

REGRESSION AND EGO FUNCTIONING IN CREATIVE
NORMALS AND PSYCHOTICS

Thesis for the Degree of Ph.D.
MICHIGAN STATE UNIVERSITY
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1971



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ABSTRACT

REGRESSION AND EGO FUNCTIONING IN CREATIVE NORMALS AND PSYCHOTICS

By Gerald L. Borofsky

Using the theoretical framework of psychoanalysis, particularly the concept of Regression in the Service of the Ego, the present study undertook to explore the relationship between artistic creativity, normality, and psychosis. Hypotheses were proposed which postulated certain similarities and differences in the degree of primary process intrusion, in the effectiveness of coping and defensive functioning, in the degree of adaptive regression, in the amount of oscillation and in the degree of integration in cognitive-synthetic functioning in the artistically creative normal, as compared to both the creative schizophrenic and the uncreative normal. In addition the psychological functioning of creative and uncreative schizophrenics was compared.

The Ss initially consisted of thirty normals and thirty inpatient schizophrenics. All Ss were currently engaged in painting or some closely related form of visual art. Within each group, Ss were ranked for the degree of creativity reflected in their artistic productions. Independent judgments by three professional artists yielded rankorder correlations ranging from .81 to .98, all of which are significant at $p < .01$. Both the schizophrenic and normal groups were then further subdivided into a high creative

group (the ten top-ranked Ss) and a low creative group (the ten bottom-ranked Ss). The resulting four groups, of ten Ss each, did not differ as to age, educational level, amount of previous art training, or socio-economic level. The distribution of sexes was the same in all four groups. The schizophrenic groups did not differ in the number of previous hospitalizations nor the proportion of diagnostic subtypes within each group.

Rorschachs were administered to these forty Ss and scored according to the tenth edition of the Holt (1968) manual for scoring primary process manifestations. Inter-judge reliability for scoring of the Holt system yielded a product moment correlation of .89, which is significant at $p < .01$.

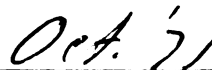
In comparing normal and schizophrenic Ss (regardless of degree of creativity) it was found that the two groups could be best differentiated by the effectiveness of their ego functioning. The normals, as expected, showed much higher levels of effective ego functioning. Contrary to expectation the groups did not differ in the amount of primary process intrusions. In comparing creative and uncreative Ss (regardless of their clinical status) it was found creative individuals had much greater access to regressive modes of functioning, and in addition, manifested much higher levels of effective ego functioning. The major focus of the study was upon the nature of psychological functioning in the creative normal.

It was found that the creative normal's style of psychological functioning is strikingly unique. He is similar to the creative schizophrenic in that he has a high degree of access to regressive modes of functioning. He differs profoundly from the creative schizophrenic in that his ego functioning is much more effective and adaptive. The creative normal also differs from the uncreative normal in several ways. The creative normal has much greater access to regressive modes of functioning than does the uncreative normal. He also shows more effective and adaptive ego functioning than the uncreative normal. It was concluded that the creative normal is a strikingly unique individual whose psychological functioning is characterized by great flexibility and effectiveness. The functioning of creative and uncreative schizophrenics was also studied and it was found that the ego functioning of creative schizophrenics is more effective than that of the uncreative schizophrenic. The various oscillation measures did not yield significant differences between the groups.

Approved


Committee Chairman

Date



REGRESSION AND EGO FUNCTIONING IN CREATIVE
NORMALS AND PSYCHOTICS

By
Gerald L. Borofsky

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Psychology

1971

To Jeanne

"...because we are the gardeners of
each other."

ACKNOWLEDGEMENTS

I would like to express my thanks to the members of my dissertation committee for their consistently constructive and meaningful assistance, frequently over a distance of many miles. Large phone bills notwithstanding, their advice has been most helpful. To Dr. Albert Rabin (chairman), Dr. Bertram Karon, Dr. William Mueller, and Dr. Robert Zucker I would like to extend my appreciation.

In particular I would like to express my heart-felt appreciation to Dr. Albert Rabin who during the past four years has been a constant source of inspiration and guidance. His creativity and scholarly approach to psychology have helped to plant the seeds and cultivate the development of scholarship and scientific thinking in a mind that was not always so disposed. His wisdom and encouragement have had a profound impact upon my developing identity as a clinical psychologist.

I would also like to thank Dr. Bertram Karon for his encouragement to explore new areas of psychology. I deeply appreciate his willingness to teach those seminars which were of particular interest to myself and other students. His continued encouragement to be creative and his scientific integrity are things which I have greatly valued.

