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SOME EFFECTS OF CONFLICT ON CREATIVE THINKING

by

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TABLE OF CONTENTS

		Page
ACKNOWLEDGEMENTS		ii
LIST OF TABLES		iv
Chapter		
I.	HISTORICAL BACKGROUND	1
II.	DESCRIPTION OF THE STUDY	24
III.	METHODOLOGY	28
IV.	RESULTS	33
V.	DISCUSSION	41
VI.	SUMMARY	49
APPENDIX		52
REFERENCES		53

LIST OF TABLES

Table		Page
1.	Mean RAT scores, mean % correct items, mean solution times and mean # conflicted words per item	34
2.	Comparison of % items passed with 2+ conflicted words vs. % items passed with no conflicted words	35
3.	Comparison of % items passed with conflicted words vs. % items passed with no conflicted words	37
4.	Comparison of solution time for passed items containing no conflicted words vs. solution time for passed items containing one or more conflicted words	38
5.	Comparison of % passed items in which the answer word was conflicted vs. % passed items in which answer word was not conflicted	40

CHAPTER I

HISTORICAL BACKGROUND

This chapter will summarize the literature on creativity and defense relevant to a study of the effects of defensive and conflictual elements on creative productions. The chapter will deal with those aspects of theories relating to 1) the creative product, 2) the creative process, and 3) the creator. Under the first section will fall definitional and criterion problems in evaluating whether a given work is "creative." The second section will concern itself with cognitive and experiential variables involved in the process of arriving at a creative solution. In the third section, individual differences and personality variables will be considered as they enhance or interfere with creative activity.

The Creative Product

Although most writers on creativity have recognized the need for a definition of the creative product, it has been difficult to develop one which would apply to a variety of areas. Indeed, the problems of establishing a definition have been so great that many writers attempt to bypass them by giving their greatest attention to what happens during the period of creation and considering the product only as the end

result of the more-important process.

One reason for the difficulty is that, to date, most theory in the area has tended to remain untested (e.g. psychoanalytic ideas) while the research which has been done has been empirical in nature or has relied on hypotheses derived from sketchy theoretical background. This presents an additional problem in evaluating the adequacy of the theoretical issues raised here. At this stage it is only possible to point to consistencies or disagreements in theoretical approaches to creativity. Almost no experimental evidence exists to support one view or disconfirm another.

In many studies the creative product has been defined empirically by its position on a statistical continuum (Guilford, et al., 1957; Barron, 1953b; 1955; 1957), or by ratings of people considered "expert" in a given field (Stein, 1960; Roe, 1950), or by general acknowledgement of its worth (Freud, 1948). These definitions are not necessarily wrong but they lack completeness and generality. More specious is a definition based on the number of products an individual presents (Rossman, 1931), as if to say that the "creativity" of a single work is enhanced if its author has been able to produce dozens more.

Among the problems that have to be handled by any definition are: 1) by what standards is a given work to be judged as "creative;" 2) who is competent to make the judgment; 3) can an objective definition be established which will generalize across all fields of endeavor, or are evaluations determined by particular criteria relevant only to a given field or perhaps only to a given piece of work within a given field; 4) how much weight (if any) must be given to the particular era

in which a work has been produced--and ought it to be evaluated periodically to see if it has stood the test of time.

Writers who have attempted to specify the nature of the creative product from a theoretical basis have stressed two aspects--newness, uniqueness, originality, and utility or value (Murray, 1959; Hebb, 1956; Bischler, 1937; Mednick, 1962; Stein, 1953; 1960). That is, it is not enough for the creative work to be merely unusual, for if this were the case one could hardly exclude productions which are unusual because of their "craziness." Rather, in its uniqueness the product must be a useful contribution to its field. It may offer a solution to a previously insoluble problem, state a new insight, constitute a discovery or invention, etc. Stein adds the additional restriction that the product's usefulness must be accepted by a group at some point in time. (This derives from his notion that it results from the interaction of individual and environment.) However well this may apply to some creations, history is full of instances when it has reversed itself on a particular evaluation. Stein feels he has spoken to this point by indicating that someone who attempts to label the "universals" of creativity is himself responding to the biases of his time, even when he is correcting an earlier appraisal. The issue of temporal relativism is obviously incompatible with a research approach, no matter how valid it may be for other reasons. It is clear that one cannot wait for several generations to give their evaluations of a product if this is to be used as a criterion variable for research at a given point in time.

Another area of definitional divergence is raised by Ghiselin (1958) who argues that the concept of utility refers to a lower level

or applicative form of creativity, while at the highest level the product only offers "some new element of meaning or some new order of significance." Unless he means to imply that these two levels occur sequentially for a given production, his concept is still subject to the criticism that it does not rule out pathological productions.

A final element these definitions have in common is, curiously, their avoidance of any emphasis on the aesthetic properties one usually associates with a creative work. Interestingly, it is only the creators themselves (as opposed to the theoreticians who are judging the work from the outside) who mention these qualities. Mathematicians such as Hadamard (1945) and Poincare (1952) who have written introspective reports of their creative endeavors, speak of judging their work by whether it appeals to their aesthetic sensibilities. However, if the criteria for utility include meeting various requirements and tests, aesthetic judgments could be considered implicitly mentioned in the definition.

In subsequent aspects of this study, the creative product will be defined as one which is unique and useful. As will be seen, this will be elaborated further as the nature of the creative process is discussed.

The Creative Process

Interest in the creative process has been extensive, and many efforts have been made to specify what it constitutes. Most theoretical approaches have some concept that separate elements are related to each other, frequently according to associative laws, and are synthesized into a new entity. This is achieved by a sequence of stages, either

discrete or overlapping. There is general agreement that the unconscious is influential at some point in the process, although writers differ in their emphasis on it. Opinions diverge concerning the role of conflict and defense, as well as whether a concept of sublimation is necessary. Only the psychoanalytic theorists make specific statements about motivations for the creative process and, as would be expected, they draw heavily on childhood experiences and fantasies, and early perceptions.

Definition

Since the definitions surveyed here rely heavily on laws of association, they will be reviewed briefly before being applied to the creative situation.

Historically, association theories were evolved to handle epistemological problems, but their usefulness is by no means limited to philosophical speculation. Aristotle evoked principles of similarity, contiguity and contrast to explain how mental operations originated in previous experience. He was the first to point out that sequences in cognitive experience reflected an associative process. Most important for the purposes of this review, he enunciated the concept of <u>fusion</u> to explain simultaneous associations to the same stimulus. He said that since it was impossible for two separate sensations to a stimulus to occur at exactly the same time, they would combine to form a new sensation. (This would occur on those occasions when both were of equal strength so the stronger could not blanket the weaker.)

The British Associationists (Warren, 1928) elaborated these ideas further. Hobbes said that imagination and fantasy came from associative

combinations. Locke's "association of ideas" described the combination or fusion of simple ideas into complex ones. Hume attempted to reduce Aristotle's three laws to one--contiguity--and while doing so developed a concept similar to that of an associative hierarchy. He stated that experience consists of those sensations "which enter with most force into consciousness." Hartley concerned himself with successive and simultaneous associations in the development of complex ideas. James Mill continued to be interested in the differences between these two kinds of associations, and added the observation that the associative process may occur so rapidly that its elements are not observed and might be presumed to be absent. However, they can be brought out by subsequent analysis. He also spoke of the associative process as one which binds experience together.

