberately designed to call upon a variety of different mental abilities that may be thought of as creative thinking abilities.

Content validity has been insured by basing the test stimuli, tasks, instructions and scoring procedures on much of the theory and research on creativity now available, relating to the lives of creative people, the functioning of the human mind, personalities of famous creative people and

other studies relating to various aspects of creativity (Torrance, 1966).

As far as construct validity of the test battery is concerned, a large number of studies have been undertaken in an attempt to understand more about the qualities being measured by these tests.

In a study investigating high I.Q. fourth grade children, Weisberg and Springer compared the personality characteristics of the high creative children with those of the low creative children in the group. The high creative children were found to rate higher on : "strength of self-image, ease of early recall, humor, availability of Oedipal anxiety, and uneven ego development" (Torrance, 1966, p 22). In addition, the high creative children showed a greater tendency toward unconventional responses on the Rorschach Ink Blot test, using a greater quantity of human movement and colour responses than did the low creatives.

In other studies, high scores on the Torrance measure have been found to be negatively correlated with high scores on a rigidity measure, the Frenkel-Brunswik Revised California Inventory (Fleming & Weintraub, in Torrance, 1966); and positively correlated with an originality measure derived from evaluations of imaginativeness in story-telling (Yamamoto, in Torrance, 1966); positively correlated with

motor creativity as measured by the Wyrick Test of Motor Creativity (Alston, in Torrance, 1966); high scores on originality and elaboration were positively correlated with high scores on the creativity scale of the Minnesota Importance Questionnaire (Dauw, in Torrance, 1966).

In a survey of 144 studies designed to improve creative functioning, 106 studies used the Torrance Tests of Creative Thinking. Each study was rated according to the percentage of the criteria on which significant creative improvement occurred, and it was noted that 71 percent of these attempts were successful. Extremely disciplined methods of training in creative problem-solving produced improvement in over 90 percent of these attempts. According to Torrance, these results provide substantial indirect support for the construct validity of the test (Torrance, 1966). In a more recent study, using the Kirton Adaption-Innovation Inventory in a group of students enrolled in a class in creative thinking, Torrance compared scores on this measure to scores on several other creativity measures, in order to determine how adaptors and innovators might differ in their styles of learning and thinking. This inventory places individuals along a continuum from innovation to adaptation. Adaptors are defined as people who are talented at improving existing ways of doing things, but are unable to see new ways outside of the current pattern. In contrast, innovators are capable of generating new ideas, and thus innovating changes. The

instrument has an internal reliability of approximately 0.88 and test-retest reliability of 0.82. Amongst several measures administered by Torrance and yun Horng in this study, Innovation was found to correlate significantly and positively with the Torrance Test of Creative Thinking measures of Fluency, Flexibility and Originality; Rorschach originality and movement; and the right hemisphere style of learning and thinking (using 'Style of Thinking and Learning', a self-report measure of styles of learning and thinking associated with the specialized cerebral hemisphere functions). Adaptation is significantly related to left hemisphere cerebral style of learning and thinking (Torrance and yun Horng, 1980).

4.2.4.1.5 Scoring

Scoring was done separately for the Verbal (Items 1-7) and Figural (Items 1-3) part of the test, following Torrance's Direction Manual and Scoring Guide (Torrance, 1966). A random sample of 20 test batteries were scored by an independent scorer, in order to establish inter-scorer reliability. Both the Figural and the Verbal parts of the test are scored as follows:

1) Fluency Score: this refers to the total number of relevant responses, relevancy being defined as appropriate, or related to the task at hand.

2) Flexibility Score: All possible responses have been divided into different categories by Torrance, and the score would therefore be the number of responses that fell into different categories. No score was given to a response if it fell into a category already scored.

3) Originality: This score was scored according to the frequency of a given response in the normative population. Very frequent responses received a score of zero, less frequent 1, unusual responses, a score of 2, according to indications provided by Torrance (Torrance, 1966, pp 20-50).

4) Elaboration: Here, a score was added for each additional detail or idea added to the original stimulus figure itself, to its boundaries and to the surrounding space.

4.2.4.2 Rorschach Test

4.2.4.2.1 Projective Tests

Since its publication in 1921, Hermann Rorschach's Inkblot Test has become one of the most popular projective techniques in both clinical work and personality research. The basic assumption of a projective test is that it attempts to elicit, in a global fashion, a patterned analysis of an individual's current psychological structure

and functioning, by means of the presentation of ambiguous, unstructured stimuli to the subject, who is then required to ascribe meaning and structure thereto, by projecting his/her inner psychological processes on to the test material (Anastasi, 1976; Brown, 1976; Wolman, 1965).

In this type of test, the use of ambiguous, unstructured and/or incomplete test items, such as ink blots, incomplete stories, pictures, permits the subject freedom to supply any number of responses, none of which can be considered to be right or wrong (Wolman, 1965). Covert, latent, or unconscious aspects of personality, perhaps threatening or anxiety-provoking, and usually well concealed by the defences, can be safely revealed by projecting them on to the imagined characters and situations in the test material. The subject is able to do this, because he/she has no idea what constitutes a 'good' response, and because his/her attention is diverted away from him/herself towards the task, so that defences can be lowered (Anastasi, 1976).

Freud, the originator of the concept of projection, defined it as a "tendency to ascribe one's own drives, feelings and emotions to other people or to the outside world, in such a manner as to defend oneself against awareness that these are part of oneself" (Zubin, 1965, p 4). Anderson and Anderson note that not only projection, but other defensive reactions, such as fantasy or reaction formation, could also

be operating when projective techniques are used (Anderson & Anderson, 1951, p 56). In addition, Murray considers that projection involves imposing meaning and structure on ambiguous stimuli while drawing on a variety of internal sources, e.g. needs, wishes, feelings, both conscious and unconscious (Zubin, 1965, p 5). The concept of projection as used in projective tests has therefore broadened considerably since its original Freudian base.

4.2.4.2.2 Description of the Rorschach Test

The test consists of ten symmetrical inkblots, centred on white paper and mounted on cards (6 by 9 inches). Five of the cards are printed in shades of grey (Figures 1,4,5,6 and 7). Two of the cards (Figures 2 and 3) are in red and grey, and the remaining three cards are completely chromatic (Anastasi, 1976).

4.2.4.2.3 Administration

No explanation of the test was given, so that the testing situation was as unstructured as possible. The subject was handed the cards, one at a time, and asked to report what he/she saw and what it looked like to him/her. Responses were recorded on tape for later transcription; responses were also noted on determinant sheets. The examiner avoided general conversation, encouraged further response

productivity, and tried to defer questions until after the test. All verbal and nonverbal behviour was recorded (Anastasi, 1976, Brown, 1970).

4.2.4.2.4 Scoring

More clinical and experimental attention has been directed towards the Rorschach than any other projective technique. Scoring systems have ranged from one end of the projective-psychometric continuum to the other. Authors such as Lindner and Schafer (in Jackson & Messick, 1978) have indicated the value of using the Rorschach as a clinical tool in a purely qualitative way, stressing the dynamic and symbolic nature of the content. Other authors have attempted to show how highly structured and completely objective multiple-choice methods can be applied to the study of individual differences, using this test (Holtzman, in Jackson & Messick, 1978).

When the Rorschach is being used for a global assessment of personality, all the data, scores, number of responses per cards, reaction times, etc., are combined into a psychogram. Interpretation is based on a study of the various dimensions of the subject's response. Relationships and interpretations commonly offered include the following: whole blot response (W) is associated with achievement-orientation and inner-directedness; movement (M) reveals

action-tendencies seeking expression, and a high M represents creativity, a rich fantasy life, and sensitivity to internal stimulation in the form of needs and wishes; colour responses reveal emotional attitudes towards others, and a high C indicates impulsivity and sensitivity to external rather than internal stimulation (Anastasi, 1976; Anderson & Anderson, 1951; Freedman & Kaplan, 1974; Pennington & Berg, 1954; Rapaport, 1978).

4.2.4.2.5 The Movement Response

Because of the limitations of objective tests of creativity, it was decided to use the Rorschach as an additional measure of creative potential. Also, its inclusion in the test battery helped to disguise the fact that the study was concerned with creativity, since most subjects assumed that the Rorschach would be used to interpret various aspects of personality functioning.

The usefulness of the Rorschach in general, both to stimulate and study creative responses, has been widely documented. The nature of the test encourages the emergence of unconscious primary-process modes of thinking and cognition, and affords the experimenter an opportunity to stimulate creative ability in a subject, which can then be scored and analysed. Squyres & Craddick consider the Rorschach response to offer a microcosmic view of the

mechanism of creativity in general (Squyres & Craddick, 1984).

Research indications have shown the movement response to be a useful measure of creative potential. In a study on the frequency of daydreaming behaviour of 150 male and female college students, a significant difference in the productivity of M responses on the Rorschach was obtained between high and low daydreaming groups (Page, 1957).

Dudek attempted to relate the primary process scores (according to the scoring system developed by Holt) on the Rorschach to the creativity of 67 grade 4 children. Creativity measures were obtained by using the Torrance Tests of Creative Thinking (full figural scale, Form A, and one item from the verbal scale). No correlation was found between Holt's measures of primary process, and the four creativity scores (fluency, flexibility, originality and elaboration). However, a positive correlation was obtained between verbal creativity and the Rorschach M (Dudek, 1975).

Using a self-report measure of information processing styles based on hemisphericity research, called 'Your Style of Learning and Thinking' (SOLAT), Torrance compared scores on this measure with scores on a variety of measures designed to assess either creative style or creative ability. The results indicate that there is a consistent tendency for the

measures of creative style, including the Rorschach Ink Blot Test, and the Torrance Tests of Creative Thinking, to be positively and significantly related to the right hemisphere style of information processing (Torrance, 1982). In the original study on the efficiency of the SOLAT, evidence indicated that, in superior adults, both cerebral hemispheres appear to be involved in creative thinking, and that optimum creative functioning seems to be dependent on the right hemispheric style of processing, or by both hemispheres functioning in a complementary manner. In addition, the same subjects appeared to have the motivations and personality characteristics usually associated with creative achievement (Torrance & Mourad, 1979).

According to studies reviewed by Raychaudhuri, high M productivity has been shown to correlate consistently with creativity. Other studies have shown higher M productivity in females than in males, (Felzer, and Kleinman & Higgins, in Raychaudhuri, 1971) and this has been interpreted as a result of culturally determined sex-role expectations relating to fantasy productions. In an attempt to relate Rorschach M productivity with sex, creativity and psychosexual orientation of the subjects, Raychaudhuri analysed the Rorschach M productions of six groups of subjects: normal males and females, creative males and females, and non-masculine males and non-feminine females. High M productivity was found to be associated with

creativity, femininity in males, and with the female sex. Raychaudhuri suggests that the high M productivity of the female subjects indicates a rich fantasy life, possibly a result of the need to overcome restrictive sex-roles, which are mostly culturally determined (Raychaudhuri, 1971).

Klopfer suggests that the ability to animate the imagery observed in the inkblot indicates a relatively free access to fantasy activities. This ability, combined with a firm hold on reality, would seem to indicate a high level of emotional integration. Persons with these abilities can freely and easily draw upon primitive impulses as sources of creative impulses (Klopfer et al, 1954, in Welman, 1985).

It should be made clear at this point that the Rorschach M response is used in this study as a measure of creative potential, and is not to be regarded as creativity per se. Most of the authors previously reviewed regard the movement response as a necessary, but not sufficient, prerequisite for creativity (Dudek, 1975; Klopfer and Schachtel, in Welman, 1985).

In the present study, M (human movement), FM (animal movement) and mF, Fm, and m (inanimate movement) responses were used to assess creative potential. In addition, a Total M score was obtained, by summing the M, FM, mF, Fm and m responses to each card.

Rorschach responses were scored 'blind' for M, FM, mF, Fm, m and Total M by an experienced clinician, following standard criteria. A random sample of 20 Rorschach protocols was scored by an independent examiner, in order to establish inter-scorer reliability.

4.2.4.3 Methodological Considerations

4.2.4.3.1 Demand Characteristics

A great deal of empirical evidence supports the fact that the experimenter and the experimental setting act as confounding variables, thus introducing a large source of variability (Kelman et al, reviewed in Stern, 1983). In addition it has also been argued by Orne that the demand characteristics of an experiment produced by subjects' expectations can also have an appreciable effect (Orne, 1962). The demand characteristics to which Orne is referring are the totality of cues which may convey the experimental hypothesis to the subjects, and thus influence their behaviour. Cues may range from information provided in the initial selections procedures, the manner of the experimenter, the experimental setting, and all cues communicated during the duration of the experiment (Orne, 1962). Faber discusses the experimenter effect by referring to the studies by Mcguigan (1963) and Kintz (1965) in which

it appeared that the experimenter was likely to bias subject responses, and even the results of his/her experiment to fit his/her theoretical expectations (Faber, 1977). It was thought that using another experimenter, blind to the hypotheses of the study, to collect the data, would circumvent this probem. However, according to the evidence of Rosenthal (1963); and Rosenthal et al (1963), subtle visual and auditory cues, including gestures and voice inflections, could still communicate something of the intention of the study to the data collector. Mcguigan suggests that the best control for the experimenter effect is to hold his/her influence constant for all subjects (Faber, 1977). Orne's studies showed the extreme compliance, much of it unconscious, which subjects exhibit when asked to perform experimental tasks ranging from mindlessly repetitive, to actively uncomfortable, to obviously meaningless, tasks (Orne, 1962). He suggests that these demand characteristics can never be totally eliminated from an experimental situation, but should be studied in order to assess their influence on the results of experiments (Orne, 1962).

In an attempt to discover whether dream content could be affected by demand characteristics, Stern et al administered a form to two groups of subjects, requesting them to pay attention either to the outdoor (nature) or indoor (urban) settings of their nocturnal dreams. Laboratory and home

dreams collected from each group showed a significant change in the predicted direction (Stern, 1983).

To minimise the possible effect of 'demand characteristics' on dream content, reported by Tart, (1964; 1969); Orne, 1962; Stern et al, 1983) subjects in the present experiment were told that the purpose of the study was to examine the relationship between dreaming and personality factors. At no stage in the study were the hypotheses revealed to the subjects, and in a post-experimental enquiry no subject had correctly formulated the hypotheses of the study. As previously mentioned in section 4.2.2 above, two subjects in Group C thought that they were members of a control group, and six subjects thought the study had something to do with creativity or divergent thinking, because they recognised that they had been given tests of divergent thinking.

4.2.4.3.2 Menstrual Cycle

Evidence indicating that menstrual cycle phases might have an appreciable effect on nocturnal dream content (Swanson & Foulkes, 1968), conflicts with more recent evidence that the menstrual cycle has no significant effect on dream content (Schultz & Koulack, 1980). Since the evidence is inconclusive at present, it was decided to re-test each female in the study on the same day in the menstrual cycle as the day on which she had originally been pre-tested,

approximately four weeks previously. Since this was quite complicated, in practice, to co-ordinate the testing sessions with the activities of 60 students, and still manage to complete re-testing within a 3-week period, in effect re-testing of females took place within a four-day period around the actual menstrual cycle day - i.e. a subject who had been tested on the 8th day of her menstrual cycle was re-tested between the 6th and the 10th day of the following cycle. Female subjects were unaware that their re-testing dates had been manipulated in this manner. Male subjects were simply re-tested four weeks after the initial testing.

4.2.4.3.3 Situational Variables

An attempt was made to hold situational variables constant by testing all subjects in the same office. However, in practice, during the period of the investigation, concrete paving was being laid outside the window, and there was a great deal of noise disturbance in the first few weeks of the study. On some occasions, it was so bad that the experimenter was unable to hear the verbal responses to the Rorschach clearly. Concerned that the tape-recorder would not pick up every word, she decided to administer the Rorschach test in a quieter office nearby on those occasions when the noise level was extreme. Both the uneven levels of noise during the period of the investigation, as well as the

fact that some of the Rorschach testing was done in another office, may have acted as nuisance variables.

4.2.4.3.4 Control Groups

Two control groups were included, Group B to control for the possible practice effects of recording dreams for the three week period, and Group C to control for the simple factor of participating in a dream research study, which many of the subjects seemed to find rather exciting, and may have contributed to a Hawthorne effect (Huysamen, 1978).

4.2.4.3.5 Home Dream collection

Although research evidence has shown that a great deal more dream material can be collected via the laboratory method, since (a) it is recorded from each REM cycle of the night; (b) it is reported immediately upon awakening after a period of REM sleep; and (c) various experimental variables can be recorded more accurately than if using the home dream collection method, it was decided to use the latter method for this study, for the following reasons.

Since the dreamwork technique was extremely time-consuming, requiring at least a half-hour each morning for the dream recording, and at least an hour each evening to complete the questionnaire, no more than 4-5 dreams per week were

expected to be delivered to the experimenter. This in fact, was borne out during the course of the study. Therefore, if quantity of dreams produced was not at issue, it was decided that the choice of laboratory or home dreams should be guided by which method produced the higher quality of dream content. According to studies reported by Faber, home dreams appear to be more dramatic,and to contain more sexual and aggression/misfortune themes than do laboratory dreams (Domhoff, 1967; Domhoff & Kamiya, 1964; Faber, 1977; Hall and Van de Castle, 1966; Van de Castle, 1971). Van de Castle suggests that the above findings are due to the fact that the artificiality of the laboratory results in blander dreams, also that subjects edit dreams of a sexual or aggressive nature in favour of more sociably acceptable content, and that the more exciting dreams are the ones most likely to be remembered at home, whereas the more prosaic and bland dreams, forgotten at home, would be captured in the laboratory by the REM-sleep awakening technique. He further suggests that the dreams recalled at home are more likely to be related to the essential psychodynamic functioning of the subject (Van de Castle, in Faber, 1977).

Aspects of these findings have been contradicted to some extent by Weisz and Foulkes (1970) who reported no significant differences between home and laboratory dreams in the basic dream processes of imagination, distortion, dramatization, percentage of recall, active participation

and sexuality. However, it appeared that home dreams contained significantly more impulse related content, specifically, more verbal and physical aggression. It appears that subjects are less likely to censor important dream material when they can record it in a dream diary, rather than report it in a face to face interview situation (Domhoff, 1967; Domhoff & Kamiya, 1964; Hall and Van der Castle, 1966; Van de Castle, 1971).

Another problem with the laboratory method is the necessity of artificially terminating a REM period when the subject is awoken to report a dream. Since it is not known how near the end of the dream the sleeper is, important dream material may be lost. The recent evidence of Fiss, (Fiss, 1979) reporting dream-like mentation in NREM sleep, has brought about a serious questioning as to whether REM sleep and dreaming are in fact, equivalent. Other studies have shown that dream-like mentation can occur without the expected accompaniment of electro-physiological correlates, as has occurred in studies of relaxed wakefulness (Foulkes & Scott, 1973; Foulkes et al, 1966; 1974; Foulkes & Fleisher, 1975; Foulkes and Vogel, 1965).

Since it appears that the major differences between home and laboratory dreams lies in content, not in process, it was decided to opt for the home dream method of using a dream diary.

4.2.4.4 Statistical Techniques

The effects of using a dreamwork technique to influence creative potential were evaluated using a Repeated Measures Analysis of Variance, on the following sets of scores, resulting from the pre- and post-experimental testing, in order to compare the mean scores between and within each of the three groups:

TORRANCE FIGURAL:	Fluency, Flexibility, Originality, Elaboration, Total Figural.
TORRANCE VERBAL:	Fluency, Flexibility, Originality Total Verbal.
RORSCHACH:	M, FM, mF, Fm, m, Total M.

The computer analysis, using the Repeated Measures Analysis of Variance (Dixon, 1981, pp 395-398), yielded the following results:

5. RESULTS

5.1 Measures

Pre- and post-experimental testing in this study yielded fifteen different measures of the dependent variable, as follows:

Torrance Figural Scores

Form A: Fluency, Flexibility, Originality, Elaboration and Total scores

Form B: Fluency, Flexibility, Originality, Elaboration and Total scores

Torrance Verbal Scores

Form A: Fluency, Flexibility, Originality, and Total

Form B: Fluency, Flexibility, Originality, and Total

Rorschach

Pre-test: M, FM, mF, Fm, m, and Total M

Post-test: M, FM, mF, Fm, m, and Total M

The three levels of the independent variable are as follows:

Group A: Dream recording of own dreams and amplification technique (see Appendix 7).

Group B: Dream recording of own dreams and logical task (see Appendix 8).

Group C: Dream recording of other people's dreams and logical task (see Appendix 8).

5.2 Torrance Tests of Creative Thinking

5.2.1 Inter-scorer reliability

Inter-scorer reliability coefficients on all measures of the Torrance Tests of Creative Thinking and all measures of the Rorschach movement responses are presented in Table 1. All correlations were positive and ranged from 0.80 to 1.00 for the Torrance, and from 0.33 to 0.80 for the Rorschach.

In the two-way repeated measures analysis of variance on the Torrance scores (Tables 2 and 3), it can be seen that there were no significant differences between the three groups; however, within groups differences for the Figural tasks can be seen for Fluency ($P< 0.0349$); Elaboration ($P< 0.0008$); and Figural Totals ($P< 0.0007$). In the Verbal tasks, within groups differences can be seen on all four measures; for Fluency ($P< 0.0002$); Flexibility ($P< 0.0000$); Originality ($P< 0.0000$); and for Verbal Totals ($P< 0.0000$). No interaction was detected at $P< 0.05$.