During the course of this past year I have received considerable support, both moral and financial, from the psychology staff at McLean Hospital. In particular the help from Dr. Irene Stiver and Dr. Robert Schnitzer was of great value in bringing the thesis to fruition. I am especially grateful to Dr. Stiver for her assistance in obtaining financial support for data processing. These costs were supported by McLean Hospital General Research Support Grant number FRO5484.

I would also like to acknowledge the support of Helga Haendel, art therapist at McLean Hospital and Joanne Kornick, art teacher at Massachusetts Mental Health Center for their assistance in obtaining Subjects for the study. I would also like to thank the staff of Lincoln-Sudbury Regional High School for their cooperation in this regard.

The assistance of Phillippe Albergo, Jeanne Borofsky, and Marion Foster in judging the art for creativity is deeply appreciated.

The assistance of Russell Sawchuck and Dr. George

Gitter in arranging for computer facilities is gratefully acknowledged. I would also like to thank Dr. Robert Holt for providing the scoring manual used in this study, and for answering a number of questions which arose during the learning of the scoring system. Thanks are also due to Dr. Martin Mayman for furnishing a detailed presentation of his system for scoring Rorschach Form Level categories.

I would also like to thank the various typists- Brenda Friedman, Marcia Griffin, Carol Knowles, and Helen Mann- who all contributed to the finished product, at times working under great pressure from me.

Although I take exception to thanking one's wife at the end of the acknowledgements, I find that I have done the same. My wife Jeanne has repeatedly shown great creativity, understanding and encouragement in dealing with the rigors of an anxious husband who was working on his thesis. It is impossible to express the full pleasure that her efforts have given me.

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INTRODUCTION

Is psychosis an inextricable aspect of creative genius? Is the creative genius necessarily insane? Although such questions have occupied man's mind for over twenty-five hundred years, they still retain much of their original attraction even today. Throughout history, the notion has persisted that artistic talent and genius were dependent upon a precariously balanced type of personality.

Wittkower and Wittkower (1963)¹ indicate that Plato was among the first to discuss this relationship. Plato made a distinction between clinical insanity or psychosis and the "creative insanity" which artists and poets are possessed of. The notion was that the artist, during the process of creating, was in a state of "inspired madness."

There is also the frequently quoted statement of Seneca that "there has never been great talent without some touch of madness." Wittkower and Wittkower note that his further comments definitely indicate that Seneca was referring to the Platonic concept of inspired madness, rather than to a fundamental relationship between creative genius and clinical insanity or psychosis.

However Seneca's remarks have been frequently quoted

¹Much of the subsequent discussion in this section is abstracted from Chapter 5 of Wittkower and Wittkower, (1963).

out of context, leaving the rather unfortunate impression that he saw artistic creativity and psychosis as being necessarily joined together. Frequent misinterpretation of this passage has been the rule rather than the exception. For example Schopenhauer is quoted as saying, "genius is nearer to madness than the average intelligence."

By the end of the nineteenth century it was a widely-accepted notion that creative genius and psychosis were closely allied with one another. The popular assumption was that genius represented a particular type of "morbid condition." For example, Lange-Eichbaum concluded that "most geniuses were psychopathically abnormal...very many were also neurotics." Lionel Trilling has observed that the purported connection between artistic genius and mental illness is "one of the characteristic notions of our culture."

The contention that artistic genius and psychosis are necessarily and inextricably allied has not gone unchallenged, however. In a nineteenth century essay, The Sanity of True Genius, Charles Lamb wrote,

So far from the position holding true, that great wit (i.e., genius) has a necessary alliance with insanity, the greatest wits, on the contrary, will ever be found the sanest writers. It is impossible for the mind to conceive a mad Shakespeare. The greatness of wit, by which the poetic talent is chiefly here understood, manifests itself in the admirable balance of all the faculties. Madness is the disproportionate straining or excess of any of them.

C. Pelman, a twentieth century German psychologist, reached the same conclusion.

...geniuses who were insane are far outnumbered by those greater ones who show no trace of insanity. It can be stated with complete assurance that not one of the great geniuses was mentally diseased; if madness actually occurred, then the creative powers were diminished (Coleridge, deQuincey, and others).

Somewhat unfortunately, although perhaps unwittingly, many psychoanalytic writers have contributed to the idea that madness and creativity are necessarily allied conditions. They have pointed to the existence of various psychodynamic constellations which are present in the creative artist. Regrettably these writers have failed to note that these same constellations are found in many other types of non-creative but normal personalities as well.