Returning to more contemporary work, present-day associationists have studied the content of mental operations. This has been investigated experimentally in a variety of verbal behavior situations where interest is not only in what has been learned but in how the learning has been affected by experiential and environmental factors. Work in the area of individual differences relates directly to the domain of this review, one study suggesting that degree of commonality ("conformance to cultural word-association norms") of associations to standardized word lists may be a predictor of conventional or unique responses in other situations (Schaefer and Jenkins,1957).

To relate these points to definitions of the creative process is a short step. What most definitions get to in one way or another is that in the creative process, elements are combined to form a new con-

cept or product. The end result meets the requirements of uniqueness mentioned previously, and it is also new and unusual to link these disparate elements at all, even though such linkage appears reasonable in retrospect. It should be mentioned that this juxtaposition of disparates is not entirely random. In practice it would not be expected that someone unfamiliar with scientific material, for example, could throw together several unrelated points and come up with an important new discovery. These definitions of the creative process presuppose some previous experiences with the elements used. Freud (1938) indicated in his study on wit (where the mechanisms are very similar to those in creativity) that it is the hidden similarities which allow the combination of ideas seemingly foreign to each other. One of the most important mechanisms he hypothesized in the operation of humor is the condensation of ideas whose associations might be found more traditionally in widely separate contexts.

Hadamard (1945), Poincare (1952) and Hebb (1958) use phrases such as "combination of elements" or "recombination of elements" to describe creative activities. Kubie (1958) speaks of making new and unexpected connections. Rogers (1959) refers to the necessity for "toying" with concepts. Wilson's study of 24 poets (1954) led him to conclude that their work required that they be able to envisage combinations as a result of associating and integrating ideas. Hart (1950) also refers to the integrating function of creativity. In a study of musical composition, Willman (1944) suggests that ideas are chosen from a large number of possibilities and it is necessary that relationships among these choices be perceived. Bischler (1937) emphasizes the uncovering of new associative connections which will lead to new combinations, and Mednick (1962) describes creative activity as one in

which associative elements are combined in new ways. Prescott (1926) makes explicit the relationship between formal association theory and the poetic process. He describes the latter as being concerned, in part, with the development of symbols derived from a fusion of images--a fusion determined by similarity and contiguity. Spender (1946) speaks of poetic associations in a somewhat different way, relating present images to early sense impressions. This is similar to Freud's concept that current fantasy leads back associatively to childhood experiences and, to a certain extent, is a symbolic reliving of them (1956c). Finally, Sessions (1952) points out that the presentation of conventional associations in musical imagery has only superficial musical significance, whereas more unusual and less easily articulated themes evoke deeper reactions.

Stages in the creative process

Although connecting disparate elements is a necessary condition of the creative process, it is not a sufficient one. A popular conception of the artist at work is that he is seized by inspiration and suddenly there stands the finished creation--like Athene full grown from the head of Zeus. Neither example considers what happened before and after the crucial moment. There is consensus among theorists as well as persons actively engaged in creative work that moments of inspiration do not occur <u>in vacuuo</u>, nor is an insight the indication that the product is completed. Instead, a series of stages has been postulated to describe the evolution of the creative process from onset to completion.

The stages themselves were first described by Wallas (1926) as preparation, incubation, illumination and verification (or elaboration). Preparation covers the initial work--familiarizing oneself with the content of the area, exploring all angles of the problem, etc. Incubation is a period during which the problem is not consciously investigated. Illumination refers to the time--sometimes quite brief--during which insight occurs, the period when the previously inexplicable material "clicks" together. Verification is again a time of work, during which the new concept is checked, tested and elaborated. Hutchinson (1949), Hadamard (1945), Poincare (1952), Vinacke (1952), and I.A. Taylor (1959) follow essentially the same formulation. Poincare gives a vivid introspective account of one of his own discoveries. Taylor adds ideas about what happens during the first two stages. During preparation it is necessary that the creator absorb as many experiences as possible, even without being aware of their value, since they may be potentially useful for the solution. Incubation must be "free from stereotyping" so that thoughts and experiences will have a chance to interact in all possible ways. Vinacke makes a similar point in stressing the need for free manipulation of mental activities. (The implications of these two issues will be discussed in the next section on unconscious processes.) Vinacke thinks that the four stages are not discrete but overlap each other. They are also subject to individual variation in which some phases may be repeated.

There are several studies which, although not technically perfect, suggest that overlapping stages, rather than discrete ones, do occur. Eindhoven and Vinacke (1952) had artists and non-artists draw illus-

trations for an "abstract" poem. Analysis of the data indicated "blending" of stages. In a similar study, Patrick (1937) found parallel results which also held when she reversed the procedure and had poets and non-poets react to a painting by producing a literary work (1935; 1937).

There have been variations on Wallas's original idea of four stages. Hebb (1958) reduces them to two--discovery and verification, as do Kris (1952)--inspiration and elaboration, and Stauffer (1948)--sudden illumination preceded by previous structuring. Spender's stages (1946) are less clearly defined--part inspiration and part work. Stein (1960) casts his three stages to parallel a partial description of the scientific method--hypothesis formation, hypothesis testing and hypothesis communication. Derived from introspective reports from poets, Wilson (1954) describes five stages--similar to the usual four but breaking down the preparation stage into "selective perception of the environment" and "acquisition of technique." None of these modifications differ significantly from Wallas's original formulation.

A last point to be raised in connection with stages of the creative process concerns what part, if any, chance plays in discovery. Cannon (1940) and McLean (1941) both state that pure chance as such does not exist, but is always based on preliminary work and experience. Mednick's principle of serendipity (1962) allows for the possibility that the necessary elements may be evoked by accidental contiguity, but presumably one would have to have had enough previous exposure to the area of study to know what to do with the elements thus evoked. Kris (1952) says that what appears to be a chance operation depends on preconscious

mental processes.

The role of the unconscious in the creative process

In the preceding discussion of stages in the creative process, it was indicated that moments of inspiration do not occur without previous work. However, in incubation, the stage immediately prior to illumination, a person typically does not engage in active work on the problem. He may be occupied with different material or just "doing nothing." Many writers have stated, nevertheless, that there is something going on at an unconscious or preconscious level during this time and without it the insight could not be achieved. Wallas (1926) speaks of illumination as being caused by unconscious events taking place during incubation. Born (1945) sees inspiration derived from the unconscious. Hadamard (1945) feels that conscious and unconscious factors work cooperatively, but that insight is a function of the unconscious ones. The moment of illumination, because it is based on work going on without awareness, underlines the importance of the unconscious. Poincare (1952), Houseman (1952), Ghiselin (1952) and Murphy (1947) all refer to the alternation of conscious and unconscious effort before the moment of insight. Bischler (1937) thinks that the id is the real source of creative elements, and Kubie (1958) states that preconscious material is the essential part, while conscious thought actually limits imaginative play. Grotjahn (1957) describes the creative process in dreams, wit and art as one in which unconscious tendencies are translated into symbols and artistic creations, while for Auden (1948) the function of poetry is to bring to consciousness hidden relationships between emotions.