Since all significant differences occurred within groups, i.e. between the pre- and post-test conditions, t tests were performed to examine the differences between the pre- and post-test scores on each of the three groups, on all dependent variable measures. A comparison between Groups A, B and C of the mean scores on the Figural tasks of the Torrance Tests is presented in Table 6. There was a significant difference between the pre- and post-test scores for subjects in Group C on Fluency, Originality, and Elaboration, as well as on the overall Figural Total score ($P< 0.05$). There was also a significant difference between the pre- and post-test scores in Group A for Elaboration and Figural Totals ($P< 0.05$). Overall, the differences between the pre- and post test scores on Figural Totals for both Groups A and C were also significant at $P< 0.01$.

A comparison between Groups A, B and C of the mean scores on the Verbal tasks of the Torrance Tests is presented in Table 7. There was a significant difference between the pre- and post-test scores for subjects in Group A for Fluency, Flexibility, and Originality, as well as for overall Verbal Totals ($P< 0.01$). There was a significant difference between the pre- and post-test scores for subjects in Group B for Flexibility and Verbal Totals ($P< 0.05$), and for Flexibility ($P< 0.01$). There was a significant difference between the pre- and post test scores for subjects in Group

C for Fluency, Flexibility, Originality and Verbal Totals ($P < 0.05$), and significant differences between the scores on Fluency, Flexibility, and Verbal Totals ($P < 0.01$).

The above results would seem to support only part of Hypothesis 1 (see section 3.1 above), i.e. that certain of the mean scores on the Torrance tests for subjects in Group A were indeed significantly higher than those for Group B. However, even more of the mean scores for Group C were significantly higher than Group B, which was not predicted by Hypothesis 1.

5.3 Rorschach Scores

In the two-way repeated measures analysis of variance on the Rorschach scores, (see Tables 4 and 5) it can be seen that there were significant differences between the three groups for M ($P < 0.0243$); FM ($P < 0.0264$); mF ($P < 0.0280$); Fm ($P < 0.0029$); and Rorschach Totals ($P < 0.0011$). The only significant differences within groups was found for M ($P < 0.0160$). An inspection of the one-way analysis of variance results yielded by the computer analysis, reveals that the differences between the three groups on these measures were already present in the pre-test conditions: Significant F-ratios were obtained on the pre-test comparisons for M ($P < 0.0443$); mF ($P < 0.0044$; and Rorschach Total ($P < 0.0036$).

Comparisons between the mean pre- and post-test Rorschach scores for Groups A, B and C are presented in Tables 8 and 9. There was a significant difference between the pre- and post-test scores for Group C for the M scores ($P< 0.05$), for Group B for the mF scores ($P< 0.05$) and for Group B for the Fm scores ($P< 0.05$). No significant differences were found on any of the other measures at $P< 0.05$, and there were no significant differences between any of the Rorschach pre- and post-test scores at $P< 0.01$.

Hypothesis 2 (see section 3.2 above) was not confirmed: i.e. the only significant differences found within groups were for Group C on M ($P< 0.0160$. Significant differences between groups were accounted for by the fact that the baseline measures between the groups were already significantly different.

5.4 TABLES

TABLE 1

INTER-RATER RELIABILITY COEFFICIENTS

TORRANCE		RORSCHACH	
Verbal: Form A	r		r
Fluency	0.80	M Score	0.69
Flexibility	0.94	FM Score	0.80
Originality	0.95	mF Score	0.41
Figural: Form A		Fm Score	0.73
Fluency	0.99	m Score	0.33
Flexibility	0.97	Total M Score	0.71
Originality	0.98		
Elaboration	0.95		
Verbal: Form B			
Fluency	0.99		
Flexibility	0.95		
Originality	0.97		
Figural: Form B			
Fluency	1.00		
Flexibility	0.97		
Originality	0.97		
Elaboration	0.98		

TABLE 2

TWO-WAY REPEATED MEASURES SUMMARY TABLE

EFFECT	F	df	P		
Figural Fluency					
BETWEEN GROUPS (GP)	,29	2,51	,7462		
WITHIN GROUPS (T)	4,69	1,51	,0349	*	
INTERACTION (X)	,49	2,51	,6173		
Figural Flexibility					
GP	,04	2,51	.9564		
T	,52	1,51	,4744		
X	1,23	2,51	,3000		
Figural Originality					
GP	,45	2,51	,6420		
T	2,77	1,51	,1020		
X	1,75	2,51	,1834		
Figural Elaboration					
GP	1,34	2,51	,2711		
T	12,82	1,51	,0008	*	!
X	,84	2,51	,4387		
Figural Totals					
GP	1,01	2,51	,3714		
T	12,88	1,51	,0007	*	!
X	2,34	2,51	,1065		

* Significant at P< 0.05.

! Significant at P< 0.01.

TABLE 3

TWO-WAY REPEATED MEASURES SUMMARY TABLE

EFFECT	F	df	P		
	Verbal Fluency				
GP	2,79	2,51	,0705		
T	15,83	1,51	,0002	*	!
X	1,08	2,51	,3475		
	Verbal Flexibility				
GP	1,81	2,51	,1741		
T	28,57	1,51	,0000	*	!
X	,22	2,51	,8043		
	Verbal Originality				
GP	2,35	2,51	,1055		
T	21,18	1,51	,0000	*	!
X	1,44	2,51	,2452		
	Verbal Totals				
GP	2,55	2,51	,0883		
T	24,65	1,51	,0000	*	!
X	1,21	2,51	,3074		

* Significant at P< 0.05.

! Significant at P< 0.01.

TABLE 4

TWO-WAY REPEATED MEASURES SUMMARY TABLE

EFFECT	F	df	P	
	Rorschach M			
GP	4,00	2,51	,0243	*
T	6,21	1,51	,0160	*
X	,17	2,51	,8428	
	Rorschach FM			
GP	3,91	2,51	,0264	*
T	,23	1,51	,6370	
X	,06	2,51	,9453	
	Rorschach mF			
GP	3,84	2,51	,0280	*
T	,40	1,51	,5315	
X	1,20	2,51	,3099	
	Rorschach Fm			
GP	6,58	2,51	,0029	* !
T	,79	1,51	,3770	
X	1,20	2,51	,3099	

* Significant at P< 0.05.

! Significant at P< 0.01.

TABLE 5

TWO-WAY REPEATED MEASURES SUMMARY TABLE

EFFECT	F	df	P		
	Rorschach m				
GP	,73	2,51	,4876		
T	,28	1,51	,6002		
X	,64	2,51	,5298		
	Rorschach Totals				
GP	7,77	2,51	,0011	*	!
T	1,78	1,51	,1878		
X	,05	2,51	,9499		

* Significant at P< 0.05.

! Significant at P< 0.01.

TABLE 6

COMPARISON OF MEANS (+S.E.) ON TORRANCE FIGURAL TESTS

Group	Pre-test	Post-Test	df	t		
		Figural Fluency				
A	21.06(±1.79)	22.50(±1.85)	17	-1,25		
B	20.28(±1.86)	21.17(±2.05)	17	-0.64		
C	18.61(±1.53)	21.33(±1.68)	17	-1.85	*	
		Figural Flexibility				
A	16.33(±1.22)	16.56(±1.10)	17	-0.28		
B	16.33(±1.14)	15.78(±1.43)	17	0.53		
C	15.28(±1.10)	16.78(±1.17)	17	-1.57		
		Figural Originality				
A	34.89(±2.88)	40.56(±5.21)	17	-1.39		
B	35.50(±4.73)	33.39(±3.94)	17	0.53		
C	29.17(±3.19)	37.00(±4.02)	17	-2.06	*	
		Figural Elaboration				
A	58.56(±5.58)	65.61(±5.24)	17	-1.89	*	
B	49.00(±3.95)	54.33(±4.19)	17	-1.66		
C	49.72(±4.78)	62.06(±5.68)	17	-2.54	*	
		Figural Totals				
A	130.8(±9.38)	145.2(±9.86)	17	-2.78	*	!
B	121.1(±7.17)	124.7(±7.14)	17	-0.53		
C	112.8(±8.97)	137.2(±10.08)	17	-2.98	*	!

* Significant at P< 0.05.

! Significant at P< 0.01.

TABLE 7

COMPARISON OF MEANS (±S.E.) ON TORRANCE VERBAL TESTS

Groups	Pre-Test	Post-Test	df	t		
		Verbal Fluency				
A	102.3(±6.29)	111.3(±6.71)	17	-2.79	*	!
B	90.67(±8.61)	94.78(±8.98)	17	-1.35		
C	79.50(±4.15)	90.83(±4.70)	17	-2.67	*	!
		Verbal Flexibility				
A	45.11(±1.85)	50.17(±2.23)	17	-2.87	*	!
B	40.83(±3.12)	45.39(±3.41)	17	-3.82	*	!
C	38.33(±1.91)	44.44(±2.35)	17	-3.00	*	!
		Verbal Originality				
A	114.9(±8.46)	136.4(±9.75)	17	-4.26	*	!
B	106.8(±11.95)	114.6(±11.87)	17	-1.72		
C	87.94(±8.10)	107.2(±6.75)	17	-2.38	*	
		Verbal Totals				
A	262.4(±15.96)	297.9(±18.11)	17	-3.93	*	!
B	238.3(±23.14)	254.8(±23.79)	17	-2.18	*	!
C	205.8(±13.49)	242.4(±13.01)	17	-2.73	*	!

* Significant at P< 0.05.

! Significant at P< 0.01.

TABLE 8

COMPARISON OF MEANS ON RORSCHACH SCORES

Groups	Pre-Test	Post-Test	df	t	
		Rorschach M			
A	5.72(±1.49)	6.83(±1.52)	17	-1.36	
B	2.39(±0.35)	3.00(±0.44)	17	-1.39	
C	2.94(±0.74)	3.83(±0.75)	17	-1.83	*
		Rorschach FM			
A	4.00(±0.80)	4.22(±0.71)	17	-0.28	
B	2.61(±0.42)	2.83(±0.52)	17	-0.59	
C	2.22(±0.40)	2.22(±0.39)	17	0	
		Rorschach mF			
A	1.89(±0.34)	1.61(±0.44)	17	0.51	
B	0.83(±0.20)	1.33(±0.32)	17	-2.03	*
C	0.78(±0.19)	0.94(±0.19)	17	-1	
		Rorschach Fm			
A	2.22(±0.42)	2.67(±0.51)	17	-0.9	
B	1.78(±0.45)	0.78(±0.25)	17	1.91	*
C	1.11(±0.28)	0.94(±0.26)	17	0.45	

* Significant at $P < 0.05$.

TABLE 9

COMPARISON OF MEANS (±S.E.) ON RORSCHACH SCORES

Group	Pre-Test	Post-Test	df	t
		Rorschach m		
A	0.33(±0.18)	0.61(±0.22)	17	-1.05
B	0.28(±0.19)	0.17(±0.09)	17	0.57
C	0.28(±0.14)	0.33(±0.28)	17	0.21
		Rorschach Totals		
A	14.17(±2.38)	15.39(±2.46)	17	-0.66
B	7.44(±0.88)	8.11(±0.90)	17	-1.04
C	7.33(±0.92)	8.28(±0.80)	17	-1.19