In summarizing this brief historical discussion of the relationship between artistic genius and insanity, we may note several points of interest. The Platonic distinction between clinical insanity and "creative insanity" suggests that these two phenomena consist of common, as well as divergent elements. The inspiration of the artist appears in some ways to be similar to the bizarreness of the psychotic. On the other hand, Plato's distinction implies that certain characteristic features differentiate the creative artist from the psychotic.

As we proceed with a more thorough review of recent

theoretical and empirical commentary, it will become clear that the original Platonic differentiation between clinical insanity (psychosis) and "creative insanity" appears to have considerable validity. To anticipate the conclusions of our review somewhat, we may note that during the creative process, the artist appears to be in a state which Plato described as "inspired madness." Conversely--as Plato implied--although there are striking similarities between "creative madness" and psychosis, there are equally striking and critical differences between the two states of psychological functioning.

The present study will attempt to empirically identify both the similarities and differences in psychological functioning which characterize these two states--psychosis and "creative madness." The above discussion has provided an introduction to those issues which are of relevance in the present study. Most of these ideas have been developed intuitively by philosophers. However, a sounder, more theoretically-based, point of departure is a necessary prerequisite for any empirical exploration of these issues. Since the present study was conceived within the theoretical framework of psychoanalysis, it will be necessary to review certain psychoanalytic concepts before proceeding with a discussion of the design to be used in this study. The following section will discuss the relevant theoretical background, as well as pertinent empirical findings.

THEORETICAL BACKGROUND

This section will contain a review of theoretical issues and empirical findings related to the psychoanalytic theory of creativity, viz. regression in the service of the ego. In addition the discussion will focus on how regression in the service of the ego differs from the maladaptive or psychotic process of regression. The following theoretical issues will be discussed: 1) Primary Process and Secondary Process; 2) Shifts in Level of Psychic Functioning: Regression; 3) Adaptive Regression and the Psychoanalytic Theory of Creativity; 4) Pathological or Maladaptive Regression; and 5) Pathological Regression and Psychotic Creativity.

Relevant empirical findings will be discussed in their appropriate context.

Primary and Secondary Process

Evolving out of his efforts to understand the nature and psychological significance of dreams, Freud (1900) made a distinction between two modes of psychic functioning: primary and secondary process.

...the activity of the first Ψ -system primary process is directed toward securing the free discharge of the quantities of excitation, while the second system, by means of the cathexes emanating from it, succeeds in inhibiting this discharge and in transforming the cathexis into a quiescent one...I presume...that under the dominion of the second system the discharge of excitation is governed by quite

different mechanical conditions from those in force under the dominion of the first system (p. 599).

Freud (1911, 1915) noted that each mode of psychic functioning possesses certain distinctive characteristics. The primary process is infantile and primitive in its functioning. It strives for immediate gratification of impulses, in accordance with the pleasure principle. There is a high degree of cathectic mobility. That is, if discharge is blocked via a given route or object, the cathexis can be readily shifted to another means or object for discharge.

In contrast, the major concern of the secondary process is adaptation of the organism to reality. Accordingly, secondary process functioning is characterized by delay of gratification, in accordance with the reality principle. In addition, there is a minimum of cathectic mobility. Cathexes obtain discharge through relatively fixed routes and objects.

Brenner (1957) has noted that the delineation of these two modes of psychic functioning implies certain developmental or genetic processes.

The primary process was so named because Freud considered it to be the original or primary way in which the psychic apparatus functioned. We believe that the id functions in conformity with the primary process throughout life and that the ego does so during the first years of life, when its organization is immature

and still very much like the id, whence it so recently sprang, in its functioning. The secondary process, on the other hand, develops gradually and progressively during the first years of life and is characteristic of the operations of the relatively mature ego (p. 49).

But where does secondary process begin and primary process end, or vice-versa? Although Freud posited two distinctive modes of psychic functioning, Brenner (1957) has suggested that the line of demarcation between the two processes is necessarily indistinct and lacking in abruptness.

...the transition from the one to the other is gradual, both historically, in tracing the growth and development of a particular individual, as well as descriptively, in attempting to draw the line between primary and secondary processes in studying the mental functioning of a particular person (p. 52).

Holt (1970) concurs stating that, "...primary and secondary processes are not sharply differentiated...nor are their component mechanisms." Holt (1967) has suggested that the notion of a continuum is more helpful in understanding the actual functioning and interaction of these two modes of psychic functioning.

Implicit in the above discussion is the existence of certain shifts in the level of psychic functioning. The following section will be devoted to a brief discussion of these shifts and their relationship to the process of creativity.