Jung (1946) provides some indication of why other than conscious factors are needed, in his view that creative work requires the capacity to play with fantasy, and occurs in people who can make use of unconscious and conscious material and the interaction between them. Kris (1953) theorizes that inspiration is more likely to appear when impulses are more accessible and are moving into awareness, and Barron (1953b) finds that people who display independence of judgment (related to originality) are more likely to indicate emotional reactivity--fluid emotional and impulsive expression.

Further explication in this area is aided by the primary process-secondary process distinction (Freud, 1956e). Primary process thought is characterized by compression and condensation of concepts, frequently into a visual image or symbol; looseness of associations; disregard of conventional logic in allowing mutually contradictory thoughts to exist side by side; absence of ordinary temporal relationships between past, present and future; suspension of critical and evaluative faculties. This mode of thought describes the mental operations of the unconscious, as well as those of the dream and of early childhood. Secondary process thought, on the other hand, refers to logical, conscious adult mental functioning--taking account of temporal and syntaxic relationships, disallowing the coexistence of incompatible ideas, etc. Because of its primitive nature the appearance of primary process thinking in the adult is considered an example of regression to an earlier mode of thought, but not necessarily a pathological regression. Although it is one example of pathological operations in the psychotic, for example, it is also found to be present in normal adults during dreams and in

creative thinking (Freud, 1958). This is actually another way of describing what happens during the incubation stage when all sorts of associative connections are made in loose and untraditional ways, without regard for previous logical formulations. In addition, primary process operation implies the free manipulation of mental activities mentioned earlier as necessary during incubation (Vinacke, 1952).

Other writers have pointed to the parallel between creativity and primary process. Maslow (1958) feels that creative behavior is blocked if primary process material is not accessible, and that secondary process with its emphasis on tight conventional logic can be a barrier to creativity. Lowenfeld (1941) also states that the artist is closer to his primitive impulses and is more receptive to unconscious material. Prescott (1926) sees unconscious origins of poetic thought as enhancing its value by giving it universality. This is achieved by a sense of timelessness, suspension of critical evaluations, disregard of practical ends in directing the organization of images, etc. Kohut (1957) actually suggests that musical rhythms correspond to a primary process layer which is masked by melodies constituting a secondary process layer.

Several writers have made more explicit the regressive aspect involved in the use of primary process material. Kris (1952) has enunciated a concept of "regression in the service of the ego" which explicates the differences between pathological and creative regressions. (We need not concern ourselves in detail with the former here except to state that it is a relatively uncontrolled and irreversible operation.) The latter refers to the ability of the ego, under certain conditions of

creative activity, to loosen its secondary process defenses and controls and temporarily dip into more primitive id material. The activities of the ego in the subsequent return are felt to be refreshed and enhanced, and more creative solutions are likely to be produced than if the ego were so tightly bound by secondary process restrictions that it could not allow such movement. Bellak (1958) observes that creative and disturbed people are similar in their capacities for ego regression, but the former can reexercise abilities to synthesize material thus gained and apply it adaptively. Bellak underlines the fact that regression aids in the synthesizing functions of the ego. The reduction of ego controls "...weakens the sharply defined boundaries ...and permits them to reorder themselves into new configurations . . ." Rapaport (1950) cautions against making absolute equations of unconscious with primary process and conscious with secondary process, because the ego--considered more conscious than unconscious--makes use of primary process regressions for its own syntheses, such as in wit and inspiration. Rosen (1953) sees illumination as an act of controlled regression, and Kohut (1957) feels that the arts permit controlled regression, music being particularly suited to it because of its preverbal nature. Freud (1956) perhaps has the last word on this matter by pointing out that the artist leaves reality because it does not allow him satisfaction, and turns to more pleasurable fantasies. However, because of his gifts, he can mould these fantasies into a new reality, accepted by others as unique and valuable reflections of the actual world.

Conflict and defense in the creative process

Free accessibility of impulse material holds dangers as well as assets for the individual. The previous section discussed the advantages;

in this one, the disadvantages will be looked at.

According to psychoanalytic theory, uninhibited expression of impulses and even awareness of their meaning produces conflicts between them and forces (external or internal) which oppose them. These forces have caused pain in the past, either in the form of actual or anticipated punishment, or as anxiety. Subsequently, the anxiety which the person has learned he will experience if he allows his impulses free play causes him to guard against them. He does this by creating a defensive structure which will prevent him, in one way or another, from acknowledging their existence. Anxiety thus sets the defensive process going. "These [defensive] operations usually entail denying conscious representation to ideas, affects, and other impulses associated with the threatening impulses. . ." (Schafer, 1954). The most powerful defense for doing this is repression, "...an unconsciously purposeful forgetting or not becoming aware of instinctual impulses or external events which, as a rule, represent possible temptations or punishments for, or mere allusions to, objectionable instinctual demands." (Fenichel, 1945) Repression is not only powerful but it is unique and ubiquitous as compared with other defenses. It must be constantly maintained because the material causing it cannot be done away with once and for all. And it serves to keep hidden not only the original impulse but also "such chains of thought as, originating elsewhere, have come into associative contact with it." (Freud, 1956d) This last point is of great significance for our purposes. Since not only the threatening impulse but any elements associatively connected with it are subject to repression, someone who is constantly warding off much potentially conflictful material will be unable to engage in the

free associative play so necessary in arriving at creative insights. He is defended so that his associations will not lead him through threatening content even if this content is not eventually relevant for the creative solution. In addition, habitual use of repression is also inconsistent with allowing uninhibited movement of associative chains. The very presence of such defenses blocks access to needed primary process material. And finally, because repressions require constant maintainence, they prevent full utilization of cognitive and affective resources in creative (or any other) activities.

On the other hand, the absence of a functioning defensive structure does not insure that primary process material and associative interplay can be used effectively. This parallels the situations discussed in connection with regression. In certain forms of pathology where defenses are ineffectual, primary process thought does indeed flow freely, but is not put to creative use. More typically it overwhelms and frightens the individual who experiences it because he lacks the mechanisms for its control. What the creative person requires is some degree of control over his impulse life, but not restraint (Rank, 1932; Lowenfeld, 1941).

Several of these points coincide with theoretical points in other disciplines, and with experimental results. Underwood (1952) hypothesizes that "any bias produces a selection of responses to stimuli, or in some instances may select stimuli...it is patent that these biases enhance or retard thinking." Underwood and Postman (1960), in a study of verbal learning, obtain results which lead them to conclude that forgetting may occur as a consequence of interferences not related to the experimental situation, but arising from prior learning. Zeller's study of

experimentally induced repression (1950) found that contiguous association of a neutral task with a threatening environmental situation severely curtailed performance on that task even though its content was non-conflictual for the subjects before the experiment. Schafer's study on disturbances in word association (1945) indicated that such disturbances "will occur when a set of highly emotionally charged ideas is touched upon by a stimulus word." This may mobilize a repressive reaction which results in delayed reaction time, blocking, etc.