FIGURE 1

TORRANCE: FIGURAL FLUENCY

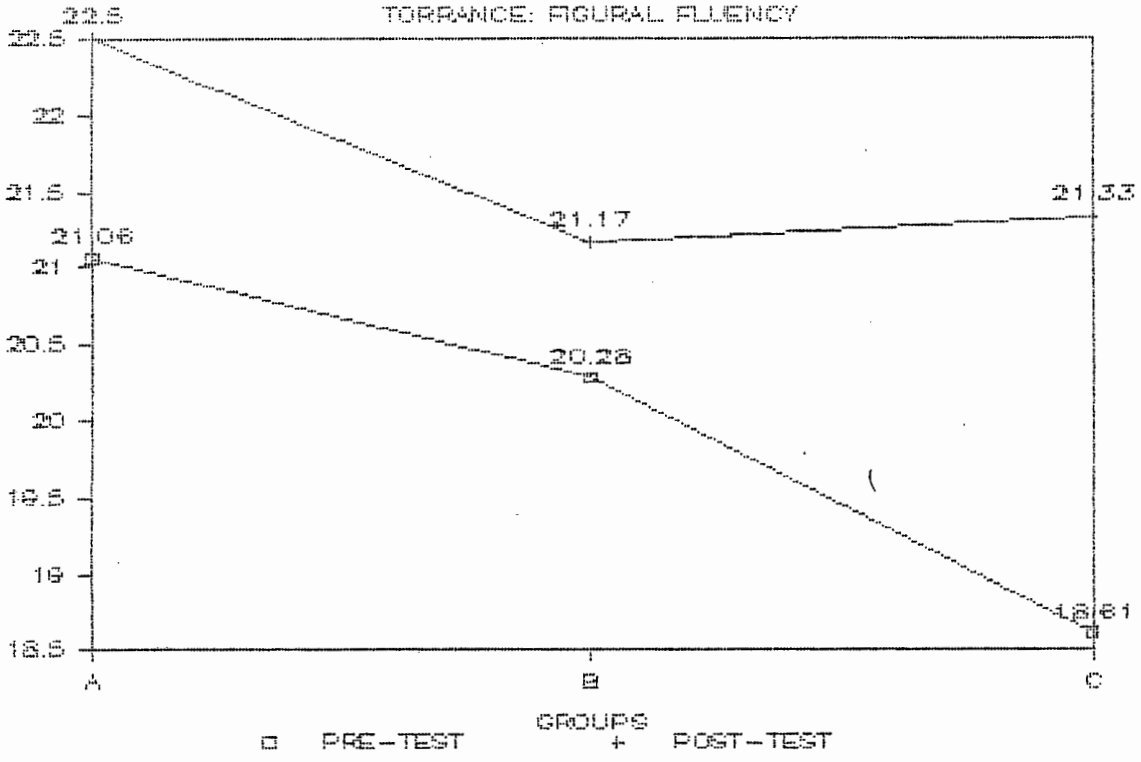


FIGURE 2

TORRANCE: FIGURAL FLEXIBILITY

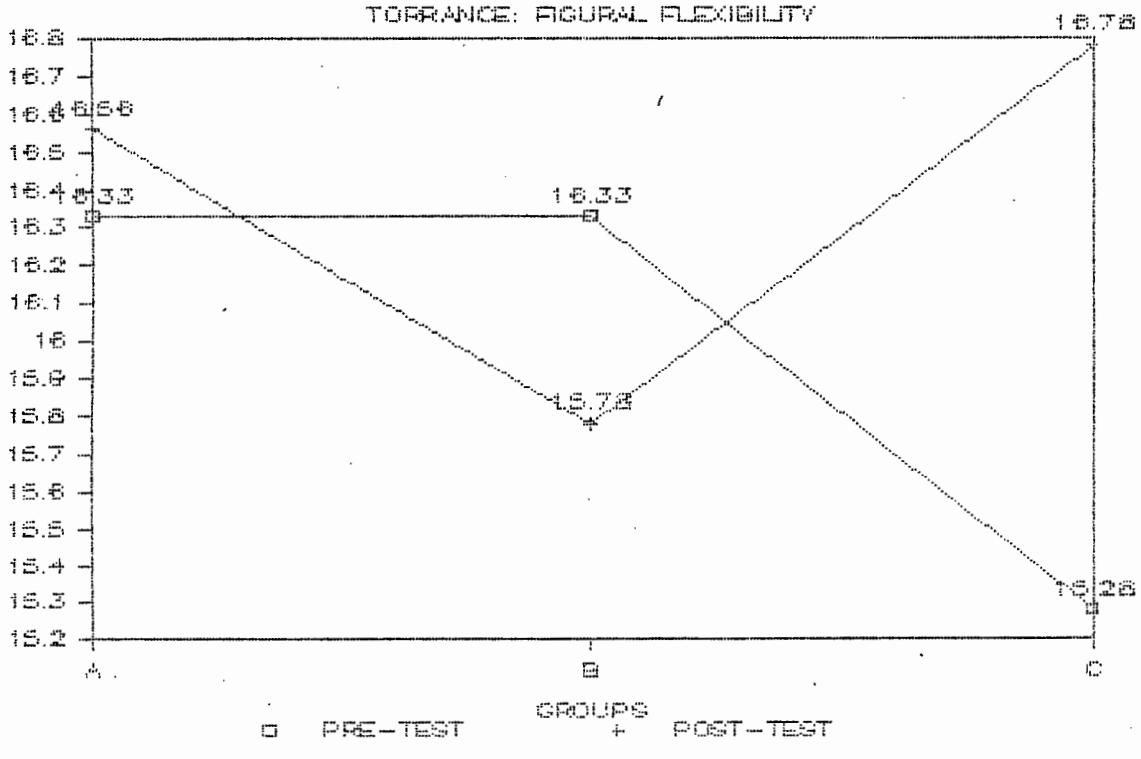


FIGURE 3

TORRANCE: FIGURAL ORIGINALITY

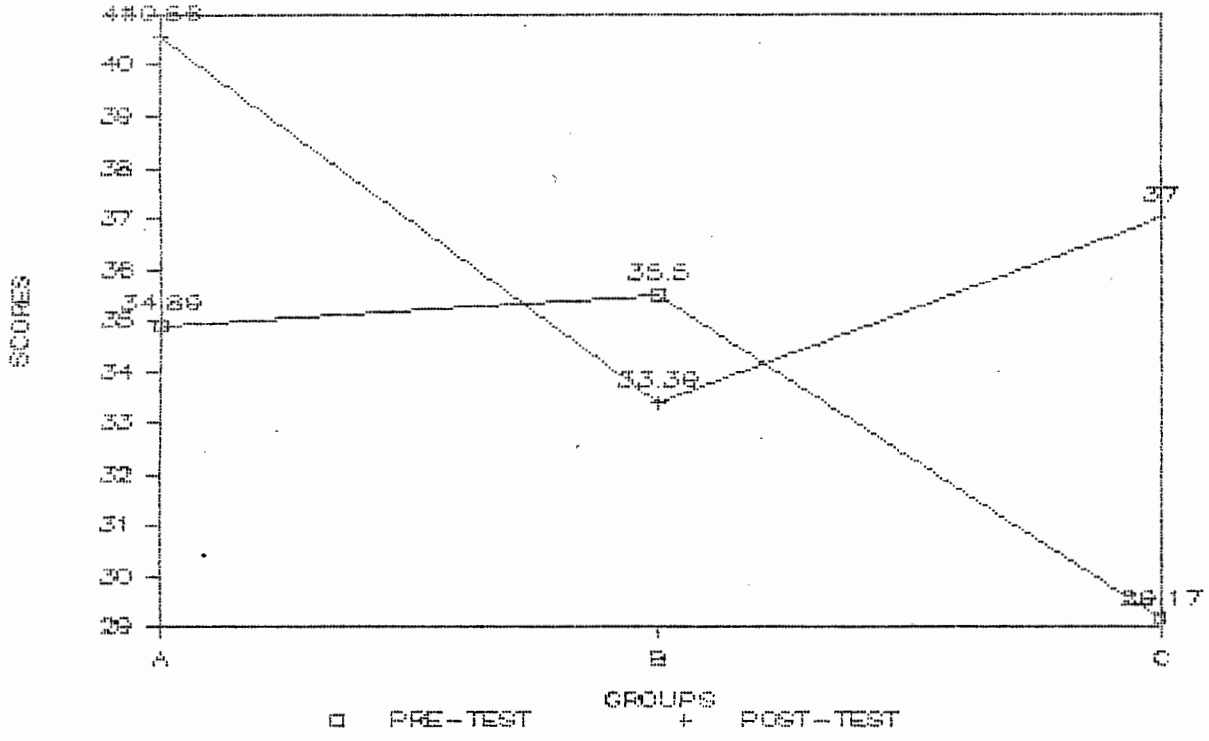


FIGURE 4

TORRANCE: FIGURAL ELABORATION

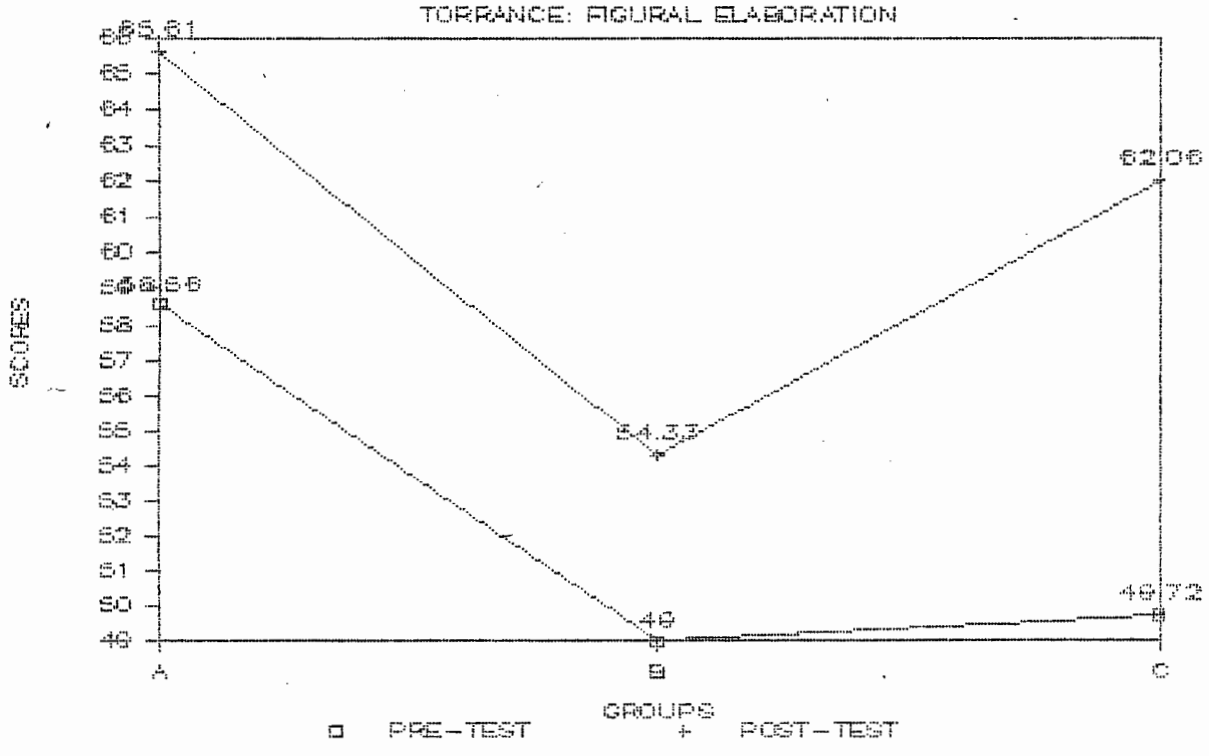


FIGURE 5

TORRANCE: VERBAL FLUENCY

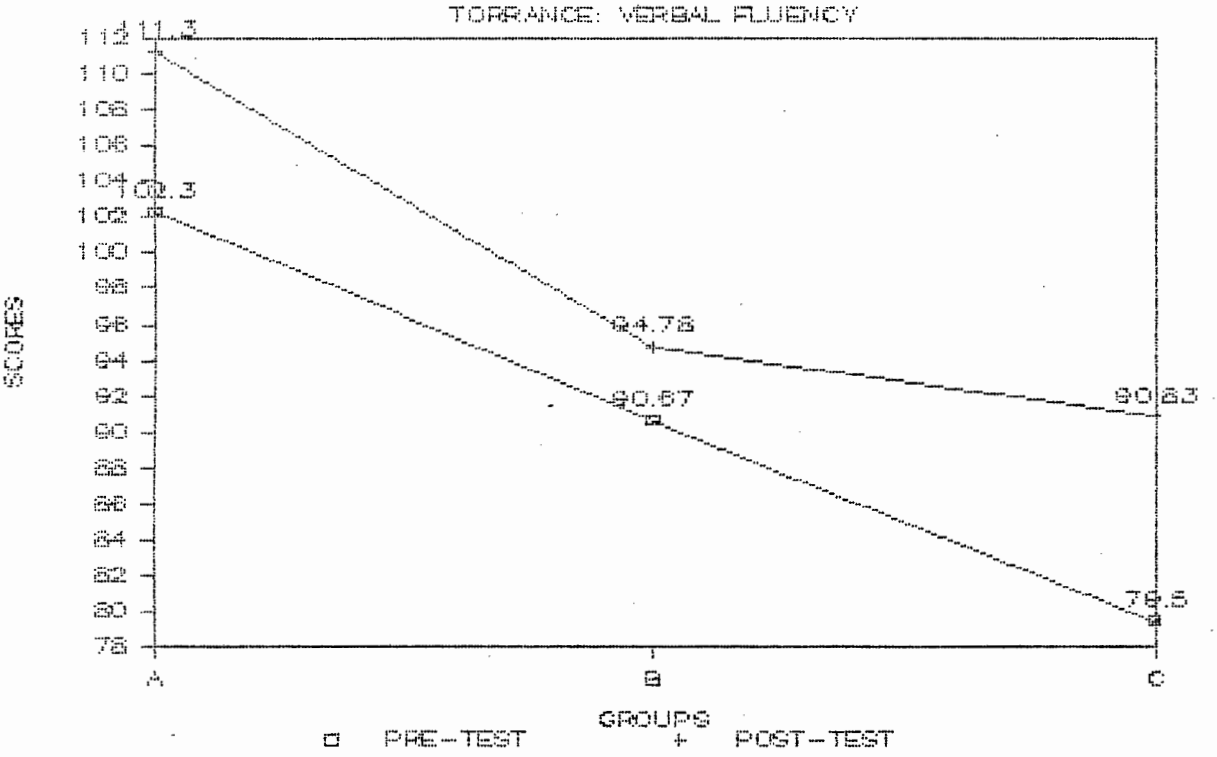


FIGURE 6

TORRANCE: VERBAL FLEXIBILITY

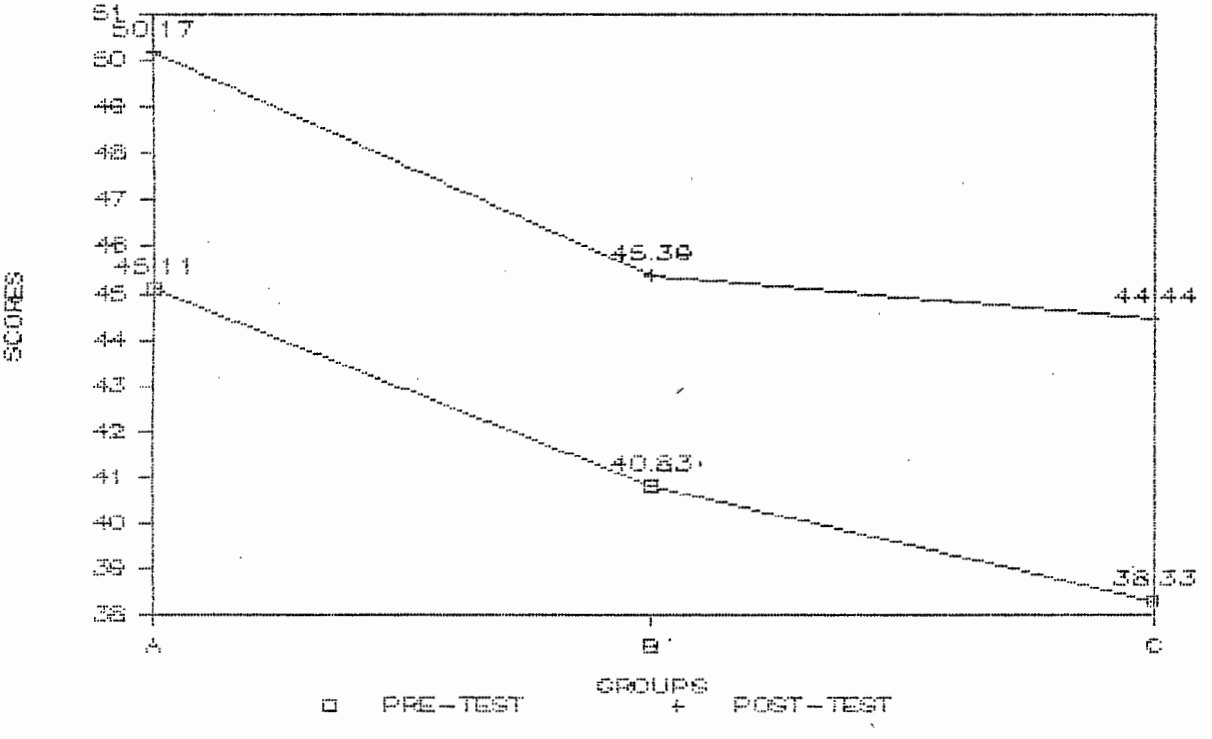


FIGURE 7

TORRANCE: VERBAL ORIGINALITY

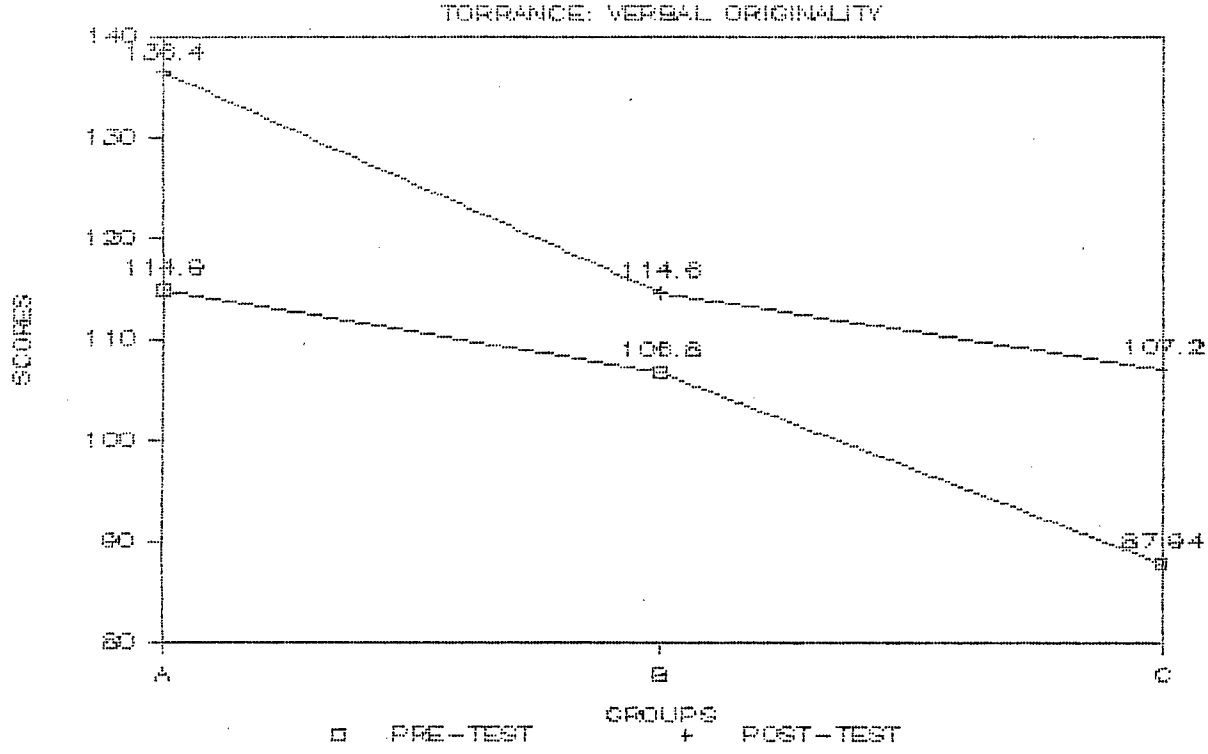


FIGURE 8

TORRANCE: FIGURAL TOTALS

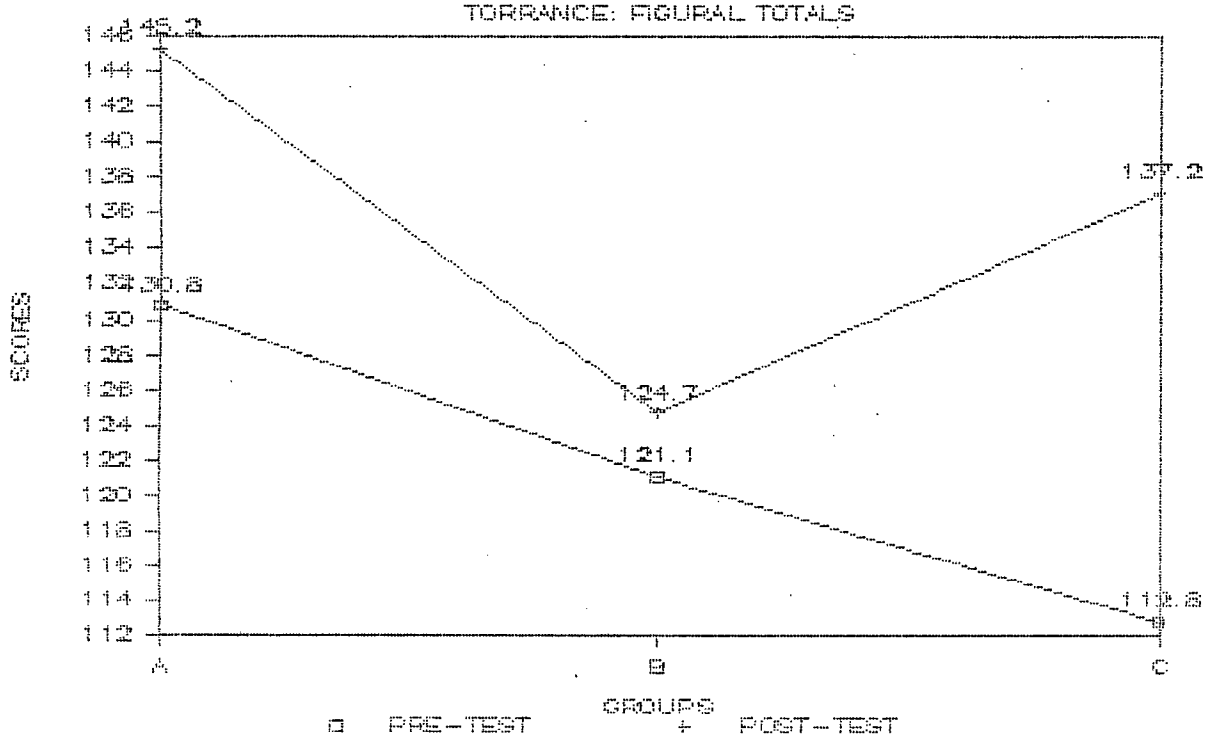


FIGURE 9

TORRANCE: VERBAL TOTALS

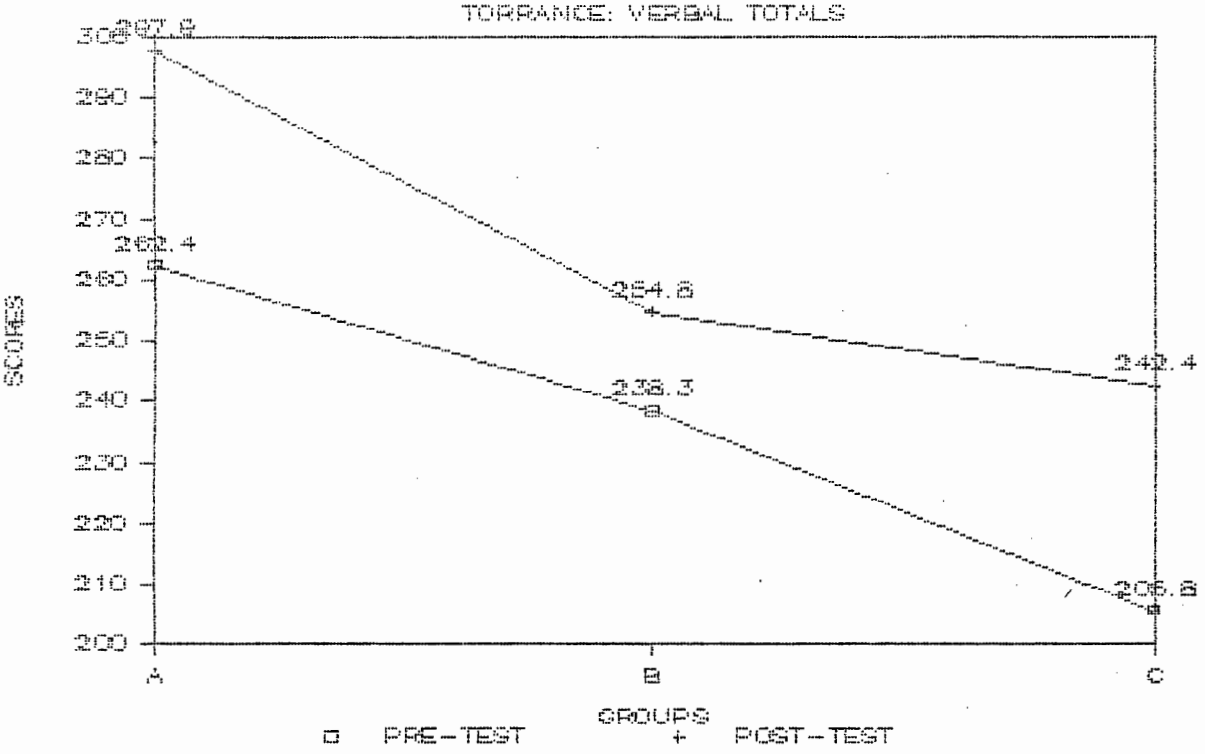


FIGURE 10

RORSCHACH: W SCORES

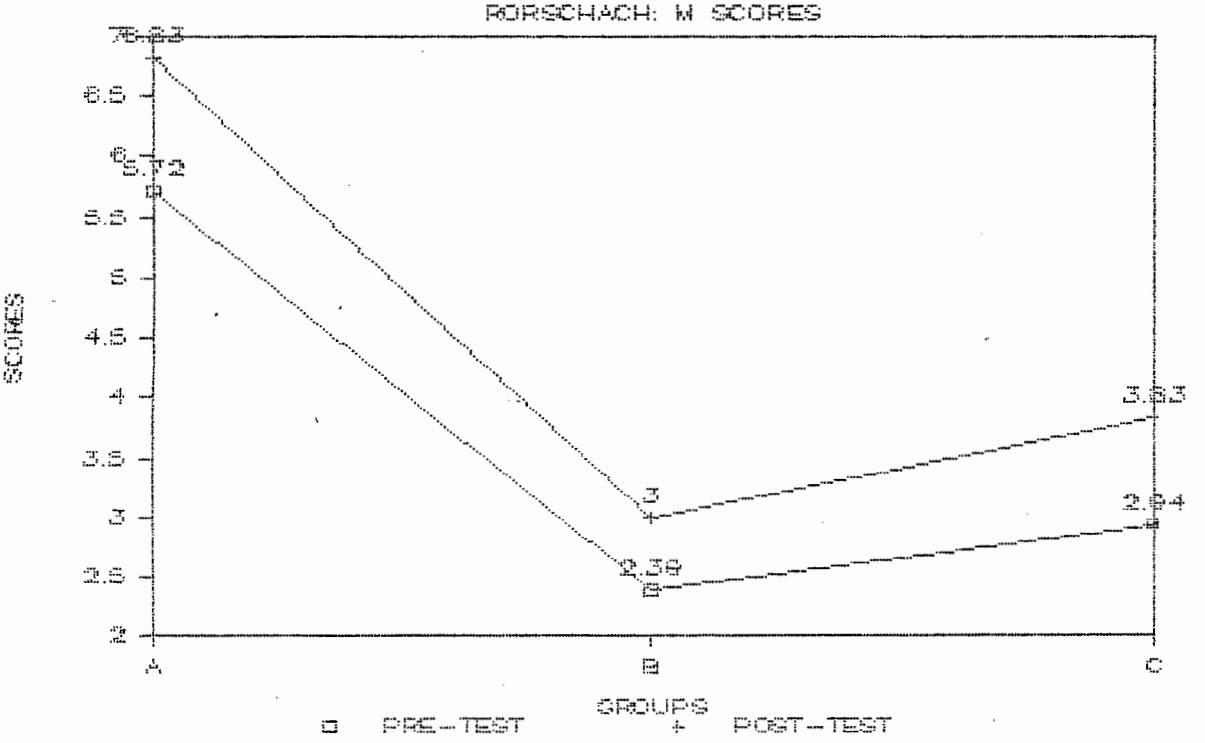


FIGURE 11

RORSCHACH: FM SCORES

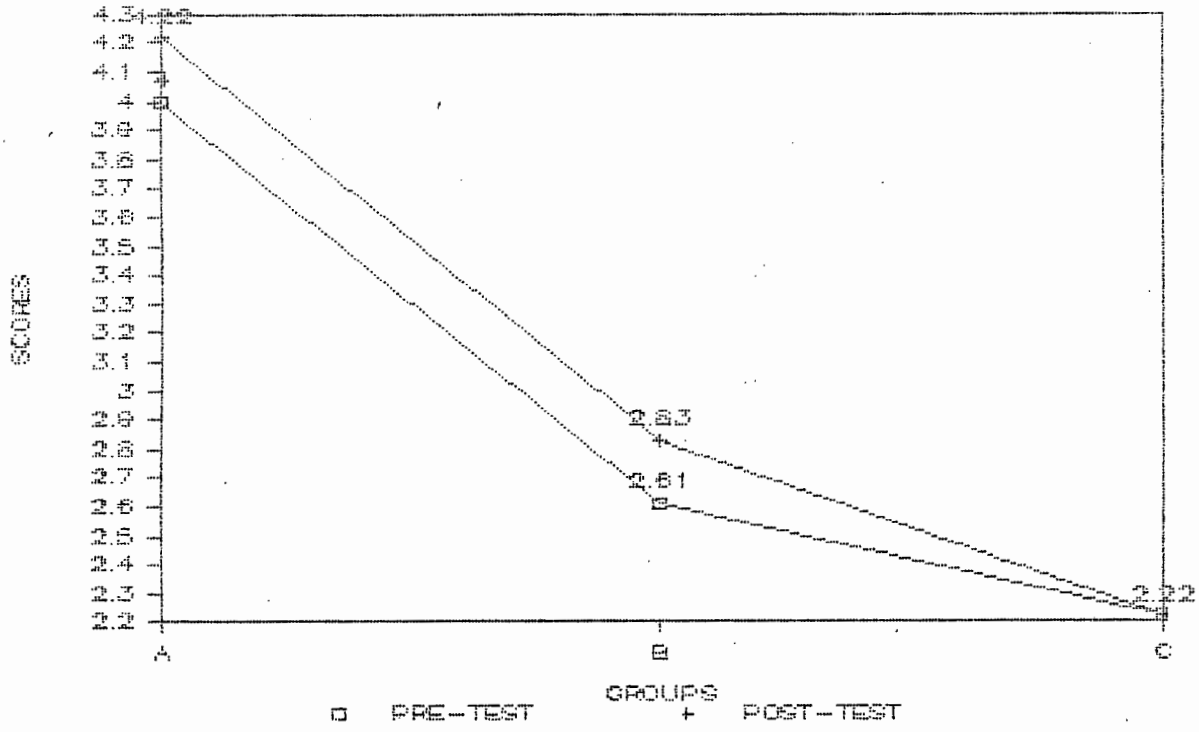


FIGURE 12

RORSCHACH: mF SCORES

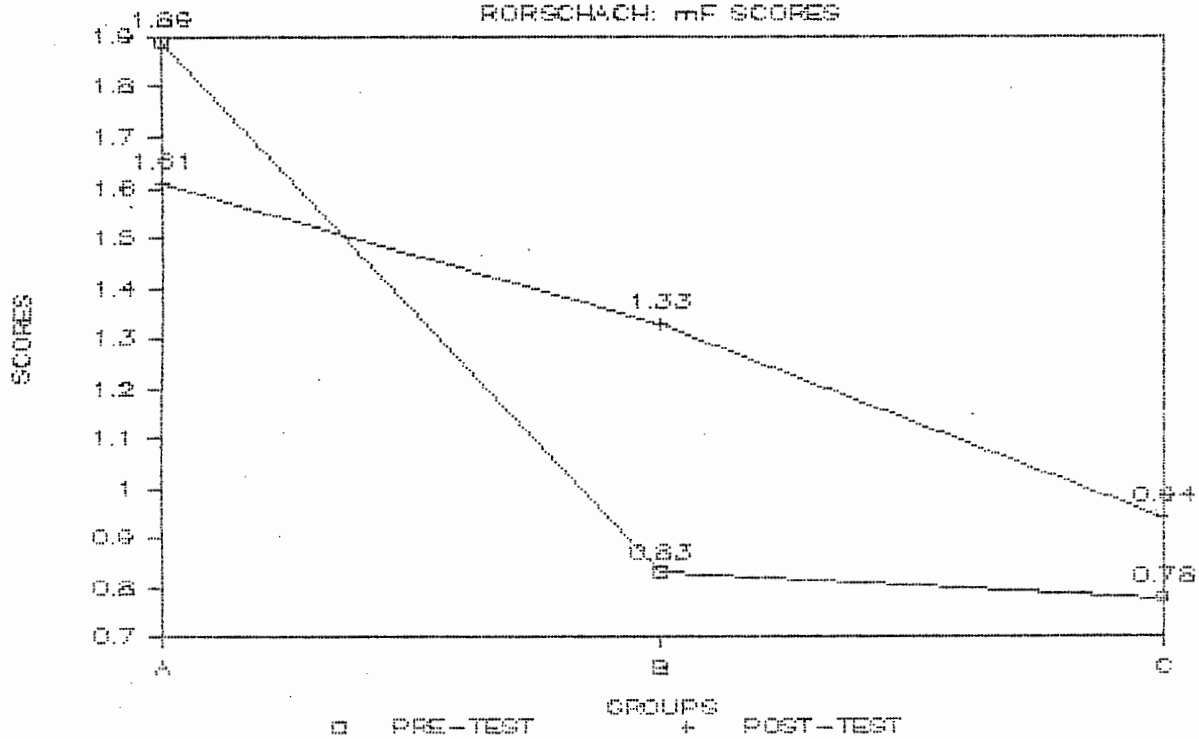


FIGURE 13

RORSCHACH: Fm SCORES

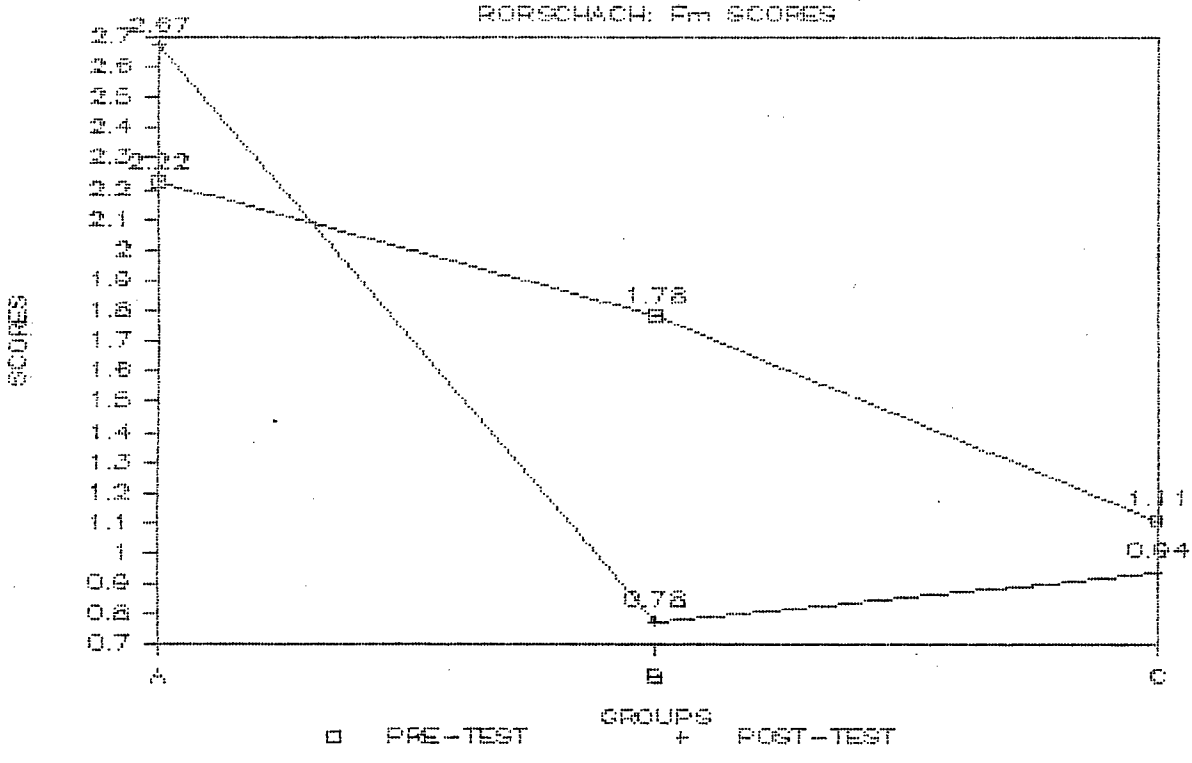


FIGURE 14

RORSCHACH: m SCORES

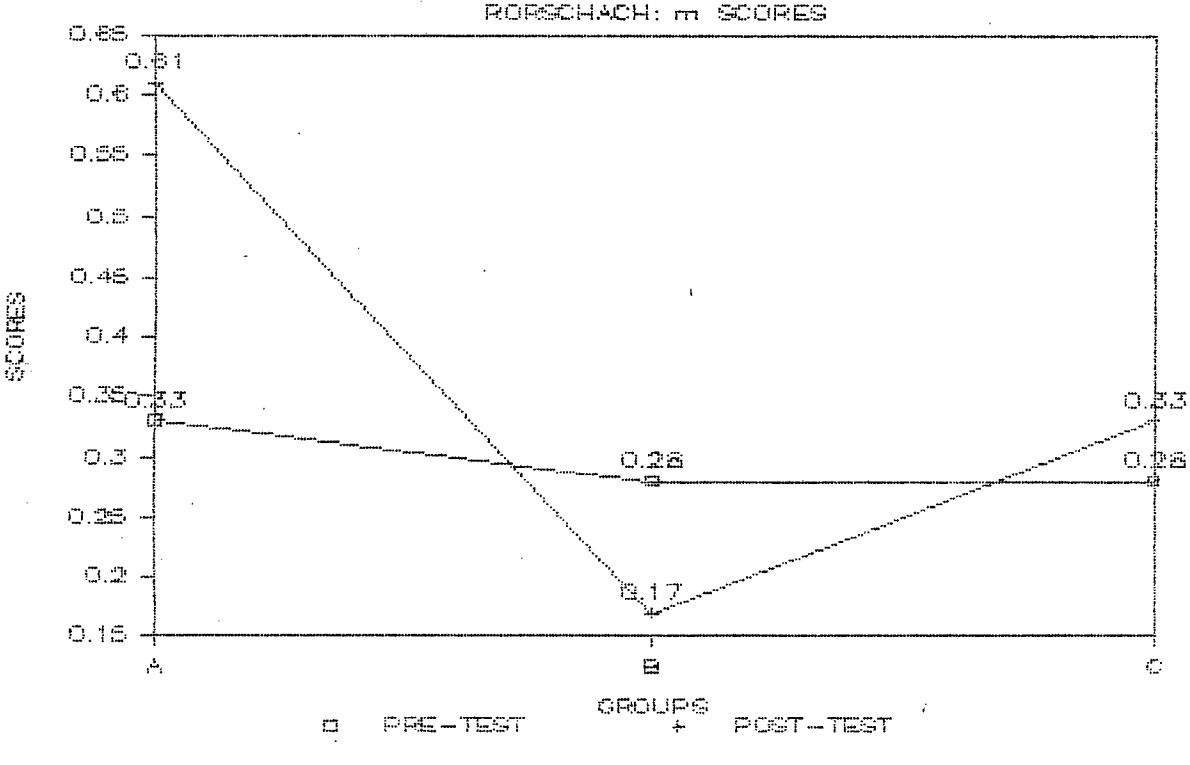
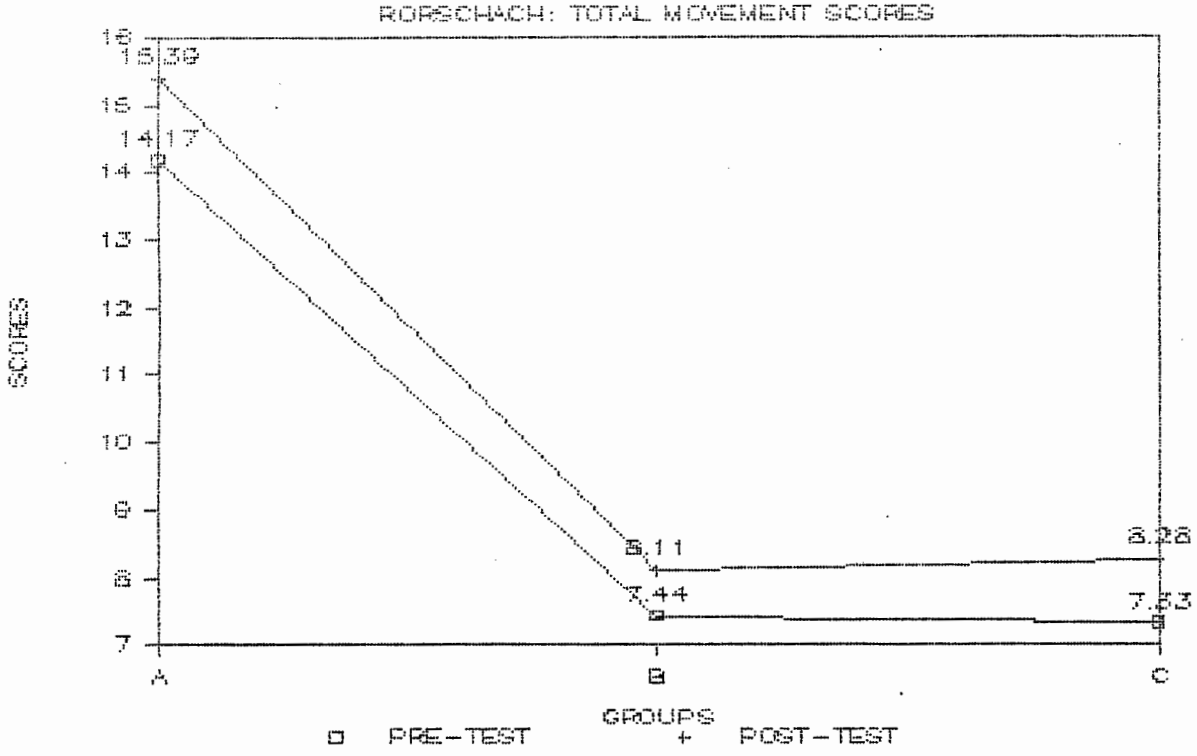


FIGURE 15

RORSCHACH: TOTAL MOVEMENT SCORES



6. DISCUSSION

6.1. Effects of the dreamwork technique on Torrance scores: Significant results

Group A

The first hypothesis in this study predicted a significant increase in creativity as measured by the Torrance Tests of Creative Thinking, in association with an opportunity to work with, and become aware of, a subject's own dreams through the use of a dream amplification technique. The highly significant increases in Figural Elaboration as well as Figural Totals (Table 6), as well as the highly significant increases on all four Verbal measures of Fluency, Flexibility, Originality and Verbal Totals, (Table 7), would seem to support this hypothesis.

Group C

The first hypothesis in this study predicted that there would be no significant change in the scores of subjects in Groups B and C. In fact, highly significant increases in Figural Fluency, Figural Originality, Figural Elaboration, as well as Figural Totals can be seen for Group C (Table 6), as well as highly significant increases on all four Verbal

measures of Fluency, Flexibility, Originality and Verbal Totals.

This unexpected finding that creativity increases for Control group C were not only significant, but occurred for more measures than for Experimental group A, necessitates a reconsideration of the original design. Although the purpose of Group C was to act as a control group, it would seem that the supposedly neutral control task of collecting dreams from other people acted as a powerful stimulus for fantasy, imagination and speculation, which led to an increase in divergent thinking. Many of the subjects in Group C reported to the experimenter during the investigation that they were curious as to why they were collecting other people's dreams and not their own. They also became interested in the meaning of the dreams they had collected, and one subject in Group C stated in the post-experimental enquiry that "I have noted an effect on the frequency of my dreams that recording others' dreams has had. My recording dreams has possibly increased the number of dreams I have had. It also makes me more aware of my dreams, and their possible meaning."

Since the task of Group C was an active one that produced significant change, it is suggested that this group not be considered as a control group at all. Instead, subjects in each group, having undergone a repeated measures design,

could be regarded as having acted as their own controls, i.e. as if three separate repeated measures experiments had taken place, for each of the three groups. From this perspective, these results indicate that both the dreamwork technique, as well as the task of collecting other people's dreams, were able to significantly increase scores on this divergent thinking test battery.

6.2 Effects of the dreamwork technique on Torrance scores: Non-significant results

It can be seen that on all measures, only two significant increases, i.e. for Verbal Flexibility and for Verbal Totals, occurred to subjects in Group B, who were required to record their own dreams, and do a logical task, requiring secondary process functioning, relating to each dream. It appears as if the secondary process experience of doing this logical piece of work had the effect of inhibiting the increase in creativity in this group, in contrast to Groups A and C. This will be further elaborated in section 6.4 below.

6.3 Interpretation of results according to theoretical rationale: Significant results

A close examination of the tasks performed by Groups A and C reveals that the following events took place.

Group A:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Had an opportunity, by using the dreamwork amplification technique, (Appendix 7) to explore meanings and associations to the imagery occurring in the dreams (activity requiring holistic, associational abilities).

Group C:

1. Collected and recorded other people's dreams (task requiring verbal skills).
2. Performed a logical task - scored dream content according to the Active Participation Scale and the Hedonic Tone Scale (Appendix 8) (activity, requiring logical, rational processes).
3. Because they were either puzzled or frustrated as to why they were not recording their own dreams, as their expectations of the study had led them to believe they would be doing, they engaged in speculative fantasy, regarding the possible meanings of the dreams they had collected, the significance of their own dreams, and, in general, expressed great interest and fascination in the study of dreams. (The kind of thinking

involved here required a loose flow of associations, leading to an increase in divergent thinking).

As has been previously mentioned in section 1 above, the creative process seems to be experienced as a constant interaction between two major modes of functioning, one illogical and intuitive, the other rational and linear. According to Ornstein, these two modes complement each other during the creative process, so that ideas generated by the intuitive mode are clarified and communicated by the rational mode (Ornstein, 1972). According to Guilford, (1959) the creative process is characterised by divergent thinking, in that several possible answers may be provided to a problem, and the thinker searches and goes off in many different directions, in contrast to convergent thinking, in which there is only one possible solution to a problem, and all thinking is focused in the direction of that answer.

When Wallas' four stages of creativity (preparation, incubation, illumination and verification) were outlined in section 2.1.2.3.3 above (Wallas, in Gowan, 1978), it was mentioned that a prerequisite for creativity was the initial stage of preparation, i.e. that there should be a problem, with which the creator is involved for a long period of time, in a disciplined fashion, but without solution.

Considering the processes in which Groups A and C were involved, both groups had a problem confronting them. Group A's problems were the tasks involved in the dreamwork technique, and were intentionally devised by the experimenter. Group C's problems, intended by the experimenter to be a neutral control task, were a curiosity and fascination with the task they had been given of collecting dreams, puzzlement as to why they were not recording their own dreams, and a growing interest in dreams, leading to increasing numbers of questions on the subject.