Many writers have handled issues directly related to conflict and defense and the creative process. Barron (1955) found that subjects rated as "original" rejected suppression as a method of impulse control, and "independent" subjects (correlated with originality) characterized themselves in ways indicating avoidance of impulse control (1953b). He also found that a preference for cognitive complexity, associated with originality, was negatively related to hysteria (a disorder characterized by repressive defenses), conservatism, conformity and rigidity (1953a). Kubie (1958) says that neurotic distortion causes repression of the meaning linking a symbol with what it represents, and results in rigid, stereotyped and uncreative performance.

Maslow (1959) states that the creative person can handle the unknown, be spontaneous and is not afraid of his own thoughts and impulses. Stein and Meer (1954), in a study using the Rorschach to evaluate creativity in chemists, conclude that "the real differences between our high and low creative individuals may turn out to be a function of defensiveness or overcriticalness which inhibits the generalization and communication of hypotheses." Born (1945) says that if the affect con-

nected with repressed experience is released, it can be put to use for creative purposes. Barron (1958) finds that original people express a preference for disordered material so that they may make new and unique patterns with it. They may actually admit repressed material to consciousness for this purpose. Grotjahn (1957) points out that art has adaptive as well as defensive functions, and may represent an attempt to express and resolve conflict.

Sublimation

No discussion of the creative process would be complete without some mention of sublimation. This concept has long been linked with theories of creative behavior. It was first enunciated by Freud (1956b) who described it as the deflection of instinctual energy from sexual gratification to other, less direct expressions. Deri (1939) summarizes post-Freudian analytic definitions of sublimation in three categories: 1) diversion of the instinct from its original aim, 2) diversion of the instinct from its original object, and 3) gratification of the instinct in substitute activities which are more socially acceptable or have greater cultural value than the original behavior. Bychowski (1951) states that libido displaced from its original sexual or aggressive aims provides energy for creative productions. Prescott (1926) sees poetry as derived from the sublimation of universal drives whose frustration gives rise to imaginative thought. Other writers implicitly refer to sublimatory operations. Vinacke (1952) describes creativity as motivated by urges toward self-actualization. It is governed by autistic, not realistic, factors, and its goal is to satisfy the internal needs of the creator. Dewey (1934) says that because need-derived impulsions meet environmental restrictions, the impulsion seeks expression

with greater circumspection regarding both goals and procedures.

Another motivating force for sublimations comes from the idea that guilt reduction is associated with this indirect form of impulse gratification. Aristotle's aesthetic theory (1936) mentioned the importance of catharsis for both the audience and the creator. Fenichel (1945) and Kris (1952) speak about relief following the sharing with an audience of the guilt attached to creative works which represent unconscious fantasies.

There are some writers who deny or qualify the need for sublimation to explain creative behavior. Kubie (1958) says that the concept is unnecessary. Arnheim (1948) feels that only inferior art is an expression of sublimated wishes, because wish fulfillment is not as important a function of creative work as the enjoyment of beauty, urge for clarity and order, etc.

It seems to this writer than any extensive dependence on sublimation as an explanatory concept relies on a more basic assumption that creative acts occur by default, and the creative process is <u>only</u> a by-product in the avoidance of conflict and frustration. This is the psychoanalytic position. Freud (1930) says that creative work derives from the necessity for dealing with life's hardships--internal as well as external--through deflections and substitute gratification. Art is only an opiate, and sublimation perpetuates its soothing effect by allowing expression of instinctual aims in ways the environment cannot frustrate.

In contrast to this view, introspective accounts of their activities by people engaged in creative work give the strong impression that they

are drawn to their difficult and exacting labors for more positive reasons. This conclusion is supported indirectly by theories of the ego psychologists. Hartmann (1951), writing of the adaptive as well as defensive ego functions, describes the ego as having a "conflict-free sphere" operating independently of intra-psychic difficulties a person may be experiencing. It does not seem unreasonable to assume that creative activity derives from this conflict-free sphere and is hampered by conflict when its creative content happens to overlap a conflicted area, or when conflict and its resulting anxieties and defensive maneuvers are so great that they interfere with almost all cognitive and affective behavior.

However, the one need filled by the concept of sublimation which is not met by the "conflict-free" theory is that the former offers some explanation, accurate or not, of the forces which may motivate creative behavior.

The Creator

One of the liveliest areas of disagreement about the creative person is whether his creativity stems from psychological illness or health, and thus what effects psychotherapy would have on his creative potential and future behavior. Shapiro (1948) considers creative activity sick because it is injurious to other psychic activity and because the creator must become involved in depth material that others avoid for their own safety. Bergler (1947) speaks at length about the oral neurosis of the writer and concludes that normal people do not feel impelled to write, that he has never seen a normal writer. Since his observations are based

on the treatment of patients who were also writers, the generality of this statement seems somewhat limited.

On the health side, Fenichel (1945) thinks the fear that creativity will be lost through psychoanalytic treatment is not usually true. It is more likely that inhibitions to creative behavior will be removed. However, in a minority of cases "neurosis and work seem so closely interwoven that it seems impossible to remove the one without impairing the other." Barron (1958) thinks the creative individual may often appear unbalanced because of his hypersensitivity to life's complexities, but in fact he may be "too healthy" for the society in which he lives. Born (1945) does not think the artist is necessarily a neurotic type, and Wilson (1954) prefers to focus on the positive integrative aspects of creative behavior.

In the middle position are Maslow (1959) and Murphy (1947) who see no constant relationship between instability and creativity. Rank (1932) thinks that creative acts are healthy but may be followed by neurotic collapse, because of the creator's sense of his own presumptuousness. Bellak (1958) thinks the creative person has greater adaptive and synthetic capacities. The effect of treatment depends on the meaning creativity has for him. "Creativity, if altered at all, will be enhanced indirectly ... by removal of neurotic encumbrances." On the other hand, with decreased narcissistic investment, creativity may suffer by successful therapy.

The sickness-health dimension may be used as a framework to view behavior of people attempting to engage in the creative process. At the extreme end, the person who is psychologically ill may be unable to pro-

ceed effectively through its stages. He may rigidly follow logical procedures and reality restrictions--helpful in the preparation and verification stages, but limiting his receptiveness to moments of insight. Or he may be unable to evoke organizational and reality principles, and will experience illuminative flashes without being able to do anything useful with them. The value of primary process materials and unconscious processes may also be curtailed for him. He may be either too well defended to reach them by temporary regressions, or too disorganized to return from such regressions and apply them.

On the health side, the individual may be able to engage in the careful detail yet be receptive to moments of insight--all necessary for successful progress through the stages of the creative process. With regard to primary process and unconscious material, he may be uninhibited by rigid and arbitrary defenses, but at the same time needs some with which to control and direct his behavior at appropriate moments.

However, it is more than likely that something additional-- be it dissatisfaction with the status quo ante, intellectual curiosity, aesthetic urges . . or internal pressures--is needed to initiate the process. It is here that the balance between sickness and health is most obscure. Thus, the characteristics summarized under the health side of the dimension, plus a receptivity to new and untraditional elements and connections between them, are those which the theories reviewed think most likely to facilitate creative activity. But all the theorists mentioned do not necessarily consider these qualities to occur exclusively for the healthy person. It may be that, given whatever motivating force is needed, the creator may run the gamut from ill-

ness to health, and the very motivation that instigates creative activity may also allow the psychologically disturbed individual to function within his area according to attributes usually associated with normal behavior. His area of endeavor is, in effect, his conflict-free sphere and the more it encompasses, the greater his creative resources.

CHAPTER II

DESCRIPTION OF THE STUDY

The previous chapter reviewed literature on creativity and defense. This chapter will summarize the theory relevant to studying the effects of conflict and defensive intervention on creative thinking. It will then present the design and predictions for this study.

The theory on which the study is based suggests that an individual can work most effectively and creatively on a given task when its elements do not tap material which is personally threatening for him. That is, his work will be most productive when it deals with conflict-free material. Conversely, he will be less effective in his productions if elements related to their successful completion touch areas which potentially are conflictual. In this case, his defenses against the anxiety which would arise if he were to engage himself fully in conflict-relevant material may prevent him from achieving the kind of involvement with the material and procedures necessary for creative problem solution. He may also have a single defensive response which may interfere with needed associates.

This approach relies on the associative links the subject has developed between the original threat and the current stimulus. Freud (1956d) points out that an individual may cope with conflict not only by repressing memories of the original situation in which it was aroused but also by blanketing all its derivatives. These, although not initially threatening in themselves, are capable of leading back associatively to the repressed and therefore have gained the power to elicit anxiety by themselves. For example, were someone to have had a parti-

cularly trying experience in a room with green walls, he might subsequently react defensively or show anxiety to the word green because it is associatively connected with previous anxieties.

It is not necessary for our purposes to define why the subject reacts unusually to green. From the fact of the reaction we assume that this ostensibly neutral stimulus is related to something not personally neutral. Furthermore, it makes no difference whether green refers back to an early core conflict or to a recent and momentary disturbance whose impact will become negligible with the passing of time. As long as green was strong enough to call up a reaction significantly different from those to other words, an immediately succeeding task involving green will be temporally close enough to be affected by the same defenses. Zeller (1950) has demonstrated experimentally that performance on a neutral task is severely limited by its contiguous association with an environmental threat, even though the task content was non-conflicted before the experiment.

In the present study, the investigator was interested in seeing whether conflict (as measured by associative disturbance) attached to the elements which composed a problem would affect the successful completion of that problem. The design was modelled after a study by Blake (1960), with variation and elaboration of the procedure and analyses carried out there. Blake's results suggested that subjects who showed conflict about specific words were less likely to answer correctly the items which contained them than those subjects indicating no associative disturbance to the same words in the same items.

The problem was studied with the Remote Associates Test (RAT)

(Mednick, 1962). The RAT, designed as a measure of creativity, presents the subject with three stimulus words. He is required to give a word which is related to all three, e.g., cookies, sixteen, heart. (The correct answer is sweet--cookies are sweet, and sweet is part of the phrase "sweet sixteen" and part of the word "sweetheart.") In order for the subject to reach the solution he must run through his associations to cookies, sixteen and heart until he finds the one (there is only one right answer) which fits all three stimulus words. According to the assumption stated above, if any of the words are associatively connected to conflict-relevant thoughts he may be unable to go through the associative process completely enough to think of the word sweet, and therefore miss the item. In addition, if sweet itself taps conflict areas it is less likely to be called up as an association to any of the three words, or if it does appear, the subject may not be able to recognize its appropriateness.

(The RAT is well suited for the present study, for not only does it rely on associative theory in its original construction, but as a measure of creativity it is seeking to measure something which also requires the development of associations through free play among several levels of consciousness, free play which would be limited by excessive defense.)

In order to evaluate whether the words of the RAT items themselves are conflict-laden for a given person, they were administered as a word association task and judged by Jung's complex indicators (1910) as revised by Hull and Lugoff (1921) and elaborated on by Rapaport (1946). Jung's original group of complex indicators was studied experimentally

by Hull and Lugoff, and those which most effectively discriminated critical from neutral words became their revised group. These were: 1) repetition of the stimulus word, 2) long reaction time, 3) assimilation of the stimulus word (incorporation in some way as part of the response), 4) defective reproduction of the response, and 5) perseveration in response.

With these materials, it was hypothesized that when a subject showed conflicted reactions to the words of a RAT item, he would subsequently fail to answer the item correctly.

It was predicted that a RAT item would be conflicted (i.e. missed or have a significantly long solution time) if two or more of the four words involved in it were judged conflicted.

Exploratory analyses were planned to investigate the differential effects of one, two, three or four conflicted words in the item. The effect of having conflict attached to the answer word of an item was also to be considered. Finally, differences between high and low RAT scorers (based on total number of RAT items passed) would be evaluated.

CHAPTER III

METHODOLOGY

Subjects

The subjects for the present study were 44 undergraduate male students enrolled in an introductory psychology course. They were required to participate in a psychology experiment in order to satisfy course requirements. All subjects had taken one form of the RAT as part of the freshman placement examination battery, but none of the items in the present study were included in that form.

Materials

1. RAT items. These came from three different RAT forms, and were selected and arranged according to increasing item difficulty. The first five items had been found to be very easy in previous studies; the next 30 were of moderate difficulty (42-63%); the final 20 had been found to be very difficult (17-35%). (Percentages refer to the number of people taking the item who passed it.) The five easy items were included to familiarize subjects with the task. The moderate and hard ones were those to be analyzed. These two levels of difficulty were included to see if there were differential effects of conflict when task difficulty varied. Therefore, the items were analyzed in two groups--those clustering around the 50% difficulty level, subsequently referred to as the easy items; and those clustering around the 25% difficulty level, subsequently referred to as the hard items.

2. A word association list, consisting of the 195 words which make up the 55 items (three stimulus words and the answer for each item

minus duplicated words, i.e. a word which appears in more than one item will only be presented once in the association list).

Experimental Equipment

The equipment used consisted of a Standard Electric Timer, a switch to start the timer, a voice key to stop the timer, and a stop watch.

Procedure

Each S was contacted by phone and reminded of his obligation to participate in an experiment. A two-hour appointment was arranged, and a postcard was sent out as a final reminder. Ss who failed to appear were recontacted, rescheduled and included in the study.

Each S was tested individually. He was given the word association test first with the following instructions:

> I will read words to you, one by one. After each word you are to answer with the first word which occurs to you. When I give a word I will start a clock going, and your response into the mike will stop it. Therefore, it is important that you not make any extraneous noises or movements which might stop the clock before you had actually answered. Also, make sure you give your answers directly into the mike.

At this point, four words were tried, both to give the subject practice in talking into the mike and to make sure the gain on the voice key was set to pick up his voice. At the end of the whole list the subject was told:

> Now I'm going to read the same list of words to you again, and for each word, try to give the response you gave the last time. Is that clear?

The list was repeated a second time. During both administrations, the

experimenter recorded reaction time after each word. At the first reading the responses themselves were written down as they were given, but in the repetition they were only recorded if they varied in any way from the responses given the first time.