According to Wallas, the creative process is ongoing in that the four-stage process is constantly occurring, as new ideas are born, worked through, giving rise to new problems to be worked at, leading to new ideas and hypotheses. It can be seen that this process was occurring in Groups A and C, in that Group A was doing a dreamwork technique about four times a week, on average, for three weeks, and Group C was collecting four dreams a week, for three weeks, and in each instance, this process of shifting from the rational to the intuitive mode, employing divergent thinking powers, was occurring, giving both groups a sufficient amount of practice in creativity training to significantly affect their scores on the Torrance four weeks later.

As mentioned in section 2.1.2.1 above, from a psychoanalytic point of view, the insights generated by the loose, illogical and highly subjective ideas of primary processes are being constantly moulded by secondary processes into a communicable context (Suler, 1980). As previously suggested by Arieti, during the creative process, primary and secondary processes combine to form a tertiary process (Arieti, 1976). From the psychoanalytic point of view, therefore, what seemed to be occurring in the creative process of Groups A and C above was a constant regression to primary process thinking, (in the form of dreams for Group A, and in the form of imaginative fantasies and speculative thinking for Group C), and then a return to secondary process thinking in order to synthesize the material (Suler, 1980).

As mentioned in section 2.1.2.2 above, Jung considered creativity to be a form of fantasy, which he divided into three types: (1) voluntary, as in an artificial concoction of conscious elements, deliberately and consciously produced; (2) passive, as occurs in uncontrolled irruptions of unconscious contents into consciousness, e.g. in psychotic states, or any state in which consciousness and unconsciousness are in opposition; and (3) active, as the fantasy occurs when the experience is guided and altered consciously, and there is co-operation between consciousness and unconsciousness - e.g. in active imagination (Casey,

1974). From a Jungian perspective it cannot be established with certainty whether the creative process, as outlined by Jung, was stimulated in this investigation, since, from Jung's point of view, the creative process occurring in the technique of active imagination involved an interplay between consciousness and unconsciousness, such that symbolic communications from the Self are conveyed to ego-consciousness, which is then responsible for translating these communications into appropriate action, referred to by Jung as the "transcendent function" (Jung, 1971, in Watkins, 1976). Since the subjects in Group C were involved in a conscious task only, the development of their divergent thinking could not have been a result of communication from their deepest unconscious needs. As far as the subjects in Group A are concerned, it seems likely, that since no significant change occurred in the Rorschach scores, which tap creative potential and psychic changes at a much deeper level, the changes in divergent thinking were occurring at a more conscious level, and could be measured by the Torrance. These changes required the kind of thinking referred to by Jung as Directed thinking, by which he meant logical, reality based, verbal, linguistic thinking, requiring concentration, as distinguished from Non-Directed thinking, being the various fantasy modes outlined above, occurring in both day- and night-dreaming. Although Non-Directed thinking can have either archaic or personal origins,

Directed thinking is an exclusively conscious process (although it rests upon an unconscious basis) (Faber, 1987).

From the neurological or cognitive point of view, it seems clear that both groups were constantly involved in an interplay between left- and right-hemisphere functioning, as the two hemispheres worked together, the left hemisphere doing the rational tasks of recording dreams and doing the logical task, while the right hemisphere wondered, speculated, explored possibilities, created new problems, and intuitively arrived at solutions.

In considering other research attempts to stimulate creativity, it has been seen earlier, in section 2.1.3.2, that several researchers used various techniques in an attempt to increase their subjects ability to solve problems -e.g. Davė's study in which dreams were induced in subjects at an impasse in the course of working on an academic, vocational or personal problem, thus overcoming their creative blocks (Davė, 1979); Rosenberg's study in which playwriting students hypnotized by the suggestion that they would be able to solve problems in their writing, found this to have a discernable effect on their work (Rosenberg, 1976); and the study by Harman et al, in which the effects of mescaline on creative problem-solving were investigated, and it was discovered that the psychedelic drug did appear to facilitate creative problem-solving, particularly in the

illumination phase (Harmon et al, in C. Tart (Ed), 1969). Perhaps an important fact in all these designs is that not only were the various techniques successful in increasing creativity, but the presence of problems to be solved was a vital ingredient in stimulating the creative process in the first place. In a similar vein, the increases in creativity functioning occurring in the present investigation can be attributed to the presence of problems presenting themselves to the subjects - the dreamwork tasks for subjects in Group A and the puzzle of dream collecting for subjects in Group C.

As far as the dreamwork technique is concerned, it appears from the significant results obtained, that the subjects were in fact, without any training, using a technique of association and amplification, in order to identify the problem(s) the dream might have been highlighting in the dreamer's life. By using this technique, naive subjects were able to translate their dream content, experienced in an altered state of consciousness, into the rational language that the conscious ego can understand.

6.4 Interpretation of results according to theoretical rationale: Non-significant results.

A close examination of the tasks performed by Group B reveals that the following events took place:

Group B:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Performed a logical task (Appendix 8) (activity requiring logical, rational processes).

Subjects in this group were not only deprived of a presenting problem as a task to deal with, but, in addition, any dream imagery stemming from their unconscious was not elaborated and explored via a technique such as the dreamwork technique used by Group A, as this imagery was inhibited by the operation of the secondary processes performing the logical task.

Support for this position comes from the experimental findings of Fiss et al (1966), who used REM sleep interruption to explore the possibility that the mental activity characteristic of REM sleep, i.e. with its bizarre, fantasy-like nature, contains similar themes to the mental activity occurring in waking activity. This research was based on reports by a number of researchers that a marked similarity existed between the bizarre, fantasy-like nature of hypnogogic and REM-sleep reports (Bertini et al, 1964; Foulkes & Vogel, 1965; Foulkes et al, 1966; Vogel et al, 1972; Witkin & Lewis, 1963).