After the word association test, the RAT items were given, one by one, and each item was timed by stopwatch. A maximum time of 1.5 minutes was allowed for each item. The instructions for the RAT were:

> In the last part of this experiment, you will be presented with three words and asked to find a fourth word which is related to all three. For example, what word do you think is related to these three? (Subject is presented a card with the words cookies, sixteen, heart, and given a few moments to think of an answer.) The answer in this case is sweet. Cookies are sweet, sweet is part of the phrase "sweet sixteen" and part of the word "sweetheart." Here is another example. (Subject is presented with a card with the words poke, go, molasses.) Give me your answer when you get it. (Subject is given a few moments to deliberate.) The correct answer in this case is slow. Slow-poke, go slow, slow as molasses. As you can see, the fourth word may be related to the other three for various reasons. Try these next two. (Subject is presented with two cards in sequence: surprise, line, birthday-- and base, snow, dance. He is told when his answers are correct and helped when he cannot get the sample items.)
>
> Now we're ready to start. I will hand you each card with the three words on it and you are to tell me your answer as soon as you get it. Many of the items are not easy and you will not be able to solve all of them. After a period of time we'll go on to the next item even if you haven't been able to give an answer to the one you were working on. This is to make sure we don't spend the whole (morning, afternoon, evening) on one item. Any questions?

Pilot testing on a comparable group of subjects indicated that administration of the word association test immediately prior to taking the RAT does not have any noticeable effect on RAT performance. A *t* test com-

paring the significance of the difference between mean scores of items for which the association task was or was not given previously, yielded a non-significant t value of .29.

Scoring of data

A stimulus word was judged as conflicted if it showed any one of the following complex indicators (see Chapter II):

1. Repetition of the stimulus word. This appeared either as an actual repetition or as a question about what the word was. Included was non-specific questioning of the word--e.g. implicitly questioning or seeking a repetition by the experimenter, "didn't hear," etc.

2. Long reaction time in giving a response. For each subject, reaction times on the first administration were ranked, and those above the top quartile were considered "long."

3. Assimilation of the stimulus word. This refers to incorporation of part or all of the stimulus word in the response--e.g. "shoe"--"shoe-lace" (but not "shoe"--"lace"); "see"--"seeing" or "see"--"ing," etc.

4. Defective reproduction of the response word. This refers to behavior during the second administration of the word association test. It is characterized by failure to remember the response word, modification of the original response word, e.g. "shoe" to "shoes" or "boot." In other words, any variation between the way the response was produced in the first administration as compared with the second administration was scored.

(The fifth Hull and Lugoff indicator, perseveration of response, was not used in the present study because it seemed more suited to

clinical than experimental analysis of data.)

No attempt was made to weight these criteria, i.e. to say that the presence of four complex indicators pointed to more conflict than one. If any indicator was present for a word, it was taken as sufficient evidence of conflict attached to that word.

CHAPTER IV

RESULTS

The major question to be answered by the data was whether the conflict attached to the components of RAT items would be related to greater difficulty in passing those items. The following statistical analyses were conducted to investigate differences between conflict-laden and non-conflict-laden items.

I. First, descriptive data are presented including 1) mean of total RAT scores for high, low and total subject group (high and low groups determined by a median split on distribution of total number of RAT items passed); 2) mean total per cent correct items for easy and hard items; 3) mean time for solution of passed items; 4) mean total number of conflict words for highs and lows.

II. Comparison of the per cent that passed items with two or more conflicted words is of total number of items with conflicted words with per cent that passed items with no conflicted words is of total number of items with no conflicted words. This comparison was also made for items having one, two, three or four conflicted words.

III. Comparison of the mean solution time for passed items containing no conflicted words vs. mean solution time for passed items containing one or more conflicted words.

IV. Comparison of the mean percentage of passed items in which the answer word was conflicted vs. mean percentage of passed items in which the answer word was not conflicted.

The statistic used throughout for evaluating the significance of

the difference between means was Student's t for correlated data.

Table 1 summarizes data on the RAT items--easy, hard and total number of items, and on the subjects--high, low and total group. The high Ss had a higher percentage of items correct in both categories than did the lows. The highs also spent more time in arriving at correct solutions than did the lows. The highs had more conflicted words in the easy items than the lows, but both groups had about the same number of conflicted words in the hard items.

Table 1.--Mean RAT scores, mean % correct items, mean solution times and mean # conflicted words per item.

	High Ss	Low Ss	Total Ss
mean total RAT scores	23.9	13.9	18.9
mean total %-- correct items			
Easy	56	33	44
Hard	35	20	28
mean solution time--correct			
Easy	17.08	13.49	15.28
Hard	24.89	22.28	23.58
mean # conflicted words per item			
Easy[1]	.82	.87	.85
Hard[2]	.82	.84	.83
Total[3]	.82	.86	.84

1. 30 items
2. 20 items
3. 50 items

Table 2 compares passed items having two or more conflicted words with passed items having no conflicted words. The easy items go against the predicted direction, with significant differences for highs, lows and total group. The hard items are in the predicted direction, with significant differences for lows and total group. The total group comparisons are qualified because, as summations of the highs and lows, they are not independent of these groups.

Table 2.--Comparison of % items passed with 2+ conflicted words vs. % items passed with no conflicted words.

	Easy Items				Hard Items			
	mean % confl.	mean % unconfl.	t	p	mean % confl.	mean % unconfl.	t	p
Highs[1]	60	45	3.33	$<.01$	34	38	.52	NS
Lows	35	19	4.44	$<.001$	18	33	2.78	$<.05$
Total[2]	48	32	5.00	$<.001$	26	35	2.04	$<.05$

1. df = 21 for high and low groups.
2. df = 43 for total group.

Table 3 summarizes the results of the analyses examining relationships between passing an item and the number of conflict words it contains. Again there is a consistent difference between the easy and hard items, with all but one of the former differences going against the predicted direction in the 12 analyses. Analyses of the hard items, on the other hand, are all in the predicted direction. Two qualifications having to do with the significances in this table should be noted. First, the $\underline{t}$ tests for one, two, three and four words are not independent since the percentages for passed items with non-conflicted words are the same in all four instances. Thus, these tests may not be as significant as they appear (see Appendix), but are included for informational purposes. Secondly, regarding the category of four words conflicted, the actual number of occasions when there were four conflicted words in an item was very small. The effect of figuring percentages on such a limited number of examples was to overinflate their value. Therefore, the significance of these $\underline{t}$ values (see Appendix) may also not be as high as they seem.

In general, the results reported in Tables 2 and 3 suggest that the presence of conflict enhances performance on the easy items, but interferes with it on the hard items.

Table 3.--Comparison of % items passed with conflicted words vs. % items passed with no conflicted words.

	Easy Items		Hard Items	
	mean % conflicted	mean % unconfl.	mean % conflicted	mean % unconfl.
1 word conflicted				
Highs	56	45	34	38
Lows	32	19	18	33
Total	44	32	26	35
2 words conflicted				
Highs	59	45	32	38
Lows	32	19	16	33
Total	46	32	24	35
3 words conflicted				
Highs	65	45	35	38
Lows	39	19	23	33
Total	52	32	29	35
4 words conflicted				
Highs	14	45	14	38
Lows	33	19	7	33
Total	23	32	11	35

Table 4 presents comparative data on time taken to solve RAT items with and without conflict. Differences are in the predicted direction, with more time being used to answer correctly the conflict-laden items than the non-conflicted ones. The total group differences are significant for both easy and hard items. It should be noted that lows work faster than the highs. The data were also analyzed by comparing passed items containing less than two conflicted words with those containing two or more conflicted words. Differences were in the predicted direction for all groups on the hard items, and for the lows and total group on the easy items. However, none of the differences were significant.