In this research by Fiss et al, TAT stories were collected under certain conditions: interrupted sleep onset, an awake, post-sleep condition and post-REM and post-NREM conditions. With the exception of the NREM conditon, a highly consistent pattern occurred in that TAT stories were indistinguishable from reports elicited from the sleep onset, post REM and post-sleep (hypnopompic) conditions. In their conclusion the authors suggest that since the abrupt termination of a dream leads to a waking fantasy of a similar nature, waking fantasies may serve a similar purpose to those of dreams (Fiss et al, 1966). Since the essential characteristics of REM mentation do not switch off, but continue into the waking state, Fiss refers to this as a "substitution phenomenon" (Fiss, 1979, p 51).

Cartwright (1966) has provided further support for this hypothesis, in her finding that she was able to match REM sleep reports and drug-induced, hallucinatory content protocols from the same subjects at a high level of confidence. In addition, a dramatic reduction was observed in the amount of time spent in REM sleep on the night following the drug-induced fantasy-experience. Cartwright's conclusions were that an opportunity to experience dream-like hallucinations during the day, compensated for the subjects' "need to dream" (Cartwright, 1966, p 13).

In addition to these findings, it appears that the opportunity to relate and elaborate on ongoing mental activity prior to REM-sleep interruption, i.e. a waking fantasy, compensated so sufficiently for the REM-sleep deprivation, that the REM rebound phenomenon did not occur (Cartwright & Monroe, 1968). However, subjects who were required to perform logical, "secondary process" operations by completing a digit-span test following interrupted REM sleep continued to show REM sleep compensationary increases on nights following REM sleep interruption. This result occurred because the secondary process task prevented the substitution phenomenon from taking place - i.e. the logical task of the digit-span test inhibited the free-flowing, associational waking fantasies that might have occurred if this test had not been performed.

These findings indicate that in the present study, subjects in Group B, having entered the study expecting to be recording dreams, performed their task with little curiosity or increase in divergent thinking powers, since the logical task (Appendix 8) which they were required to perform upon their dreams, had a similar effect on these subjects as did the digit-span test mentioned above, i.e. it successfully inhibited the free-associational, fantasy-like, speculative thinking, in which subjects in Groups A and C were engaging, albeit for different reasons.

6.5 Effects of the dreamwork technique on Rorschach scores

The second hypothesis of this study predicted a significant increase in movement responses to the Rorschach Ink Blot test, in association with an opportunity to work with, and become aware of, subject's own dreams through the use of a dream amplification technique. The rejection of this hypothesis is probably accounted for by the following reason. On a content inspection of the dreamwork handed in by subjects in the experimental group, it became clear that subjects had the most difficulty in answering questions relating to symbolic meanings, making associations between persons, qualities or situations, having no apparent similarities, and were more comfortable in dealing with questions relating to issues of a more concrete nature. Only a few subjects, possibly 3, really used the technique effectively, examples of which can be seen in Appendices 11 and 12. However, a content inspection of the Rorschach protocols for these few subjects reveals no increases taking place. For sufficient change to occur at such a deep psychic level as to affect creative potential, as measured by the movement responses on the Rorschach, therefore, it would appear that subjects would require a period of training so that the method of responding to questions could be clarified, and they could have an opportunity to practise the technique, in a group, with the experimenter guiding

them, until they felt sure that they understood fully what was required of them.

6.6 Differences between groups

As can be seen from Tables 4 and 5 there were significant differences between groups, on all Rorschach measures, at $P < 0.05$. Since no interaction occurred, a one-way analysis of variance was performed on all comparisons between groups, for both the pre- and post-test conditions. The results yielded significant differences between the three groups on all measures of the Rorschach, in the pre-test condition, suggesting that there exist innate differences in creative potential. It cannot be established whether this pre-existing difference between the groups on this measure in any way accounted for the lack of significant findings in comparisons on the two-way analysis of variance. Since these pre-existing differences are probably the result of sampling error, it is suggested that in future replications, much larger sample sizes are employed, or that baseline creative potential measures are taken, and subjects are assigned to related groups in a matched design, such that equal numbers of subjects of high, medium and low creative potential, are assigned to each of the treatment groups.

6.7 Applications

From an analysis of the data presented in section 5 above it seems, therefore, that the two measures used in this study to measure creativity, namely, the Torrance Tests of Creative Thinking, and the Rorschach Ink Blot Test, are, in effect, measuring different aspects of creativity.

Since significant changes occurred between the pre- and post-test conditions on the Torrance and not on the Rorschach, it would seem that the Torrance is measuring the actual act of creativity, divergent thinking in action, which is a preconscious process, whereas the Rorschach M measures creative potential, emerging from the unconscious along with all the other deep psychic structures tapped by the Rorschach. This is not to say that creative potential cannot be increased, but simply that in this investigation, the dreamwork technique was effective in increasing creativity, or divergent thinking, but not in increasing creative potential. As was mentioned in section 4.2.4.2.5 above, the Rorschach M response was used in this study as a measure of creative potential only, and was not intended to be regarded as measuring creativity per se. The movement response is considered by authors previously reviewed to be a necessary, but not sufficient, prerequisite for creativity (Dudek, 1975; Klopfer & Schachtel, in Welman, 1985).

A content inspection of some of the raw data would seem to confirm this finding. Subject 1 in Group B scored higher than any other subject in the three groups on Figural scores of Fluency, Flexibility, Originality, and scored second highest on Verbal scores of Fluency, Flexibility and Originality, whereas her Rorschach Total M score was one of the lowest.

A useful application of this finding would be to use these two measures in establishing the construct validity of tests measuring respectively, divergent thinking, and creative potential, since these tests used together offer such a useful tool for discriminant validity.

In future replications of this study, it is suggested that the Rorschach may be useful as a measure of profound psychic change, but that the study would have to extend over a much longer period of time, possibly with a preparatory period of training in using the dreamwork technique, so that subjects understood more fully what was required.

These measures might also prove useful to determine the success of other dreamwork techniques practised at the Jungian-Senoi Institute, or in fact, to evaluate creativity increase in individuals engaged in dreamwork in other non-experimental settings, i.e. individual or group, Jungian or

Gestalt, or any other therapies in which dreamwork is done by the dreamer in an experiential way.

6.8 Methodological Considerations

6.8.1 Demand characteristics

As outlined in section 4.2.4.3.1 above, the experimental hypothesis may be inadvertently conveyed to the subjects by a variety of cues, which can affect their expectations, thus influencing their behaviour and therefore the results. To minimise the effects of these "demand characteristics", subjects in this study were told that the purpose of the study was to examine the relationship between dreaming and personality factors. Creativity was not mentioned at any point by the experimenter to any of the subjects, and the Eysenck Personality Inventory, embedded in the design, was intended to lend support to the suggestion that personality factors were being investigated. At no stage in the study were the hypotheses revealed to the subjects, and in the post-experimental enquiry no subject had correctly formulated the precise hypotheses of the study. No subject linked the creativity tests to the dreamwork task, and the majority of subjects who had formulated some hypotheses thought the investigator was trying to understand their personalities from reading their dreams. However, six subjects thought the study had something to do with

creativity or divergent thinking, because they recognised the Torrance as being a test of divergent thinking, and two subjects thought that they were members of a control group. In further investigations of this nature this could be prevented by using subjects unfamiliar with any kinds of psychological testing, and having no knowledge of research design.

To minimise the experimenter effect the experimenter attempted to hold her influence constant for all subjects, as suggested by McGuigan (1963) - i.e. at all times questions from subjects in all groups were handled in the same way, i.e. the experimenter replied that all questions would be dealt with in a de-briefing session to be held at the termination of the study, which de-briefing did in fact take place, two weeks after termination of the study. To control for the experimenter effect that can occur when instructions are given verbally to subjects, all instructions were typewritten, and no further explanations were given.

Each subject had an equal opportunity to spend time with the experimenter for a five-minute meeting on a weekly basis, and subjects in all three groups were encouraged, motivated, and made to feel that their contributions were important and worthwhile.

As far as scoring procedures were concerned, the Torrance was scored by the experimenter, since this test battery requires no interpretation, so that no biasing of scores is possible. However, the Rorschach, which does require some interpretation in scoring, was scored by an independent trained scorer.

6.8.2 Reliability of scoring

Scoring reliability was determined for each measure, by having a second experienced scorer score a sample of twenty sets of tests, in order to determine an inter-rater reliability coefficient. Correlation coefficients as reported in Table 1 in section 5.4 above, were highly significant for the Torrance on all measures, and highly significant for the Rorschach on measures of M, FM, Fm and Total M. The low correlations for mF and m (0.41 and 0.33 respectively could possibly be attributed to the very small range of scores on these measures (0-3 for the mF, and 0-1 for the m measure) which could have distorted the results.

6.8.3 Experimental design

Although two control groups were used in this study, it has been seen that unexpected changes took place in Control Group C, who were performing a supposedly neutral task. Both control groups were active, in that both were

performing a task of some kind. This performance in itself, whether dream recording, or dream collecting, might contribute to an increase in creativity. It would therefore be an improvement in future replications of studies of this nature, to include a fourth control group which was passive, i.e. a matched group who did nothing apart from going about their usual daily activities, but who were pre- and post-tested with the same measures as the other groups involved in the study.

6.9 Conclusion

As previously mentioned in section 6.1.2.1, for creativity to occur, there must be a presenting problem, and therefore this investigation must be looked at from the perspective of using the dream for the creative solution of problems, whether cognitive or emotional, leading to an overall improvement in creativity functioning.

In a recent article focusing on this problem-solving aspect of dreams, Baylor and Deslauriers (1986) suggest that some dreams are generated by a regulatory system in an attempt to restore equilibrium to the cognitive and emotional systems of the organism. The dream-state, with its lack of conscious control, is considered to provide the ideal conditions for this regulatory system to scan the range of biological and psychological needs that may have escaped the

waking person. Unresolved problems, focal conflicts and problems not sufficiently dealt with could resurface during the dreaming state. The unique method of processing and reworking of daytime concerns which the dream employs provides solutions to these problems. However, for these dreams to serve a purposeful function, and for change to take place, not only must the individual pay attention to and interpret the meaning of these dream solutions and messages, but he/she must commit him/herself to action.

Baylor and Deslauriers outline a five-step method designed to facilitate dream understanding, sensitizing the dreamer to the language of the dream, and helping him/her understand the sense of his/her creation, recorded in a dream report, of an event that took place in an altered state of consciousness, by connecting it to past and planned events and aspects of his/her own emotional, regulatory and cognitive systems.

Although the technique employed by Baylor and Deslauriers is different to the technique used in this study, strong theoretical and empirical connections underlie the rationale behind the development of the two techniques.

According to these two authors, a major difficulty in attributing a problem-solving function to dreams is the difficulty of defining the problem(s) the dream is

attacking, since, without a clearly defined problem, the efficacy of solutions cannot be assessed. One way of assessing this would be to use the approach used in this study, i.e., not to attempt to assess the efficiency of problem-solving on an individual basis, but to use a more global assessment measure, such as a creativity measure, to determine overall improvement in creative problem-solving ability.

It can be seen that the common thread linking most of the creativity-enhancing approaches outlined in this study, including the dreamwork technique under investigation, has been that it was not the contents of the actual task involved that contributed to significant changes on the creativity measure involved, but that an open-ended problem-solving mind-set was established, which encouraged divergent thinking, leading to an overall increase in creativity performance.

6. DISCUSSION

6.1. Effects of the dreamwork technique on Torrance scores: Significant results

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Group C:

1. Collected and recorded other people's dreams (task requiring verbal skills).
2. Performed a logical task - scored dream content according to the Active Participation Scale and the Hedonic Tone Scale (Appendix 8) (activity, requiring logical, rational processes).
3. Because they were either puzzled or frustrated as to why they were not recording their own dreams, as their expectations of the study had led them to believe they would be doing, they engaged in speculative fantasy, regarding the possible meanings of the dreams they had collected, the significance of their own dreams, and, in general, expressed great interest and fascination in the study of dreams. (The kind of thinking

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Considering the processes in which Groups A and C were involved, both groups had a problem confronting them. Group A's problems were the tasks involved in the dreamwork technique, and were intentionally devised by the experimenter. Group C's problems, intended by the experimenter to be a neutral control task, were a curiosity and fascination with the task they had been given of collecting dreams, puzzlement as to why they were not recording their own dreams, and a growing interest in dreams, leading to increasing numbers of questions on the subject.

According to Wallas, the creative process is ongoing in that the four-stage process is constantly occurring, as new ideas are born, worked through, giving rise to new problems to be worked at, leading to new ideas and hypotheses. It can be seen that this process was occurring in Groups A and C, in that Group A was doing a dreamwork technique about four times a week, on average, for three weeks, and Group C was collecting four dreams a week, for three weeks, and in each instance, this process of shifting from the rational to the intuitive mode, employing divergent thinking powers, was occurring, giving both groups a sufficient amount of practice in creativity training to significantly affect their scores on the Torrance four weeks later.

As mentioned in section 2.1.2.1 above, from a psychoanalytic point of view, the insights generated by the loose, illogical and highly subjective ideas of primary processes are being constantly moulded by secondary processes into a communicable context (Suler, 1980). As previously suggested by Arieti, during the creative process, primary and secondary processes combine to form a tertiary process (Arieti, 1976). From the psychoanalytic point of view, therefore, what seemed to be occurring in the creative process of Groups A and C above was a constant regression to primary process thinking, (in the form of dreams for Group A, and in the form of imaginative fantasies and speculative thinking for Group C), and then a return to secondary process thinking in order to synthesize the material (Suler, 1980).

As mentioned in section 2.1.2.2 above, Jung considered creativity to be a form of fantasy, which he divided into three types: (1) voluntary, as in an artificial concoction of conscious elements, deliberately and consciously produced; (2) passive, as occurs in uncontrolled irruptions of unconscious contents into consciousness, e.g. in psychotic states, or any state in which consciousness and unconsciousness are in opposition; and (3) active, as the fantasy occurs when the experience is guided and altered consciously, and there is co-operation between consciousness and unconsciousness - e.g. in active imagination (Casey,

1974). From a Jungian perspective it cannot be established with certainty whether the creative process, as outlined by Jung, was stimulated in this investigation, since, from Jung's point of view, the creative process occurring in the technique of active imagination involved an interplay between consciousness and unconsciousness, such that symbolic communications from the Self are conveyed to ego-consciousness, which is then responsible for translating these communications into appropriate action, referred to by Jung as the "transcendent function" (Jung, 1971, in Watkins, 1976). Since the subjects in Group C were involved in a conscious task only, the development of their divergent thinking could not have been a result of communication from their deepest unconscious needs. As far as the subjects in Group A are concerned, it seems likely, that since no significant change occurred in the Rorschach scores, which tap creative potential and psychic changes at a much deeper level, the changes in divergent thinking were occurring at a more conscious level, and could be measured by the Torrance. These changes required the kind of thinking referred to by Jung as Directed thinking, by which he meant logical, reality based, verbal, linguistic thinking, requiring concentration, as distinguished from Non-Directed thinking, being the various fantasy modes outlined above, occurring in both day- and night-dreaming. Although Non-Directed thinking can have either archaic or personal origins,

Directed thinking is an exclusively conscious process (although it rests upon an unconscious basis) (Faber, 1987).

From the neurological or cognitive point of view, it seems clear that both groups were constantly involved in an interplay between left- and right-hemisphere functioning, as the two hemispheres worked together, the left hemisphere doing the rational tasks of recording dreams and doing the logical task, while the right hemisphere wondered, speculated, explored possibilities, created new problems, and intuitively arrived at solutions.

In considering other research attempts to stimulate creativity, it has been seen earlier, in section 2.1.3.2, that several researchers used various techniques in an attempt to increase their subjects ability to solve problems -e.g. Davė's study in which dreams were induced in subjects at an impasse in the course of working on an academic, vocational or personal problem, thus overcoming their creative blocks (Davė, 1979); Rosenberg's study in which playwriting students hypnotized by the suggestion that they would be able to solve problems in their writing, found this to have a discernable effect on their work (Rosenberg, 1976); and the study by Harman et al, in which the effects of mescaline on creative problem-solving were investigated, and it was discovered that the psychedelic drug did appear to facilitate creative problem-solving, particularly in the

illumination phase (Harmon et al, in C. Tart (Ed), 1969). Perhaps an important fact in all these designs is that not only were the various techniques successful in increasing creativity, but the presence of problems to be solved was a vital ingredient in stimulating the creative process in the first place. In a similar vein, the increases in creativity functioning occurring in the present investigation can be attributed to the presence of problems presenting themselves to the subjects - the dreamwork tasks for subjects in Group A and the puzzle of dream collecting for subjects in Group C.

As far as the dreamwork technique is concerned, it appears from the significant results obtained, that the subjects were in fact, without any training, using a technique of association and amplification, in order to identify the problem(s) the dream might have been highlighting in the dreamer's life. By using this technique, naive subjects were able to translate their dream content, experienced in an altered state of consciousness, into the rational language that the conscious ego can understand.

6.4 Interpretation of results according to theoretical rationale: Non-significant results.

A close examination of the tasks performed by Group B reveals that the following events took place:

Group B:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Performed a logical task (Appendix 8) (activity requiring logical, rational processes).

Subjects in this group were not only deprived of a presenting problem as a task to deal with, but, in addition, any dream imagery stemming from their unconscious was not elaborated and explored via a technique such as the dreamwork technique used by Group A, as this imagery was inhibited by the operation of the secondary processes performing the logical task.

Support for this position comes from the experimental findings of Fiss et al (1966), who used REM sleep interruption to explore the possibility that the mental activity characteristic of REM sleep, i.e. with its bizarre, fantasy-like nature, contains similar themes to the mental activity occurring in waking activity. This research was based on reports by a number of researchers that a marked similarity existed between the bizarre, fantasy-like nature of hypnogogic and REM-sleep reports (Bertini et al, 1964; Foulkes & Vogel, 1965; Foulkes et al, 1966; Vogel et al, 1972; Witkin & Lewis, 1963).

In this research by Fiss et al, TAT stories were collected under certain conditions: interrupted sleep onset, an awake, post-sleep condition and post-REM and post-NREM conditions. With the exception of the NREM conditon, a highly consistent pattern occurred in that TAT stories were indistinguishable from reports elicited from the sleep onset, post REM and post-sleep (hypnopompic) conditions. In their conclusion the authors suggest that since the abrupt termination of a dream leads to a waking fantasy of a similar nature, waking fantasies may serve a similar purpose to those of dreams (Fiss et al, 1966). Since the essential characteristics of REM mentation do not switch off, but continue into the waking state, Fiss refers to this as a "substitution phenomenon" (Fiss, 1979, p 51).

Cartwright (1966) has provided further support for this hypothesis, in her finding that she was able to match REM sleep reports and drug-induced, hallucinatory content protocols from the same subjects at a high level of confidence. In addition, a dramatic reduction was observed in the amount of time spent in REM sleep on the night following the drug-induced fantasy-experience. Cartwright's conclusions were that an opportunity to experience dream-like hallucinations during the day, compensated for the subjects' "need to dream" (Cartwright, 1966, p 13).

In addition to these findings, it appears that the opportunity to relate and elaborate on ongoing mental activity prior to REM-sleep interruption, i.e. a waking fantasy, compensated so sufficiently for the REM-sleep deprivation, that the REM rebound phenomenon did not occur (Cartwright & Monroe, 1968). However, subjects who were required to perform logical, "secondary process" operations by completing a digit-span test following interrupted REM sleep continued to show REM sleep compensationary increases on nights following REM sleep interruption. This result occurred because the secondary process task prevented the substitution phenomenon from taking place - i.e. the logical task of the digit-span test inhibited the free-flowing, associational waking fantasies that might have occurred if this test had not been performed.

These findings indicate that in the present study, subjects in Group B, having entered the study expecting to be recording dreams, performed their task with little curiosity or increase in divergent thinking powers, since the logical task (Appendix 8) which they were required to perform upon their dreams, had a similar effect on these subjects as did the digit-span test mentioned above, i.e. it successfully inhibited the free-associational, fantasy-like, speculative thinking, in which subjects in Groups A and C were engaging, albeit for different reasons.

6.5 Effects of the dreamwork technique on Rorschach scores

The second hypothesis of this study predicted a significant increase in movement responses to the Rorschach Ink Blot test, in association with an opportunity to work with, and become aware of, subject's own dreams through the use of a dream amplification technique. The rejection of this hypothesis is probably accounted for by the following reason. On a content inspection of the dreamwork handed in by subjects in the experimental group, it became clear that subjects had the most difficulty in answering questions relating to symbolic meanings, making associations between persons, qualities or situations, having no apparent similarities, and were more comfortable in dealing with questions relating to issues of a more concrete nature. Only a few subjects, possibly 3, really used the technique effectively, examples of which can be seen in Appendices 11 and 12. However, a content inspection of the Rorschach protocols for these few subjects reveals no increases taking place. For sufficient change to occur at such a deep psychic level as to affect creative potential, as measured by the movement responses on the Rorschach, therefore, it would appear that subjects would require a period of training so that the method of responding to questions could be clarified, and they could have an opportunity to practise the technique, in a group, with the experimenter guiding

them, until they felt sure that they understood fully what was required of them.

6.6 Differences between groups

As can be seen from Tables 4 and 5 there were significant differences between groups, on all Rorschach measures, at $P < 0.05$. Since no interaction occurred, a one-way analysis of variance was performed on all comparisons between groups, for both the pre- and post-test conditions. The results yielded significant differences between the three groups on all measures of the Rorschach, in the pre-test condition, suggesting that there exist innate differences in creative potential. It cannot be established whether this pre-existing difference between the groups on this measure in any way accounted for the lack of significant findings in comparisons on the two-way analysis of variance. Since these pre-existing differences are probably the result of sampling error, it is suggested that in future replications, much larger sample sizes are employed, or that baseline creative potential measures are taken, and subjects are assigned to related groups in a matched design, such that equal numbers of subjects of high, medium and low creative potential, are assigned to each of the treatment groups.

6.7 Applications

From an analysis of the data presented in section 5 above it seems, therefore, that the two measures used in this study to measure creativity, namely, the Torrance Tests of Creative Thinking, and the Rorschach Ink Blot Test, are, in effect, measuring different aspects of creativity.

Since significant changes occurred between the pre- and post-test conditions on the Torrance and not on the Rorschach, it would seem that the Torrance is measuring the actual act of creativity, divergent thinking in action, which is a preconscious process, whereas the Rorschach M measures creative potential, emerging from the unconscious along with all the other deep psychic structures tapped by the Rorschach. This is not to say that creative potential cannot be increased, but simply that in this investigation, the dreamwork technique was effective in increasing creativity, or divergent thinking, but not in increasing creative potential. As was mentioned in section 4.2.4.2.5 above, the Rorschach M response was used in this study as a measure of creative potential only, and was not intended to be regarded as measuring creativity per se. The movement response is considered by authors previously reviewed to be a necessary, but not sufficient, prerequisite for creativity (Dudek, 1975; Klopfer & Schachtel, in Welman, 1985).

A content inspection of some of the raw data would seem to confirm this finding. Subject 1 in Group B scored higher than any other subject in the three groups on Figural scores of Fluency, Flexibility, Originality, and scored second highest on Verbal scores of Fluency, Flexibility and Originality, whereas her Rorschach Total M score was one of the lowest.

A useful application of this finding would be to use these two measures in establishing the construct validity of tests measuring respectively, divergent thinking, and creative potential, since these tests used together offer such a useful tool for discriminant validity.

In future replications of this study, it is suggested that the Rorschach may be useful as a measure of profound psychic change, but that the study would have to extend over a much longer period of time, possibly with a preparatory period of training in using the dreamwork technique, so that subjects understood more fully what was required.

These measures might also prove useful to determine the success of other dreamwork techniques practised at the Jungian-Senoi Institute, or in fact, to evaluate creativity increase in individuals engaged in dreamwork in other non-experimental settings, i.e. individual or group, Jungian or

Gestalt, or any other therapies in which dreamwork is done by the dreamer in an experiential way.

6.8 Methodological Considerations

6.8.1 Demand characteristics

As outlined in section 4.2.4.3.1 above, the experimental hypothesis may be inadvertently conveyed to the subjects by a variety of cues, which can affect their expectations, thus influencing their behaviour and therefore the results. To minimise the effects of these "demand characteristics", subjects in this study were told that the purpose of the study was to examine the relationship between dreaming and personality factors. Creativity was not mentioned at any point by the experimenter to any of the subjects, and the Eysenck Personality Inventory, embedded in the design, was intended to lend support to the suggestion that personality factors were being investigated. At no stage in the study were the hypotheses revealed to the subjects, and in the post-experimental enquiry no subject had correctly formulated the precise hypotheses of the study. No subject linked the creativity tests to the dreamwork task, and the majority of subjects who had formulated some hypotheses thought the investigator was trying to understand their personalities from reading their dreams. However, six subjects thought the study had something to do with

creativity or divergent thinking, because they recognised the Torrance as being a test of divergent thinking, and two subjects thought that they were members of a control group. In further investigations of this nature this could be prevented by using subjects unfamiliar with any kinds of psychological testing, and having no knowledge of research design.

To minimise the experimenter effect the experimenter attempted to hold her influence constant for all subjects, as suggested by McGuigan (1963) - i.e. at all times questions from subjects in all groups were handled in the same way, i.e. the experimenter replied that all questions would be dealt with in a de-briefing session to be held at the termination of the study, which de-briefing did in fact take place, two weeks after termination of the study. To control for the experimenter effect that can occur when instructions are given verbally to subjects, all instructions were typewritten, and no further explanations were given.

Each subject had an equal opportunity to spend time with the experimenter for a five-minute meeting on a weekly basis, and subjects in all three groups were encouraged, motivated, and made to feel that their contributions were important and worthwhile.

As far as scoring procedures were concerned, the Torrance was scored by the experimenter, since this test battery requires no interpretation, so that no biasing of scores is possible. However, the Rorschach, which does require some interpretation in scoring, was scored by an independent trained scorer.

6.8.2 Reliability of scoring

Scoring reliability was determined for each measure, by having a second experienced scorer score a sample of twenty sets of tests, in order to determine an inter-rater reliability coefficient. Correlation coefficients as reported in Table 1 in section 5.4 above, were highly significant for the Torrance on all measures, and highly significant for the Rorschach on measures of M, FM, Fm and Total M. The low correlations for mF and m (0.41 and 0.33 respectively could possibly be attributed to the very small range of scores on these measures (0-3 for the mF, and 0-1 for the m measure) which could have distorted the results.

6.8.3 Experimental design

Although two control groups were used in this study, it has been seen that unexpected changes took place in Control Group C, who were performing a supposedly neutral task. Both control groups were active, in that both were

performing a task of some kind. This performance in itself, whether dream recording, or dream collecting, might contribute to an increase in creativity. It would therefore be an improvement in future replications of studies of this nature, to include a fourth control group which was passive, i.e. a matched group who did nothing apart from going about their usual daily activities, but who were pre- and post-tested with the same measures as the other groups involved in the study.

6.9 Conclusion

As previously mentioned in section 6.1.2.1, for creativity to occur, there must be a presenting problem, and therefore this investigation must be looked at from the perspective of using the dream for the creative solution of problems, whether cognitive or emotional, leading to an overall improvement in creativity functioning.

In a recent article focusing on this problem-solving aspect of dreams, Baylor and Deslauriers (1986) suggest that some dreams are generated by a regulatory system in an attempt to restore equilibrium to the cognitive and emotional systems of the organism. The dream-state, with its lack of conscious control, is considered to provide the ideal conditions for this regulatory system to scan the range of biological and psychological needs that may have escaped the

waking person. Unresolved problems, focal conflicts and problems not sufficiently dealt with could resurface during the dreaming state. The unique method of processing and reworking of daytime concerns which the dream employs provides solutions to these problems. However, for these dreams to serve a purposeful function, and for change to take place, not only must the individual pay attention to and interpret the meaning of these dream solutions and messages, but he/she must commit him/herself to action.

Baylor and Deslauriers outline a five-step method designed to facilitate dream understanding, sensitizing the dreamer to the language of the dream, and helping him/her understand the sense of his/her creation, recorded in a dream report, of an event that took place in an altered state of consciousness, by connecting it to past and planned events and aspects of his/her own emotional, regulatory and cognitive systems.

Although the technique employed by Baylor and Deslauriers is different to the technique used in this study, strong theoretical and empirical connections underlie the rationale behind the development of the two techniques.

According to these two authors, a major difficulty in attributing a problem-solving function to dreams is the difficulty of defining the problem(s) the dream is

attacking, since, without a clearly defined problem, the efficacy of solutions cannot be assessed. One way of assessing this would be to use the approach used in this study, i.e., not to attempt to assess the efficiency of problem-solving on an individual basis, but to use a more global assessment measure, such as a creativity measure, to determine overall improvement in creative problem-solving ability.

It can be seen that the common thread linking most of the creativity-enhancing approaches outlined in this study, including the dreamwork technique under investigation, has been that it was not the contents of the actual task involved that contributed to significant changes on the creativity measure involved, but that an open-ended problem-solving mind-set was established, which encouraged divergent thinking, leading to an overall increase in creativity performance.

6. DISCUSSION

6.1. Effects of the dreamwork technique on Torrance scores: Significant results

Group A

The first hypothesis in this study predicted a significant increase in creativity as measured by the Torrance Tests of Creative Thinking, in association with an opportunity to work with, and become aware of, a subject's own dreams through the use of a dream amplification technique. The highly significant increases in Figural Elaboration as well as Figural Totals (Table 6), as well as the highly significant increases on all four Verbal measures of Fluency, Flexibility, Originality and Verbal Totals, (Table 7), would seem to support this hypothesis.

Group C

The first hypothesis in this study predicted that there would be no significant change in the scores of subjects in Groups B and C. In fact, highly significant increases in Figural Fluency, Figural Originality, Figural Elaboration, as well as Figural Totals can be seen for Group C (Table 6), as well as highly significant increases on all four Verbal

measures of Fluency, Flexibility, Originality and Verbal Totals.

This unexpected finding that creativity increases for Control group C were not only significant, but occurred for more measures than for Experimental group A, necessitates a reconsideration of the original design. Although the purpose of Group C was to act as a control group, it would seem that the supposedly neutral control task of collecting dreams from other people acted as a powerful stimulus for fantasy, imagination and speculation, which led to an increase in divergent thinking. Many of the subjects in Group C reported to the experimenter during the investigation that they were curious as to why they were collecting other people's dreams and not their own. They also became interested in the meaning of the dreams they had collected, and one subject in Group C stated in the post-experimental enquiry that "I have noted an effect on the frequency of my dreams that recording others' dreams has had. My recording dreams has possibly increased the number of dreams I have had. It also makes me more aware of my dreams, and their possible meaning."

Since the task of Group C was an active one that produced significant change, it is suggested that this group not be considered as a control group at all. Instead, subjects in each group, having undergone a repeated measures design,

could be regarded as having acted as their own controls, i.e. as if three separate repeated measures experiments had taken place, for each of the three groups. From this perspective, these results indicate that both the dreamwork technique, as well as the task of collecting other people's dreams, were able to significantly increase scores on this divergent thinking test battery.

6.2 Effects of the dreamwork technique on Torrance scores: Non-significant results

It can be seen that on all measures, only two significant increases, i.e. for Verbal Flexibility and for Verbal Totals, occurred to subjects in Group B, who were required to record their own dreams, and do a logical task, requiring secondary process functioning, relating to each dream. It appears as if the secondary process experience of doing this logical piece of work had the effect of inhibiting the increase in creativity in this group, in contrast to Groups A and C. This will be further elaborated in section 6.4 below.

6.3 Interpretation of results according to theoretical rationale: Significant results

A close examination of the tasks performed by Groups A and C reveals that the following events took place.

Group A:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Had an opportunity, by using the dreamwork amplification technique, (Appendix 7) to explore meanings and associations to the imagery occurring in the dreams (activity requiring holistic, associational abilities).

Group C:

1. Collected and recorded other people's dreams (task requiring verbal skills).
2. Performed a logical task - scored dream content according to the Active Participation Scale and the Hedonic Tone Scale (Appendix 8) (activity, requiring logical, rational processes).
3. Because they were either puzzled or frustrated as to why they were not recording their own dreams, as their expectations of the study had led them to believe they would be doing, they engaged in speculative fantasy, regarding the possible meanings of the dreams they had collected, the significance of their own dreams, and, in general, expressed great interest and fascination in the study of dreams. (The kind of thinking

involved here required a loose flow of associations, leading to an increase in divergent thinking).

As has been previously mentioned in section 1 above, the creative process seems to be experienced as a constant interaction between two major modes of functioning, one illogical and intuitive, the other rational and linear. According to Ornstein, these two modes complement each other during the creative process, so that ideas generated by the intuitive mode are clarified and communicated by the rational mode (Ornstein, 1972). According to Guilford, (1959) the creative process is characterised by divergent thinking, in that several possible answers may be provided to a problem, and the thinker searches and goes off in many different directions, in contrast to convergent thinking, in which there is only one possible solution to a problem, and all thinking is focused in the direction of that answer.

When Wallas' four stages of creativity (preparation, incubation, illumination and verification) were outlined in section 2.1.2.3.3 above (Wallas, in Gowan, 1978), it was mentioned that a prerequisite for creativity was the initial stage of preparation, i.e. that there should be a problem, with which the creator is involved for a long period of time, in a disciplined fashion, but without solution.

Considering the processes in which Groups A and C were involved, both groups had a problem confronting them. Group A's problems were the tasks involved in the dreamwork technique, and were intentionally devised by the experimenter. Group C's problems, intended by the experimenter to be a neutral control task, were a curiosity and fascination with the task they had been given of collecting dreams, puzzlement as to why they were not recording their own dreams, and a growing interest in dreams, leading to increasing numbers of questions on the subject.

According to Wallas, the creative process is ongoing in that the four-stage process is constantly occurring, as new ideas are born, worked through, giving rise to new problems to be worked at, leading to new ideas and hypotheses. It can be seen that this process was occurring in Groups A and C, in that Group A was doing a dreamwork technique about four times a week, on average, for three weeks, and Group C was collecting four dreams a week, for three weeks, and in each instance, this process of shifting from the rational to the intuitive mode, employing divergent thinking powers, was occurring, giving both groups a sufficient amount of practice in creativity training to significantly affect their scores on the Torrance four weeks later.

As mentioned in section 2.1.2.1 above, from a psychoanalytic point of view, the insights generated by the loose, illogical and highly subjective ideas of primary processes are being constantly moulded by secondary processes into a communicable context (Suler, 1980). As previously suggested by Arieti, during the creative process, primary and secondary processes combine to form a tertiary process (Arieti, 1976). From the psychoanalytic point of view, therefore, what seemed to be occurring in the creative process of Groups A and C above was a constant regression to primary process thinking, (in the form of dreams for Group A, and in the form of imaginative fantasies and speculative thinking for Group C), and then a return to secondary process thinking in order to synthesize the material (Suler, 1980).

As mentioned in section 2.1.2.2 above, Jung considered creativity to be a form of fantasy, which he divided into three types: (1) voluntary, as in an artificial concoction of conscious elements, deliberately and consciously produced; (2) passive, as occurs in uncontrolled irruptions of unconscious contents into consciousness, e.g. in psychotic states, or any state in which consciousness and unconsciousness are in opposition; and (3) active, as the fantasy occurs when the experience is guided and altered consciously, and there is co-operation between consciousness and unconsciousness - e.g. in active imagination (Casey,

1974). From a Jungian perspective it cannot be established with certainty whether the creative process, as outlined by Jung, was stimulated in this investigation, since, from Jung's point of view, the creative process occurring in the technique of active imagination involved an interplay between consciousness and unconsciousness, such that symbolic communications from the Self are conveyed to ego-consciousness, which is then responsible for translating these communications into appropriate action, referred to by Jung as the "transcendent function" (Jung, 1971, in Watkins, 1976). Since the subjects in Group C were involved in a conscious task only, the development of their divergent thinking could not have been a result of communication from their deepest unconscious needs. As far as the subjects in Group A are concerned, it seems likely, that since no significant change occurred in the Rorschach scores, which tap creative potential and psychic changes at a much deeper level, the changes in divergent thinking were occurring at a more conscious level, and could be measured by the Torrance. These changes required the kind of thinking referred to by Jung as Directed thinking, by which he meant logical, reality based, verbal, linguistic thinking, requiring concentration, as distinguished from Non-Directed thinking, being the various fantasy modes outlined above, occurring in both day- and night-dreaming. Although Non-Directed thinking can have either archaic or personal origins,

Directed thinking is an exclusively conscious process (although it rests upon an unconscious basis) (Faber, 1987).

From the neurological or cognitive point of view, it seems clear that both groups were constantly involved in an interplay between left- and right-hemisphere functioning, as the two hemispheres worked together, the left hemisphere doing the rational tasks of recording dreams and doing the logical task, while the right hemisphere wondered, speculated, explored possibilities, created new problems, and intuitively arrived at solutions.

In considering other research attempts to stimulate creativity, it has been seen earlier, in section 2.1.3.2, that several researchers used various techniques in an attempt to increase their subjects ability to solve problems -e.g. Davė's study in which dreams were induced in subjects at an impasse in the course of working on an academic, vocational or personal problem, thus overcoming their creative blocks (Davė, 1979); Rosenberg's study in which playwriting students hypnotized by the suggestion that they would be able to solve problems in their writing, found this to have a discernable effect on their work (Rosenberg, 1976); and the study by Harman et al, in which the effects of mescaline on creative problem-solving were investigated, and it was discovered that the psychedelic drug did appear to facilitate creative problem-solving, particularly in the

illumination phase (Harmon et al, in C. Tart (Ed), 1969). Perhaps an important fact in all these designs is that not only were the various techniques successful in increasing creativity, but the presence of problems to be solved was a vital ingredient in stimulating the creative process in the first place. In a similar vein, the increases in creativity functioning occurring in the present investigation can be attributed to the presence of problems presenting themselves to the subjects - the dreamwork tasks for subjects in Group A and the puzzle of dream collecting for subjects in Group C.

As far as the dreamwork technique is concerned, it appears from the significant results obtained, that the subjects were in fact, without any training, using a technique of association and amplification, in order to identify the problem(s) the dream might have been highlighting in the dreamer's life. By using this technique, naive subjects were able to translate their dream content, experienced in an altered state of consciousness, into the rational language that the conscious ego can understand.

6.4 Interpretation of results according to theoretical rationale: Non-significant results.

A close examination of the tasks performed by Group B reveals that the following events took place:

Group B:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Performed a logical task (Appendix 8) (activity requiring logical, rational processes).

Subjects in this group were not only deprived of a presenting problem as a task to deal with, but, in addition, any dream imagery stemming from their unconscious was not elaborated and explored via a technique such as the dreamwork technique used by Group A, as this imagery was inhibited by the operation of the secondary processes performing the logical task.

Support for this position comes from the experimental findings of Fiss et al (1966), who used REM sleep interruption to explore the possibility that the mental activity characteristic of REM sleep, i.e. with its bizarre, fantasy-like nature, contains similar themes to the mental activity occurring in waking activity. This research was based on reports by a number of researchers that a marked similarity existed between the bizarre, fantasy-like nature of hypnogogic and REM-sleep reports (Bertini et al, 1964; Foulkes & Vogel, 1965; Foulkes et al, 1966; Vogel et al, 1972; Witkin & Lewis, 1963).

In this research by Fiss et al, TAT stories were collected under certain conditions: interrupted sleep onset, an awake, post-sleep condition and post-REM and post-NREM conditions. With the exception of the NREM conditon, a highly consistent pattern occurred in that TAT stories were indistinguishable from reports elicited from the sleep onset, post REM and post-sleep (hypnopompic) conditions. In their conclusion the authors suggest that since the abrupt termination of a dream leads to a waking fantasy of a similar nature, waking fantasies may serve a similar purpose to those of dreams (Fiss et al, 1966). Since the essential characteristics of REM mentation do not switch off, but continue into the waking state, Fiss refers to this as a "substitution phenomenon" (Fiss, 1979, p 51).

Cartwright (1966) has provided further support for this hypothesis, in her finding that she was able to match REM sleep reports and drug-induced, hallucinatory content protocols from the same subjects at a high level of confidence. In addition, a dramatic reduction was observed in the amount of time spent in REM sleep on the night following the drug-induced fantasy-experience. Cartwright's conclusions were that an opportunity to experience dream-like hallucinations during the day, compensated for the subjects' "need to dream" (Cartwright, 1966, p 13).

In addition to these findings, it appears that the opportunity to relate and elaborate on ongoing mental activity prior to REM-sleep interruption, i.e. a waking fantasy, compensated so sufficiently for the REM-sleep deprivation, that the REM rebound phenomenon did not occur (Cartwright & Monroe, 1968). However, subjects who were required to perform logical, "secondary process" operations by completing a digit-span test following interrupted REM sleep continued to show REM sleep compensationary increases on nights following REM sleep interruption. This result occurred because the secondary process task prevented the substitution phenomenon from taking place - i.e. the logical task of the digit-span test inhibited the free-flowing, associational waking fantasies that might have occurred if this test had not been performed.

These findings indicate that in the present study, subjects in Group B, having entered the study expecting to be recording dreams, performed their task with little curiosity or increase in divergent thinking powers, since the logical task (Appendix 8) which they were required to perform upon their dreams, had a similar effect on these subjects as did the digit-span test mentioned above, i.e. it successfully inhibited the free-associational, fantasy-like, speculative thinking, in which subjects in Groups A and C were engaging, albeit for different reasons.

6.5 Effects of the dreamwork technique on Rorschach scores

The second hypothesis of this study predicted a significant increase in movement responses to the Rorschach Ink Blot test, in association with an opportunity to work with, and become aware of, subject's own dreams through the use of a dream amplification technique. The rejection of this hypothesis is probably accounted for by the following reason. On a content inspection of the dreamwork handed in by subjects in the experimental group, it became clear that subjects had the most difficulty in answering questions relating to symbolic meanings, making associations between persons, qualities or situations, having no apparent similarities, and were more comfortable in dealing with questions relating to issues of a more concrete nature. Only a few subjects, possibly 3, really used the technique effectively, examples of which can be seen in Appendices 11 and 12. However, a content inspection of the Rorschach protocols for these few subjects reveals no increases taking place. For sufficient change to occur at such a deep psychic level as to affect creative potential, as measured by the movement responses on the Rorschach, therefore, it would appear that subjects would require a period of training so that the method of responding to questions could be clarified, and they could have an opportunity to practise the technique, in a group, with the experimenter guiding

them, until they felt sure that they understood fully what was required of them.

6.6 Differences between groups

As can be seen from Tables 4 and 5 there were significant differences between groups, on all Rorschach measures, at $P < 0.05$. Since no interaction occurred, a one-way analysis of variance was performed on all comparisons between groups, for both the pre- and post-test conditions. The results yielded significant differences between the three groups on all measures of the Rorschach, in the pre-test condition, suggesting that there exist innate differences in creative potential. It cannot be established whether this pre-existing difference between the groups on this measure in any way accounted for the lack of significant findings in comparisons on the two-way analysis of variance. Since these pre-existing differences are probably the result of sampling error, it is suggested that in future replications, much larger sample sizes are employed, or that baseline creative potential measures are taken, and subjects are assigned to related groups in a matched design, such that equal numbers of subjects of high, medium and low creative potential, are assigned to each of the treatment groups.