Table 4.--Comparison of solution time for passed items containing no conflicted words vs. solution time for passed items containing one or more conflicted words.

	Easy Items				Hard Items			
	mean sec. unconfl.	mean sec. confl.	t	p	mean sec. unconfl.	mean sec. confl.	t	p
Highs[1]	15.42	18.74	1.14	NS	20.34	29.44	1.94	NS
Lows	9.84	17.14	1.86	NS	16.75	27.80	1.78	NS
Total[2]	12.63	17.94	2.18	$<.05$	18.55	28.62	2.73	$<.01$

1. df = 21 for high and low groups.
2. df = 43 for total group.

Since the answer word has to be produced by the S, as compared with the three stimulus words which are presented to him, it was felt that special importance might be attached to whether the answer was conflicted or not. Therefore, an analysis was done to evaluate these effects. Matched pairs of items were chosen, differing only in whether or not the answer word was conflicted. The number of matched pairs available ranged from a minimum of seven pairs for one subject to a maximum of 18 pairs for another. The analysis compared the items which had conflicted answer words with those which did not.

Table 5 shows the effects of conflicted and non-conflicted answer words on the passing of items. All comparisons tend toward decreased likelihood that items will be passed if their answers evoke conflict reactions, but all fall far short of significance. Additional comparisons, based on the combination of easy and hard items into one group were also non-significant. It is possible that the significance levels were reduced by the limitation of the number of items available. In order for an item to have been included in this analysis, it had to be paired with one which was like it in all respects but the answer word itself. Therefore, for some Ss, many items were excluded from the comparison because they could not be matched with any other.

Table 5.--Comparison of % passed items in which the answer word was conflicted vs. % passed items in which the answer word was not conflicted.

	Easy Items				Hard Items			
	mean % confl.	mean % unconfl.	t	p	mean % confl.	mean % unconfl.	t	p
Highs[1]	58	53	1.00	NS	37	35	.28	NS
Lows	38	33	1.00	NS	22	15	1.17	NS
Total[2]	48	43	1.67	NS	29	25	1.00	NS

1. df = 21 for high and low groups.
2. df = 43 for total group.

CHAPTER V

DISCUSSION

The major finding of the study was that conflict retards performance on some items but, contrary to prediction, improves it on others. The results were as expected for the hard items but reversed for the easy ones. One possible interpretation of this difference comes from the work done in drive theory. Anxiety is arousing, and the increased motivation derived from it facilitates performance on easy tasks for which the dominant response is the correct one. However, the same increase in anxiety interferes with performance on more complex tasks for which the dominant response is not correct (Spence, 1956; 1958; Taylor, 1956). Garskof (1962) found that an increase in arousal leads to greater likelihood that the most probable associate will be given by normal subjects, and recent data[1] show that the correct answer for easy RAT items is the most probable response. Therefore, it seems likely that heightened motivation, resulting from conflict, increased the probability that the most dominant association (which is the correct answer) will be produced for easy items.

Results of the analyses of solution time data indicate that more time was needed to solve conflict-laden than non-conflicted items. This was as predicted. Group differences show that low Ss correctly answer non-conflicted items faster than the highs. Mednick theorized (1962) and found[2] that low RAT scorers have a steeper associative hierarchy.

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1. Mednick, S. A., Mednick, Martha T., & Houston, J. Personal communication.

2. Mednick, S. A., & Mednick, Martha T. Personal communication.

Thus, although it is hard for these Ss to get beyond their most probable association, they can produce it rapidly and readily. This would account for their greater speed on the easy items. Schlosberg and Heineman (1950) also offer evidence for this. They find that responses are given more quickly when S has a limited number of associations. With conflicted items, the differences in speed between highs and lows are much smaller.

With regard to comparisons of number of conflicted words in an item, two or more conflicted words appear to be the most reliable measure of item performance of those investigated. For the hard items, the data confirm the results of the Blake study (1960) and follow the prediction of the present work. As pointed out above, with easy items this criterion discriminates equally well but in the reverse direction. (Item difficulty levels from the Blake study were not available for comparison, but it seems likely that her results were based on more difficult items.) The conflicted vs. non-conflicted answer word does not seem to have any additional effect on item performance. This leads to speculation that Ss find it easier to evade the conflictual context of a word if it is one that must be produced as an associate. When presented with the stimulus word S has to run through his associations to each, and if they are conflicted he may not complete the process successfully. However, he goes through no such procedure with the answer word. As he associates to the stimulus words and hits upon one he thinks may be the correct answer, all he has to do is test it against the other two stimuli. It if fits in some way, he is finished with it. If it is unsuitable he goes on to another associate. There is no need to pursue his associations to this potential response any further, so that any

connections it might have with conflicted material are not likely to be tapped unless they are directly evoked by its relationship with a stimulus word.

A final look at the high and the low subjects indicates that the mean difference between conflicted and non-conflicted hard items is greater for the lows. This would be expected since the hard items are more difficult for them than for the highs.

Although the concern of this study was to investigate the effects of conflict on creative thinking, it is likely that factors other than anxiety-related conflicts have some influence on item performance. One such factor has already been mentioned briefly--the slope of the associative hierarchy. Previous work (Mednick & Mednick) has found high and low RAT scorers to be differentiated on this dimension. Highs tend to have flat, and lows, steep associative hierarchies; highs are able to produce considerably more associations to words than lows. Though conflict facilitated performance on easy items for both groups, the highs still had a higher percentage correct, and this held for their performance on hard items where conflict was inhibiting. Thus it is possible that their success is related to the greater availability of associates to be tried as potential answers. This is further supported by the fact that conflict does not differentiate high from lows--there were no major differences between them in actual number of conflicted words. Therefore, it appears that specific effects of conflict on performance--facilitation for easy items, inhibition for hard ones--have been found, but that the performance itself is a function of at least one additional variable--availability of potential answers.

A question arises about the measures of conflict used in this study. At least one of the complex indicators, response latency, has been shown to be greater when many alternative responses are available to a stimulus (Schlosberg and Heineman, 1950). Indirect confirmation of this evidence is found in the solution time data which showed that on hard items, for which the answer was less probable than for easy items, Ss took more time to answer correctly. Thus, at least one of the measures of conflict may not have been a pure indicator of conflict. Future research ought to evaluate each of the complex indicators separately and define their roles more precisely.

The stages of the creative process are reflected in the operations required to solve a RAT item. During preparation, S familiarizes himself with the stimulus materials, trying to produce appropriate associations to them. Because of the time limit set for each item, the incubation stage is compressed, but probably overlaps the preparation stage to a certain extent. At the moment of illumination, S discovers the associate which he thinks may fit the requirements of the item, but it is not until the verification stage that he checks it against the three stimulus words and decides if it is the correct solution or if it should be discarded and the whole sequence repeated. The last two stages probably overlap too, and may be relatively brief. It seems that conflict could potentially be present at all four stages, but its impact would be most important in the first two. Its effect on preparation would be to limit the range of associates produced to the stimulus words. During incubation it would prevent these associates from linking up with each other, and thus the occurrence of an insight followed by

attempts to check its accuracy would be most unlikely.

There are both advantages and disadvantages in using a task such as the RAT to measure creative behavior. On the positive side, one, or at most two, correct responses are specified for each RAT item, making them comparable across Ss and allowing Ss to be ranked objectively on their performance. In addition, the elements of the items are simple enough to be handled without elaborate training procedures. Items can also be constructed for given cultural groups, avoiding the possibility that some people would be more likely to answer them successfully because they live in a particular cultural milieu. On the negative side, one can question whether creativity is expressed in such a limited task, or whether the creator must find his materials for himself as well as doing something with them. One approach to this question would be to relate RAT performance to a more independent creative task in order to see whether the higher scorers are the more successful producers in their free activities. It should also be remembered that the items are deceptively simple. Separately, the stimuli and answers are ordinary everyday words, but putting them together requires more than ordinary thinking.

Another serious question is whether the RAT measures only verbal problem-solving behavior or something that generalizes to creative activity in other areas. Some work has already been done indicating that successful architects (Mednick, 1962) and research scientists (Dodd, 1962) do well on RAT items, but further research is needed on this problem. Such research will also have to handle the issue raised in the first chapter, insuring the goodness of criterion variables used

to evaluate success in various fields. Related to the generality of this verbal test, Mandler and Parnes (1957) have measured frequency and uniqueness of associations to a variety of stimuli--nonsense syllables, adjectives, line drawings and Rorschach cards. They found individual differences to be consistent across all stimulus categories. This similarity of reaction suggests that the RAT task might also be tapping behavior relevant to performance in other modalities, but a final statement might depend on the results of a measure like the RAT which could study performance with the materials of these other modalities, perhaps using sounds or visual images. The difficulties in constructing a task like this, however, are very great.

Once involved in creative work, the person's first productions are the most probable associations to the stimuli which initiate it. If these associations are generated by personal conflict, the resulting expressions may seem unique, even though they are the person's strongest associations. We are familiar with the phenomenon of the first novel, usually autobiographical, which is perceived as fresh and creative by the reader, but is not original in the same sense to its author who has habitually responded in the same ways to his internal drives and external perceptions. It seems that judgment of his capacity for producing original writing is determined largely by his subsequent work. Here his development may follow one of two courses. He may produce nothing of significance after his first work, repeating again and again what he said there. This too is a common experience after a successful first novel. It may occur because the writer actually has nothing else to say or because he is so bound to his

material and to the immediate associations it evokes that he cannot move beyond it. The other alternative is that he continues to produce original work of high quality. His writing becomes more remote from the initial motivating forces. He is able to respond to them in a new and different way at each successive attempt. In effect, the person who is repeatedly creative may be guided by underlying conflict into conflict-free areas.

There is another possible course of action taken by a potentially creative person whose responses to conflict may cause him to move into conflict-free areas even further removed from it, and to produce creative work there. Obviously, choice of an area of concentration is also determined by individual talents and abilities, the nature and quality of motivational sources, earlier experiences, etc.

Useful research would be a more specific investigation of the possible roles that particular psychological disturbances play in creative behavior. This could be done using the procedures of this study but with somewhat different materials. It is feasible to construct RAT items individually tailored to tap areas of conflict as well as those clearly non-conflictual. Definition of these areas would be possible through prior use of projective material and interviews, and differentiation of conflicted from non-conflicted material for each person. In the construction of neutral and loaded items for each subject, the number of potentially conflicted words within an item could be varied systematically. Further application of such an approach would be to relate the results to analyses of the projective material used in the original determination of conflict, such as the Blacky

Test (Blum, 1949) and Defense Preference Inventory (Blum, 1954), or primary process Rorschach analysis (Holt and Havel, 1960). With these approaches it should be possible to indicate not only the presence of conflict but also its content, the ways it is handled, and whether some types of conflict are more likely to affect creative activity.

CHAPTER VI

SUMMARY

This study was concerned with relationships between aspects of personality and the creative process. It proposed to evaluate effects of conflict and resulting anxiety and defense on creative thought. Theoretical material suggested that creative thinking depends on free interplay among associative elements. If an individual strongly defends against conflictful material or if any of the elements themselves are conflict-laden, he may be unable to reach creative solutions. The study investigated whether conflict (measured by associative disturbance) attached to elements composing a problem, affected its successful completion.

The study was conducted with the Remote Associates Test (RAT), designed to measure creativity. This requires the S to produce the one associate related to three stimulus words presented to him. Before individual administration of the RAT, each S was given a word association test consisting of all stimulus and answer words of items he would subsequently receive. (RAT performance had been shown not to be noticeably affected by prior administration of the word association test.) Each word was scored for conflict according to complex indicators. Forty-four undergraduate males taking introductory psychology served as Ss.

It was hypothesized that if conflicted reactions were shown to words of a RAT item, it would subsequently be failed. It was predicted that a RAT item would be conflicted (missed or have a significantly

long solution time) if two or more of the four words involved in it were judged conflicted.

Results were considered separately for two item groups--easy and hard, and two subject groups--highs and lows, based on a division at the median of the distribution of total RAT scores. These subject groups were also combined (total group). Performance on hard items with two or more conflicted words was in the predicted direction, significant for the low and total groups. However, performance on easy items was against the prediction--significant for all Ss. These results suggest that conflict enhances performance on easy items but interferes with performance on hard items. The divergence is explicable in terms of drive theory. Heightened drive increases response interference on hard or complex tasks where the dominant response is less probable, but decreases response interference on less difficult tasks where the dominant response is more probable. Other experimental evidence indicates that arousal increases the probability of a likely associate. The most likely associate for easy items is the correct answer; therefore, increments in drive may increase the probability of a correct answer for easy items.

Solution time differences were all in the predicted direction, with more time taken to solve conflict-laden than non-conflicted items. Differences are significant for the total group on easy and hard items. Greater speed of low Ss on non-conflicted items was interpreted as resulting from steeper associative hierarchies which enable them to produce their most probable associations readily and rapidly.

Two or more conflicted words were found to be the most reliable

measure of whether an item would be passed. The effects of conflicted and non-conflicted answers on the passing of items was considered. Comparisons for all groups on all items were in the direction of decreased likelihood that items would be passed if their answers were conflicted, but none were near significance. Thus, conflicted vs. non-conflicted answers did not seem to contribute any additional effect.

The measures of conflict employed in the study were discussed. Response latency does not appear to be a pure conflict indicator, and future research ought to evaluate separately the effects of each indicator.

APPENDIX

Values of t for comparison of % items passed with conflicted words vs. % items passed with no conflicted words.

	Easy Items		Hard Items	
	t	p	t	p
1 word conflicted				
Highs	1.55	NS	.48	NS
Lows	2.36	<.05	1.95	NS
Total	2.67	<.05	1.48	NS
2 words conflicted				
Highs	3.11	<.01	.78	NS
Lows	2.36	<.05	2.70	<.05
Total	4.38	<.001	2.50	<.05
3 words conflicted				
Highs	2.38	<.05	.30	NS
Lows	3.17	<.01	1.12	NS
Total	3.64	<.01	.94	NS
4 words conflicted				
Highs	3.10	<.01	2.40	<.05
Lows	1.40	NS	3.38	<.01
Total	1.17	NS	3.75	<.001

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