6.7 Applications

From an analysis of the data presented in section 5 above it seems, therefore, that the two measures used in this study to measure creativity, namely, the Torrance Tests of Creative Thinking, and the Rorschach Ink Blot Test, are, in effect, measuring different aspects of creativity.

Since significant changes occurred between the pre- and post-test conditions on the Torrance and not on the Rorschach, it would seem that the Torrance is measuring the actual act of creativity, divergent thinking in action, which is a preconscious process, whereas the Rorschach M measures creative potential, emerging from the unconscious along with all the other deep psychic structures tapped by the Rorschach. This is not to say that creative potential cannot be increased, but simply that in this investigation, the dreamwork technique was effective in increasing creativity, or divergent thinking, but not in increasing creative potential. As was mentioned in section 4.2.4.2.5 above, the Rorschach M response was used in this study as a measure of creative potential only, and was not intended to be regarded as measuring creativity per se. The movement response is considered by authors previously reviewed to be a necessary, but not sufficient, prerequisite for creativity (Dudek, 1975; Klopfer & Schachtel, in Welman, 1985).

A content inspection of some of the raw data would seem to confirm this finding. Subject 1 in Group B scored higher than any other subject in the three groups on Figural scores of Fluency, Flexibility, Originality, and scored second highest on Verbal scores of Fluency, Flexibility and Originality, whereas her Rorschach Total M score was one of the lowest.

A useful application of this finding would be to use these two measures in establishing the construct validity of tests measuring respectively, divergent thinking, and creative potential, since these tests used together offer such a useful tool for discriminant validity.

In future replications of this study, it is suggested that the Rorschach may be useful as a measure of profound psychic change, but that the study would have to extend over a much longer period of time, possibly with a preparatory period of training in using the dreamwork technique, so that subjects understood more fully what was required.

These measures might also prove useful to determine the success of other dreamwork techniques practised at the Jungian-Senoi Institute, or in fact, to evaluate creativity increase in individuals engaged in dreamwork in other non-experimental settings, i.e. individual or group, Jungian or

Gestalt, or any other therapies in which dreamwork is done by the dreamer in an experiential way.

6.8 Methodological Considerations

6.8.1 Demand characteristics

As outlined in section 4.2.4.3.1 above, the experimental hypothesis may be inadvertently conveyed to the subjects by a variety of cues, which can affect their expectations, thus influencing their behaviour and therefore the results. To minimise the effects of these "demand characteristics", subjects in this study were told that the purpose of the study was to examine the relationship between dreaming and personality factors. Creativity was not mentioned at any point by the experimenter to any of the subjects, and the Eysenck Personality Inventory, embedded in the design, was intended to lend support to the suggestion that personality factors were being investigated. At no stage in the study were the hypotheses revealed to the subjects, and in the post-experimental enquiry no subject had correctly formulated the precise hypotheses of the study. No subject linked the creativity tests to the dreamwork task, and the majority of subjects who had formulated some hypotheses thought the investigator was trying to understand their personalities from reading their dreams. However, six subjects thought the study had something to do with

creativity or divergent thinking, because they recognised the Torrance as being a test of divergent thinking, and two subjects thought that they were members of a control group. In further investigations of this nature this could be prevented by using subjects unfamiliar with any kinds of psychological testing, and having no knowledge of research design.

To minimise the experimenter effect the experimenter attempted to hold her influence constant for all subjects, as suggested by McGuigan (1963) - i.e. at all times questions from subjects in all groups were handled in the same way, i.e. the experimenter replied that all questions would be dealt with in a de-briefing session to be held at the termination of the study, which de-briefing did in fact take place, two weeks after termination of the study. To control for the experimenter effect that can occur when instructions are given verbally to subjects, all instructions were typewritten, and no further explanations were given.

Each subject had an equal opportunity to spend time with the experimenter for a five-minute meeting on a weekly basis, and subjects in all three groups were encouraged, motivated, and made to feel that their contributions were important and worthwhile.

As far as scoring procedures were concerned, the Torrance was scored by the experimenter, since this test battery requires no interpretation, so that no biasing of scores is possible. However, the Rorschach, which does require some interpretation in scoring, was scored by an independent trained scorer.

6.8.2 Reliability of scoring

Scoring reliability was determined for each measure, by having a second experienced scorer score a sample of twenty sets of tests, in order to determine an inter-rater reliability coefficient. Correlation coefficients as reported in Table 1 in section 5.4 above, were highly significant for the Torrance on all measures, and highly significant for the Rorschach on measures of M, FM, Fm and Total M. The low correlations for mF and m (0.41 and 0.33 respectively could possibly be attributed to the very small range of scores on these measures (0-3 for the mF, and 0-1 for the m measure) which could have distorted the results.

6.8.3 Experimental design

Although two control groups were used in this study, it has been seen that unexpected changes took place in Control Group C, who were performing a supposedly neutral task. Both control groups were active, in that both were

performing a task of some kind. This performance in itself, whether dream recording, or dream collecting, might contribute to an increase in creativity. It would therefore be an improvement in future replications of studies of this nature, to include a fourth control group which was passive, i.e. a matched group who did nothing apart from going about their usual daily activities, but who were pre- and post-tested with the same measures as the other groups involved in the study.

6.9 Conclusion

As previously mentioned in section 6.1.2.1, for creativity to occur, there must be a presenting problem, and therefore this investigation must be looked at from the perspective of using the dream for the creative solution of problems, whether cognitive or emotional, leading to an overall improvement in creativity functioning.

In a recent article focusing on this problem-solving aspect of dreams, Baylor and Deslauriers (1986) suggest that some dreams are generated by a regulatory system in an attempt to restore equilibrium to the cognitive and emotional systems of the organism. The dream-state, with its lack of conscious control, is considered to provide the ideal conditions for this regulatory system to scan the range of biological and psychological needs that may have escaped the

waking person. Unresolved problems, focal conflicts and problems not sufficiently dealt with could resurface during the dreaming state. The unique method of processing and reworking of daytime concerns which the dream employs provides solutions to these problems. However, for these dreams to serve a purposeful function, and for change to take place, not only must the individual pay attention to and interpret the meaning of these dream solutions and messages, but he/she must commit him/herself to action.

Baylor and Deslauriers outline a five-step method designed to facilitate dream understanding, sensitizing the dreamer to the language of the dream, and helping him/her understand the sense of his/her creation, recorded in a dream report, of an event that took place in an altered state of consciousness, by connecting it to past and planned events and aspects of his/her own emotional, regulatory and cognitive systems.

Although the technique employed by Baylor and Deslauriers is different to the technique used in this study, strong theoretical and empirical connections underlie the rationale behind the development of the two techniques.

According to these two authors, a major difficulty in attributing a problem-solving function to dreams is the difficulty of defining the problem(s) the dream is

attacking, since, without a clearly defined problem, the efficacy of solutions cannot be assessed. One way of assessing this would be to use the approach used in this study, i.e., not to attempt to assess the efficiency of problem-solving on an individual basis, but to use a more global assessment measure, such as a creativity measure, to determine overall improvement in creative problem-solving ability.

It can be seen that the common thread linking most of the creativity-enhancing approaches outlined in this study, including the dreamwork technique under investigation, has been that it was not the contents of the actual task involved that contributed to significant changes on the creativity measure involved, but that an open-ended problem-solving mind-set was established, which encouraged divergent thinking, leading to an overall increase in creativity performance.

6. DISCUSSION

6.1. Effects of the dreamwork technique on Torrance scores: Significant results

Group A

The first hypothesis in this study predicted a significant increase in creativity as measured by the Torrance Tests of Creative Thinking, in association with an opportunity to work with, and become aware of, a subject's own dreams through the use of a dream amplification technique. The highly significant increases in Figural Elaboration as well as Figural Totals (Table 6), as well as the highly significant increases on all four Verbal measures of Fluency, Flexibility, Originality and Verbal Totals, (Table 7), would seem to support this hypothesis.

Group C

The first hypothesis in this study predicted that there would be no significant change in the scores of subjects in Groups B and C. In fact, highly significant increases in Figural Fluency, Figural Originality, Figural Elaboration, as well as Figural Totals can be seen for Group C (Table 6), as well as highly significant increases on all four Verbal

measures of Fluency, Flexibility, Originality and Verbal Totals.

This unexpected finding that creativity increases for Control group C were not only significant, but occurred for more measures than for Experimental group A, necessitates a reconsideration of the original design. Although the purpose of Group C was to act as a control group, it would seem that the supposedly neutral control task of collecting dreams from other people acted as a powerful stimulus for fantasy, imagination and speculation, which led to an increase in divergent thinking. Many of the subjects in Group C reported to the experimenter during the investigation that they were curious as to why they were collecting other people's dreams and not their own. They also became interested in the meaning of the dreams they had collected, and one subject in Group C stated in the post-experimental enquiry that "I have noted an effect on the frequency of my dreams that recording others' dreams has had. My recording dreams has possibly increased the number of dreams I have had. It also makes me more aware of my dreams, and their possible meaning."

Since the task of Group C was an active one that produced significant change, it is suggested that this group not be considered as a control group at all. Instead, subjects in each group, having undergone a repeated measures design,

could be regarded as having acted as their own controls, i.e. as if three separate repeated measures experiments had taken place, for each of the three groups. From this perspective, these results indicate that both the dreamwork technique, as well as the task of collecting other people's dreams, were able to significantly increase scores on this divergent thinking test battery.

6.2 Effects of the dreamwork technique on Torrance scores: Non-significant results

It can be seen that on all measures, only two significant increases, i.e. for Verbal Flexibility and for Verbal Totals, occurred to subjects in Group B, who were required to record their own dreams, and do a logical task, requiring secondary process functioning, relating to each dream. It appears as if the secondary process experience of doing this logical piece of work had the effect of inhibiting the increase in creativity in this group, in contrast to Groups A and C. This will be further elaborated in section 6.4 below.

6.3 Interpretation of results according to theoretical rationale: Significant results

A close examination of the tasks performed by Groups A and C reveals that the following events took place.

Group A:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Had an opportunity, by using the dreamwork amplification technique, (Appendix 7) to explore meanings and associations to the imagery occurring in the dreams (activity requiring holistic, associational abilities).

Group C:

1. Collected and recorded other people's dreams (task requiring verbal skills).
2. Performed a logical task - scored dream content according to the Active Participation Scale and the Hedonic Tone Scale (Appendix 8) (activity, requiring logical, rational processes).
3. Because they were either puzzled or frustrated as to why they were not recording their own dreams, as their expectations of the study had led them to believe they would be doing, they engaged in speculative fantasy, regarding the possible meanings of the dreams they had collected, the significance of their own dreams, and, in general, expressed great interest and fascination in the study of dreams. (The kind of thinking

involved here required a loose flow of associations, leading to an increase in divergent thinking).

As has been previously mentioned in section 1 above, the creative process seems to be experienced as a constant interaction between two major modes of functioning, one illogical and intuitive, the other rational and linear. According to Ornstein, these two modes complement each other during the creative process, so that ideas generated by the intuitive mode are clarified and communicated by the rational mode (Ornstein, 1972). According to Guilford, (1959) the creative process is characterised by divergent thinking, in that several possible answers may be provided to a problem, and the thinker searches and goes off in many different directions, in contrast to convergent thinking, in which there is only one possible solution to a problem, and all thinking is focused in the direction of that answer.

When Wallas' four stages of creativity (preparation, incubation, illumination and verification) were outlined in section 2.1.2.3.3 above (Wallas, in Gowan, 1978), it was mentioned that a prerequisite for creativity was the initial stage of preparation, i.e. that there should be a problem, with which the creator is involved for a long period of time, in a disciplined fashion, but without solution.

Considering the processes in which Groups A and C were involved, both groups had a problem confronting them. Group A's problems were the tasks involved in the dreamwork technique, and were intentionally devised by the experimenter. Group C's problems, intended by the experimenter to be a neutral control task, were a curiosity and fascination with the task they had been given of collecting dreams, puzzlement as to why they were not recording their own dreams, and a growing interest in dreams, leading to increasing numbers of questions on the subject.

According to Wallas, the creative process is ongoing in that the four-stage process is constantly occurring, as new ideas are born, worked through, giving rise to new problems to be worked at, leading to new ideas and hypotheses. It can be seen that this process was occurring in Groups A and C, in that Group A was doing a dreamwork technique about four times a week, on average, for three weeks, and Group C was collecting four dreams a week, for three weeks, and in each instance, this process of shifting from the rational to the intuitive mode, employing divergent thinking powers, was occurring, giving both groups a sufficient amount of practice in creativity training to significantly affect their scores on the Torrance four weeks later.

As mentioned in section 2.1.2.1 above, from a psychoanalytic point of view, the insights generated by the loose, illogical and highly subjective ideas of primary processes are being constantly moulded by secondary processes into a communicable context (Suler, 1980). As previously suggested by Arieti, during the creative process, primary and secondary processes combine to form a tertiary process (Arieti, 1976). From the psychoanalytic point of view, therefore, what seemed to be occurring in the creative process of Groups A and C above was a constant regression to primary process thinking, (in the form of dreams for Group A, and in the form of imaginative fantasies and speculative thinking for Group C), and then a return to secondary process thinking in order to synthesize the material (Suler, 1980).

As mentioned in section 2.1.2.2 above, Jung considered creativity to be a form of fantasy, which he divided into three types: (1) voluntary, as in an artificial concoction of conscious elements, deliberately and consciously produced; (2) passive, as occurs in uncontrolled irruptions of unconscious contents into consciousness, e.g. in psychotic states, or any state in which consciousness and unconsciousness are in opposition; and (3) active, as the fantasy occurs when the experience is guided and altered consciously, and there is co-operation between consciousness and unconsciousness - e.g. in active imagination (Casey,

1974). From a Jungian perspective it cannot be established with certainty whether the creative process, as outlined by Jung, was stimulated in this investigation, since, from Jung's point of view, the creative process occurring in the technique of active imagination involved an interplay between consciousness and unconsciousness, such that symbolic communications from the Self are conveyed to ego-consciousness, which is then responsible for translating these communications into appropriate action, referred to by Jung as the "transcendent function" (Jung, 1971, in Watkins, 1976). Since the subjects in Group C were involved in a conscious task only, the development of their divergent thinking could not have been a result of communication from their deepest unconscious needs. As far as the subjects in Group A are concerned, it seems likely, that since no significant change occurred in the Rorschach scores, which tap creative potential and psychic changes at a much deeper level, the changes in divergent thinking were occurring at a more conscious level, and could be measured by the Torrance. These changes required the kind of thinking referred to by Jung as Directed thinking, by which he meant logical, reality based, verbal, linguistic thinking, requiring concentration, as distinguished from Non-Directed thinking, being the various fantasy modes outlined above, occurring in both day- and night-dreaming. Although Non-Directed thinking can have either archaic or personal origins,

Directed thinking is an exclusively conscious process (although it rests upon an unconscious basis) (Faber, 1987).

From the neurological or cognitive point of view, it seems clear that both groups were constantly involved in an interplay between left- and right-hemisphere functioning, as the two hemispheres worked together, the left hemisphere doing the rational tasks of recording dreams and doing the logical task, while the right hemisphere wondered, speculated, explored possibilities, created new problems, and intuitively arrived at solutions.

In considering other research attempts to stimulate creativity, it has been seen earlier, in section 2.1.3.2, that several researchers used various techniques in an attempt to increase their subjects ability to solve problems -e.g. Davė's study in which dreams were induced in subjects at an impasse in the course of working on an academic, vocational or personal problem, thus overcoming their creative blocks (Davė, 1979); Rosenberg's study in which playwriting students hypnotized by the suggestion that they would be able to solve problems in their writing, found this to have a discernable effect on their work (Rosenberg, 1976); and the study by Harman et al, in which the effects of mescaline on creative problem-solving were investigated, and it was discovered that the psychedelic drug did appear to facilitate creative problem-solving, particularly in the

illumination phase (Harmon et al, in C. Tart (Ed), 1969). Perhaps an important fact in all these designs is that not only were the various techniques successful in increasing creativity, but the presence of problems to be solved was a vital ingredient in stimulating the creative process in the first place. In a similar vein, the increases in creativity functioning occurring in the present investigation can be attributed to the presence of problems presenting themselves to the subjects - the dreamwork tasks for subjects in Group A and the puzzle of dream collecting for subjects in Group C.

As far as the dreamwork technique is concerned, it appears from the significant results obtained, that the subjects were in fact, without any training, using a technique of association and amplification, in order to identify the problem(s) the dream might have been highlighting in the dreamer's life. By using this technique, naive subjects were able to translate their dream content, experienced in an altered state of consciousness, into the rational language that the conscious ego can understand.

6.4 Interpretation of results according to theoretical rationale: Non-significant results.

A close examination of the tasks performed by Group B reveals that the following events took place:

Group B:

1. Recorded their dreams (activity requiring verbal and memory skills).
2. Performed a logical task (Appendix 8) (activity requiring logical, rational processes).

Subjects in this group were not only deprived of a presenting problem as a task to deal with, but, in addition, any dream imagery stemming from their unconscious was not elaborated and explored via a technique such as the dreamwork technique used by Group A, as this imagery was inhibited by the operation of the secondary processes performing the logical task.

Support for this position comes from the experimental findings of Fiss et al (1966), who used REM sleep interruption to explore the possibility that the mental activity characteristic of REM sleep, i.e. with its bizarre, fantasy-like nature, contains similar themes to the mental activity occurring in waking activity. This research was based on reports by a number of researchers that a marked similarity existed between the bizarre, fantasy-like nature of hypnogogic and REM-sleep reports (Bertini et al, 1964; Foulkes & Vogel, 1965; Foulkes et al, 1966; Vogel et al, 1972; Witkin & Lewis, 1963).

In this research by Fiss et al, TAT stories were collected under certain conditions: interrupted sleep onset, an awake, post-sleep condition and post-REM and post-NREM conditions. With the exception of the NREM conditon, a highly consistent pattern occurred in that TAT stories were indistinguishable from reports elicited from the sleep onset, post REM and post-sleep (hypnopompic) conditions. In their conclusion the authors suggest that since the abrupt termination of a dream leads to a waking fantasy of a similar nature, waking fantasies may serve a similar purpose to those of dreams (Fiss et al, 1966). Since the essential characteristics of REM mentation do not switch off, but continue into the waking state, Fiss refers to this as a "substitution phenomenon" (Fiss, 1979, p 51).

Cartwright (1966) has provided further support for this hypothesis, in her finding that she was able to match REM sleep reports and drug-induced, hallucinatory content protocols from the same subjects at a high level of confidence. In addition, a dramatic reduction was observed in the amount of time spent in REM sleep on the night following the drug-induced fantasy-experience. Cartwright's conclusions were that an opportunity to experience dream-like hallucinations during the day, compensated for the subjects' "need to dream" (Cartwright, 1966, p 13).

In addition to these findings, it appears that the opportunity to relate and elaborate on ongoing mental activity prior to REM-sleep interruption, i.e. a waking fantasy, compensated so sufficiently for the REM-sleep deprivation, that the REM rebound phenomenon did not occur (Cartwright & Monroe, 1968). However, subjects who were required to perform logical, "secondary process" operations by completing a digit-span test following interrupted REM sleep continued to show REM sleep compensationary increases on nights following REM sleep interruption. This result occurred because the secondary process task prevented the substitution phenomenon from taking place - i.e. the logical task of the digit-span test inhibited the free-flowing, associational waking fantasies that might have occurred if this test had not been performed.

These findings indicate that in the present study, subjects in Group B, having entered the study expecting to be recording dreams, performed their task with little curiosity or increase in divergent thinking powers, since the logical task (Appendix 8) which they were required to perform upon their dreams, had a similar effect on these subjects as did the digit-span test mentioned above, i.e. it successfully inhibited the free-associational, fantasy-like, speculative thinking, in which subjects in Groups A and C were engaging, albeit for different reasons.

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them, until they felt sure that they understood fully what was required of them.

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performing a task of some kind. This performance in itself, whether dream recording, or dream collecting, might contribute to an increase in creativity. It would therefore be an improvement in future replications of studies of this nature, to include a fourth control group which was passive, i.e. a matched group who did nothing apart from going about their usual daily activities, but who were pre- and post-tested with the same measures as the other groups involved in the study.

6.9 Conclusion

As previously mentioned in section 6.1.2.1, for creativity to occur, there must be a presenting problem, and therefore this investigation must be looked at from the perspective of using the dream for the creative solution of problems, whether cognitive or emotional, leading to an overall improvement in creativity functioning.

In a recent article focusing on this problem-solving aspect of dreams, Baylor and Deslauriers (1986) suggest that some dreams are generated by a regulatory system in an attempt to restore equilibrium to the cognitive and emotional systems of the organism. The dream-state, with its lack of conscious control, is considered to provide the ideal conditions for this regulatory system to scan the range of biological and psychological needs that may have escaped the

waking person. Unresolved problems, focal conflicts and problems not sufficiently dealt with could resurface during the dreaming state. The unique method of processing and reworking of daytime concerns which the dream employs provides solutions to these problems. However, for these dreams to serve a purposeful function, and for change to take place, not only must the individual pay attention to and interpret the meaning of these dream solutions and messages, but he/she must commit him/herself to action.

Baylor and Deslauriers outline a five-step method designed to facilitate dream understanding, sensitizing the dreamer to the language of the dream, and helping him/her understand the sense of his/her creation, recorded in a dream report, of an event that took place in an altered state of consciousness, by connecting it to past and planned events and aspects of his/her own emotional, regulatory and cognitive systems.

Although the technique employed by Baylor and Deslauriers is different to the technique used in this study, strong theoretical and empirical connections underlie the rationale behind the development of the two techniques.

According to these two authors, a major difficulty in attributing a problem-solving function to dreams is the difficulty of defining the problem(s) the dream is

attacking, since, without a clearly defined problem, the efficacy of solutions cannot be assessed. One way of assessing this would be to use the approach used in this study, i.e., not to attempt to assess the efficiency of problem-solving on an individual basis, but to use a more global assessment measure, such as a creativity measure, to determine overall improvement in creative problem-solving ability.

It can be seen that the common thread linking most of the creativity-enhancing approaches outlined in this study, including the dreamwork technique under investigation, has been that it was not the contents of the actual task involved that contributed to significant changes on the creativity measure involved, but that an open-ended problem-solving mind-set was established, which encouraged divergent thinking, leading to an overall increase in creativity performance.

APPENDICES

APPENDIX 1

Dream Research

Student volunteers needed for participation in a Psychology Masters research project, which aims to explore the relationship between dreaming and personality factors. Participation is limited to 60 subjects, and selection will be subject to certain criteria.

Selected subjects will be required to participate in two testing sessions, lasting two hours each, with a four week time interval in between. During the three weeks between this time period, subjects will meet with the researcher once a week for 10 minutes. Subjects will be required to keep a daily dream diary and to answer questions on dreams.

Interested students please contact Linda Katz at 444821 after 6 pm, or come to Room 215, P.D. Hahn Building (Psychology Department), between 8 and 5 from 28-31 July.

APPENDIX 2

PERSONAL DATA QUESTIONNAIRE STRICTLY CONFIDENTIAL

NAME: _____

DATE OF BIRTH: _____

TELEPHONE NUMBER: _____

1) Have you ever consulted a private psychiatrist or psychologist? (YES/NO) _____

IF YES:

When did you do so? _____

How long did you see them for? _____

What was/is the nature of the problem (Briefly)? _____

_____

Were you given any form of medication ? (Please specify) ___

_____

2) Have you ever consulted an outpatient psychiatric unit at a psychiatric hospital? (YES/NO) _____

IF YES:

When did you do so? _____

How long did you see them for? _____

What was/is the nature of the problem (Briefly) ? _____

_____

Were you given any form of medication? (Please specify) ___

3) Have you ever consulted a doctor or homeopathist for any nervous or emotional difficulties? (YES/NO) _____

IF YES:

When did you do so? _____

What was/is the nature of the problem? (Briefly) _____

Did they give you any form of medication? (Please specify)

4) Are you presently taking any form of medication? (If Yes, please specify which drugs, and whether prescription or non-prescription) _____

5) Have you ever suffered from any severe illness (e.g. epilepsy, diabetes, etc.? (If Yes, please specify) _____

6) Have you ever suffered from any severe head injuries? (If Yes, please specify) _____

7) Do you normally have difficulty falling asleep? _____

8) Do you meditate on a regular basis? (If so, please specify how often) _____

9) If you were to keep a record of your dreams, e.g. by recording them into a dream diary each day, how many dreams a week, on average, would you say you would be likely to remember? Please circle the appropriate figure.

1 2 3 4 5 6 7 8 9 10

10) Do you, or have you ever, become intensely involved in recording and trying to understand your dreams. Elaborate.

_____

_____

_____

_____

THIS SECTION IS FOR FEMALE SUBJECTS ONLY

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11) What is the average length of your menstrual cycle? Circle the nearest appropriate figure.

21 days 23 days 25 days 27 days 29 days 31 days

33 days 35 days 37 days 39 days

12) Do you have any menstrual cycle disturbances? Briefly explain. _____

_____

_____

13) Are you currently on an oral contraceptive? _____

14) What was the date of your last period?

_____

APPENDIX 3

DREAM DIARY INSTRUCTIONS

NAME: _____

GROUP: _____

CODE: _____

PLEASE READ THE FOLLOWING CAREFULLY:

This dream diary consists of two forms for each day of this study:

DREAM RECORD SHEET

This form is for you to record any dream or dreams you may recall from the previous night. Be sure to record the date at the top of each page. It is essential that you write down your dream as soon as possible after you awaken in the morning. If you cannot recall a dream, simply write NO RECALL on the relevant form. Be sure to do this when it is applicable.

When reporting a dream, please describe it as exactly and as fully as you remember it. Your report should contain, whenever possible, a description of the setting of the

dream, whether it was familiar to you or not, a description of the people, for example, their sex, age and relationship to you. Also include any animals in your description, as well as objects, including their shape and colour. Conversations, words, sounds and smells should also be mentioned, where applicable. If possible, describe your feelings during the dream, and whether it was pleasant or unpleasant. Be sure to tell exactly what happened to you and other characters in the dream. If you remember more than one dream from the same night, be sure to distinguish between dreams by clear markings and separations. If more space is required, use additional sheets of paper.

It is essential that you report anything that you can recall from the previous night's sleep. Everything is important, even hazy impressions, isolated images, flashes of colour, etc.

Your dream reports will be treated in the strictest confidence, so do not be afraid to report dream events which might be embarrassing to you if related to strangers. Your willingness to co-operate in this regard will greatly increase the accuracy and successful completion of this study.

DREAM QUESTIONNAIRE

This form consists of questions to be answered on each dream. Do not answer the questions in the morning, but simply record the dream. Choose a quiet time in the evening, when you are unlikely to be interrupted, to complete the questionnaire on the previous night's dream/dreams. It is important that this procedure be strictly adhered to - i.e. dreams must be recorded first thing in the morning, and the questionnaire must be completed in the evening of that day.

Before beginning the questions, read through your dream again, concentrating on how it feels to be in that dream. Imagine that you are back in the dream again.

If you are running out of forms, please contact me, and a new booklet will be provided.

Thank you once again for participating in this study.

Linda Katz

APPENDIX 4

DREAM DIARY INSTRUCTIONS

NAME: _____

GROUP: _____

CODE: _____

PLEASE READ THE FOLLOWING CAREFULLY:

This dream diary consists of two forms for each day of this study:

DREAM RECORD SHEET

This form is for you to record any dream or dreams you may recall from the previous night. Be sure to record the date at the top of each page. It is essential that you write down your dream as soon as possible after you awaken in the morning. If you cannot recall a dream, simply write NO RECALL on the relevant form. Be sure to do this when it is applicable.

When reporting a dream, please describe it as exactly and as fully as you remember it. Your report should contain, whenever possible, a description of the setting of the

dream, whether it was familiar to you or not, a description of the people, for example, their sex, age and relationship to you. Also include any animals in your description, as well as objects, including their shape and colour. Conversations, words, sounds and smells should also be mentioned, where applicable. If possible, describe your feelings during the dream, and whether it was pleasant or unpleasant. Be sure to tell exactly what happened to you and other characters in the dream. If you remember more than one dream from the same night, be sure to distinguish between dreams by clear markings and separations. If more space is required, use additional sheets of paper.

It is essential that you report anything that you can recall from the previous night's sleep. Everything is important, even hazy impressions, isolated images, flashes of colour, etc.

Your dream reports will be treated in the strictest confidence, so do not be afraid to report dream events which might be embarrassing to you if related to strangers. Your willingness to co-operate in this regard will greatly increase the accuracy and successful completion of this study.

DREAM QUESTIONNAIRE

This form consists of questions to be answered on each dream. Do not answer the questions in the morning, but simply record the dream. Choose a quiet time in the evening, when you are unlikely to be interrupted, to complete the questionnaire on the previous night's dream/dreams. It is important that this procedure be strictly adhered to - i.e. dreams must be recorded first thing in the morning, and the questionnaire must be completed in the evening of that day.

If you are running out of forms, please contact me, and a new booklet will be provided.

Thank you once again for participating in this study.

Linda Katz

APPENDIX 5

DREAM DIARY INSTRUCTIONS

NAME: _____

GROUP: _____

CODE: _____

PLEASE READ THE FOLLOWING CAREFULLY:

This dream diary consists of two forms for each day of this study:

DREAM RECORD SHEET

This form is for you to record dreams which you will collect from friends, family, acquaintances or any people you might know who would be willing to contribute a dream or several dreams to help you fulfil your part in this project.

IMPORTANT: Do not use your own dreams for this task, and please do not collect dreams from any of the students who are participating in this project. With these two exceptions, you may use dreams you can find from any source.

When reporting a dream, please describe it as exactly and as fully as the dreamer describes it. Your report should contain, whenever possible, a description of the setting of the dream, whether it was familiar to the dreamer or not, a description of the people, for example, their sex, age and relationship to the dreamer. Also include any animals in your description, as well as objects, including their shape and colour. Conversations, words, sounds and smells should also be mentioned, where applicable. If possible, describe the dreamer's feelings during the dream, and whether it was pleasant or unpleasant. Be sure to find out exactly what happened to the dreamer and other characters in the dream. If necessary, ask the dreamer further questions to elicit more information. Do not include the dreamer's real name in your report, but simply refer to him/her by his/her initials, or use a pseudonym.

DREAM QUESTIONNAIRE

This form consists of questions to be answered on each dream. Do not answer the questions when you are collecting the dream, but simply record the dream. Choose a quiet time in the evening, when you are unlikely to be interrupted, to complete the questionnaire on the dream you have collected that day. It is not necessary that you collect a dream for

every day of the week. Three or four dreams a week will be sufficient.

If you are running out of forms, please contact me, and a new booklet will be provided.

Thank you once again for participating in this study.

Linda Katz

APPENDIX 6

DREAM RECORD SHEET NAME: _____

DATE: _____

DREAM REPORT

If there is insufficient space, please continue on the reverse side of this sheet, or use extra paper.

APPENDIX 7

DREAM QUESTIONNAIRE

DATE: _____

INSTRUCTIONS: Read through your dream again, concentrating on how it feels to be back in the dream. Now answer the following questions as fully as indicated. If there is insufficient space, please use the reverse side of the paper, or use extra paper.

1) Which character/s in the dream seemed to be the most important to you? Describe the character/s and elaborate. _____

_____

_____

_____

_____

_____

2) If the dream character/s were unfamiliar to you, did they remind you of anyone you know in reality? Elaborate. _____

_____

_____

_____

3) If the dream character/s were familiar to you, did the character/s, or some aspect of them, remind you of anyone else you know in reality? _____

4) How did these dream character/s make you feel, in the dream? _____

5) Have you ever felt like this in reality? How long ago? Describe fully. _____

6) Which situation/s in the dream seemed to be the most important to you? Describe fully, explaining why you consider them to be important. _____

_____

_____

_____

_____

_____

7) How did these situation/s make you feel? Describe fully. _____

_____

_____

_____

_____

_____

8) Do these situation/s remind you of anything in reality in your life? Elaborate. _____

_____

_____

_____

_____

_____

9. Imagine that this dream is a short story, and you could re-write the ending. How would you change it? _____

_____

_____

_____

_____

_____

10) Can you see any connection between a character, scene or situation in this dream and any other dreams you have had? Please describe and elaborate. _____

_____

_____

_____

_____

_____

11) Does any image or scene in the dream strike you as particularly strange or bizarre? Elaborate and briefly explain why. _____

_____

_____

_____

_____

_____

12) Do you feel that this dream, or any part of this dream has had any effect on your waking life? Describe and elaborate. _____

_____

_____

_____

_____

_____

13) If you recalled more than one dream from last night, can you see any connection between these dreams? Please elaborate briefly. _____

_____

_____

_____

_____

_____

role is entirely or almost entirely passive (recipient of other's actions rather than initiator).

4. Dreamer is present as participating character in moderately active role; not the overriding determiner of dream events, however.
5. Dreamer is present in active role and seems to be determining the character of dream events to a major degree.

APPENDIX 9

RESEARCH ON DREAMING AND PERSONALITY FACTORS

POST-EXPERIMENTAL ENQUIRY

Did you formulate any hypotheses concerning the aims of this study?

(YES/NO)

If yes, please elaborate:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX 10

PSYCHOLOGY 1 PRACTICAL PROGRAMME 1986

SPECIALITY PRACTICAL (3RD AND 4TH QUARTER) OPTION

LINDA KATZ

WRITTEN ASSIGNMENT

According to research indications, for the creative process to occur, there must be an easy flow between unconscious and conscious experiences. Design an experiment to test the hypothesis that an awareness of unconscious processes, as elicited by working with dreams, will increase creativity.

In your presentation, give an outline of evidence leading to this hypothesis, with reference to the literature, clearly set out the aim of the experiment, your hypothesis, what would be the dependent and independent variables, and how you would control for irrelevant variables.

Describe how you would select your experimental design, give reasons for your choice, and show how you would select an appropriate statistical test to interpret your results.

Your report should not exceed 10 pages (3000 words).

Refer to:

Miller, S. (1984) Experimental Design and Statistics (2nd Ed.), Methuen, London.

and Reading List (on Short Loan, filed under Katz, L., 1986)

Due on 3rd October 1986

APPENDIX 11

EXTRACT FROM A SUBJECT'S DREAMWORK

At the end of the study, after the last testing session was completed, and all dreamwork folders had been handed in to the experimenter, an assignment project was posted for all those Psychology I students whose participation in the study had contributed towards a Practical requirement. A list of selected readings was attached to this assignment. (Appendix 10).

Extract from essay by 18-year-old female first year psychology student. Essay topic was to design an experiment to test the hypothesis that an awareness of unconscious processes, elicited by working with dreams, could increase creativity.

Personal Experience of the Creative Dream Process

What follows is my personal account of the creative dream process as it happened to me. My intention for including it in this essay was fourfold:

1) To illustrate that creative dreams are not merely something constricted to the past. Neither are they restricted to people of extraordinary genius. On the

contrary, they are accessible to everyone. It is simply a matter of being aware of them.

2) Secondly, creativity ought to be nurtured. Yet, our present education system is oriented towards left hemisphere functions. It tends to ignore the equally valuable strengths and potentials of the creative, artistic and intellectual capacities of the right hemisphere. Furthermore, if the education system incorporated right hemisphere orientated activities, there would be an increased probability of success in situations which demand creative thinking. Thus, right hemisphere functions should hold an equal place in the education system.

3) I wanted to confirm the hypothesis that "an awareness of unconscious processes, as elicited by working with dreams, will increase creativity".

4) Finally, I have shown how my own experience verifies Graham Wallas's four stages of the creative process:

1. PREPARATION

I was baffled by the readings for this essay on the psychoanalytic approach to the creative process. I was unclear about the revisions made to Freud's theory of the

creative process and to Kris's theory (1952) of the creative process, called 'Regression in Service of the Ego'. I was also confused that I had not encountered any empirical research confirming my suspicion that the right and left hemisphere functions correspond to primary and secondary process thinking respectively.

2. INCUBATION

The incubation period occurred to me during REM (Rapid Eye Movement) sleep. I was divorced from the problem and had three dreams....

Dream 1

Elements in Dream

1. I was sitting in a roller coaster with several unfamiliar, but friendly, people.

2. The roller coaster was travelling downwards at a tremendous speed.

3. We were laughing and enjoying the experience.

Associations-

1. I was about to experience an unfamiliar, yet pleasant experience.

2. Approaching the unconscious.

3. The unconscious experience was going to be a pleasant, enjoyable one.

Initial Speculations

1. Journeying from the left to the right hemisphere of the brain.

2. Transforming from a conscious to a preconscious state.

3. Altered State of Consciousness.

Key Themes

1. Incubation during sleep

Dream 2

Elements in Dream

1. We were working in our factory the whole day. Our house was situated in the centre of the factory.

2. My family were dissatisfied with the house.

3. Therefore, we moved to a house which was very beautifully furnished and tastefully decorated.

4. The house was juxtaposed with the factory.

5. There was an interleading door between the house and the factory, which was wide open.

Associations

1. Factory: A building in which goods are produced. Working in the factory dominates our life.
House: Place of sleep and dreaming.

2. Unhappy

3. Moved to the right hemisphere of the brain which is responsible for artistic abilities.

4. The right and left hemispheres of the brain co-exist alongside one another.

5. Interleading door: inter-connection, interrelatedness.

Initial Speculations

1. Factory: Symbolizes the left hemisphere (L.H.) of the brain where logical reasoning and verbalization are produced; dominant.
House: Symbolizes the right hemisphere (R.H.) of the brain which "houses" (pun) dreams during sleep.

2. Dissatisfied with the notion that the left hemisphere is dominant.

3. The R.H. of the brain is rich in creativity.

4. The right and left hemispheres of the brain are of equal dominance.

5. Although the left and right hemispheres of the brain have separate functions, they are both interrelated and easily accessible.

Key Themes

1. The left hemisphere of the brain is dominant.

2. Rejection of the notion that the L.H. is dominant.

3. The R.H. of the brain is rich in creativity. Therefore, it requires equal status with the L.H.

4. Neither of the hemispheres is dominant. They are of equal importance.

5. When the creative process occurs, there is an easy flow between the right and left hemispheres.

Dream 3

Scene 1:

Elements in Dream

1. Apemen were working in an outdoor factory.

2. Our house was situated on the periphery of the factory, next to a tree.

3. There was an arrow at the tip of the apemen's tails, which pointed away from them.

4. I tore out a blank page from a notebook.

Associations

1. Apemen: Primitive; regression

2. House on the periphery:

Primary process thinking is insignificant.

Factory workers in the foreground:

The secondary process is dominant.

3. Arrow: pointing in the opposite direction.

4. Dissatisfied with this explanation.

Initial Speculations

1. The initial creative inspiration comes from the person's ability to regress to primary process thought which is a more primitive cognitive state. Through regression, we gain access to images of the unconscious.

2. Primary Process thinking is insignificant. Secondary Process thinking is dominant.

3.The above conceptualization is incorrect.

4. Discarded this explanation.

Key Themes

1. Ernst Kris's theory (1952) of the creative process, called 'Regression in the Service of the Ego'.

4. Rejected Ernst Kris's theory. Rejected that a shift to primary process is a regression. (Instead it can be a progression). Rejected that primary process is more primitive than secondary process.

Dream 3

Scene 2:

Elements in Dream

1. The factory and our house were juxtaposed.

2. There was no actual partition between the factory and the bedroom. It was an imaginary division.

3. The workers were pleased at the new arrangements, as it gave them free access to the bedroom at any time, e.g. they could make use of it during their lunch-hour, for a nap.

Associations

1. Primary and secondary process thinking co-exist alongside one another.

Factory: Left hemisphere of the brain which controls secondary, logical reasoning.

Bedroom: Sleep; dreams. Right hemisphere, responsible for primary, creative thought.

2. Duality; accessibility to both hemispheres.

3. There is a continuous interaction and exchange of information between the right and left hemispheres of the brain.

Initial Speculations

1. The primary and secondary processes are of equal dominance.

2. This is an abstract model. There is no literal division between the two hemispheres.

3. Optimal psychic life depends on the continuous interplay between the two hemispheres.

Key Themes

1. The traditional psychoanalytic division of thought into primary and secondary processes has been reformulated. Primary and secondary processes are thought to belong to the right and left hemispheres of the brain, respectively.

3. Creativity is maximized when there is a free flow between the two hemispheres.

---

3. ILLUMINATION

The 'aha' experience occurred to me while I was relaxing in the bath in my dimly lit bathroom. My attention to external stimuli was very low. I had not understood or taken any notice of the previous night's three dreams. Suddenly, I connected the imagery in my dreams with the problems I was grappling with concerning the psychoanalytic approach to the creative process. This was accompanied by a tremendous feeling of joy, exhiliaration, wholeness and aliveness.

---

4. VERIFICATION

The original dream imagery was transformed into words. The concrete product has been incorporated into my essay.

APPENDIX 12

DREAM REPORT FROM SUBJECT IN GROUP A AND EXTRACT FROM DREAMWORK QUESTIONNAIRE

Dream Report

"I was one of three people to be chosen to be a cheerleader for a huge campus sports event. K.L., a Master's student and F.S. were the other two cheerleaders. The three of us were wearing red and white sporty clothes and red capes, etc. There were thousands of people on the stands and the three of us were together on the field. The three of us linked together and our bodies were rolling together in a ball from side to side. Later, photos were taken of us.

1. Which character/s in the dream seemed to be the most important to you? Describe the character/s and elaborate.

"F.S. He is tall, thin, erect, gentle, kind, clever, talented.
K.L. He is a Master's student, blond hair, blue eyes, medium build, very broad, and thinks a lot of himself. He is very sporty.
Me. I am very short. When I was in matric, I was House Captain and the colour of our house was red. I did wear a red cape on sports night etc."

4. How did these dream characters make you feel, in the dream?

"I was proud to be the only female chosen. I felt in harmony with them. Unity, togetherness between the three of us. I felt positively towards them."

6. Which situation/s in the dream seemed to be the most important to you? Describe fully, explaining why you consider them to be important.

"(1) I was the only female cheerleader to be chosen
(2) We were wearing red.
(3) There were thousands of people cheering for us excitedly.
(4) Our heights are important: Tall, medium, short.
(5) Important: the three of us were rolling together in a ball."

7. How did these situation/s make you feel? Describe fully.

"(1) proud
(2) assertive, forceful, strong, in the lime-light
(3) felt I had leadership abilities
(4) I felt satisfied with my height and well-proportioned
(5) Whole, complete, unity, harmony"

8. Do these situation/s remind you of anything in reality in your life? Elaborate.

"Yes. I was feeling quite whole and fulfilled in reality. I felt I was in control of my life."

11. Does any image or scene in the dream strike you as particularly strange or bizarre? Elaborate and briefly explain why.

"Rolling in a ball. This could possibly imply that I am feeling a very together person at present; that things are running/"rolling" smoothly or that I desire to make friends or be part of a team or some unity."

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