Shifts in Level of Psychic Functioning: Regression

One of the difficulties in attempting to distinguish between primary process and secondary process functioning arises from the fact that the psychic apparatus does not function at a single fixed level. There is a constant switching or oscillation in the relative contribution of each mode to the overall functioning of the individual organism. A decrease in secondary process accompanied by an increase in primary process is termed regression. The reverse situation may for our purposes, be called progression. As Schafer (1954) notes,

These changes may be subtle and brief, as in ordinary daytime experience, or gross and more or less fixed, as in a severe schizophrenic condition, but they are a constant aspect of psychic life. Whether stimulated by outer duress and temptation or by inner privation and conflict, these shifts reflect the individual's never ceasing and never altogether resolved--though not necessarily always tumultuous--striving for adaptation and gratification. The shifts in the level of psychic functioning are never total shifts but rather vary in scope...(p. 80).

As indicated above, a shift in functioning toward the primary process end of the continuum is called a regression. Before discussing the role of regressive shifts in the process of creativity, it is first necessary to examine certain aspects of the process we have loosely termed regression.

In his 1914 revision of the Interpretation of Dreams,

Freud distinguished between three kinds of regression:

...(a) topographical regression, in the sense of the schematic picture of the Ψ -systems which have been explained above; (b) temporal regression, in so far as what is in question is a harking back to older psychical structures; and (c) formal regression, where primitive methods of expression and representation take the place of the usual ones. All these three kinds of regression are, however, one at bottom and occur together as a rule; for what is older in time is more primitive in form...(p. 548).

For our purposes we can dispense with the notion of topographical regression, since it refers to one of Freud's earlier models of the mind--a model which he himself later revised into the structural model (1923, 1933).

However, the other two kinds of regression proposed by Freud are relevant to the present review. Formal regression is of particular concern to us, since it refers to a regressive shift in the mode of psychic functioning. That is, more primitive methods of expression and representation gain in relative importance. In a word, primary process functioning gains in relative importance during formal regression.

As Freud has indicated in the above passage, temporal regression appears to be a necessary concomitant of formal regression, at least in psychopathological states. Whether formal regression can occur without a concomitant regression in an individual's mode of defense, gratification and adaptation is a question worthy of study in its own right. The present study will not deal with this issue, however.

In terms of the present study, we may now ask what is the relationship between primary process, formal regression, and creativity. This will lead us into a discussion of regression in the service of the ego (adaptive regression). Before launching our discussion of adaptive regression, however, we may find it useful to briefly discuss the relationship between primary process and creativity.

Both Marc Chagall and Joan Miro, as well as numerous other creative artists have emphasized that the source of their creativity sprang from an ability to view the world in child-like fashion. What do such statements mean to the empirically-minded psychologist? To understand such remarks, we must examine the relationship between primary process functioning and creativity. Kris (1952) has discussed this relationship in the following terms:

The ego, we assume, has two kinds of bound energy at its disposal, neutralized energy, and libido and aggression in their not neutralized form. Fantastic, free wandering thought-processes tend to discharge more libido and aggression and less neutralized energy. In fantasy production the ego's thought-processes are largely in the service of the id, but not only is the id involved,.... The content of the freely wandering fantasies is extended between the pleasure-unpleasure continuum, hence the probability that in this kind of processes, the discharge of non-neutralized libido and aggression will be maximized. In reflective thinking the contrary is likely to occur. Reflective thinking in the sense of Freud, problem-solving as we would prefer to say, serves

to a higher degree the autonomous ego interests. Discharge of libido and aggression is therefore likely to be minimized and that of neutralized ego-energy to be of greater relevance (p. 311-312).

Thus we see that "fantastic, free wandering" thought processes are primary process in nature. This suggests that when the artist is speaking of a child-like perception of the world, he is referring to the fact that he is able to experience some type of controlled formal regression. That is, his fantasies have their roots in primary process material. In this sense, he is able to perceive the world as a child does.

What are the mechanisms involved in such regressions? Is the regression under the control of any psychic agency, or does it vascillate uncontrollably? Such questions are extremely relevant to the present study. In order to understand how the psychological functioning of the creative artist differs from that of his noncreative, but psychologically healthy counterpart, we must explore the phenomenon of regression in the service of the ego. Similarly, in order to understand how the psychic functioning of the creative artist differs from that of the psychotic, we must look for the means by which the formal regression is controlled. This also leads us to the concept of adaptive regression or regression in the service of the ego.

Adaptive Regression and the Psychoanalytic Theory of Creativity

Freud (1917) noted that creative artists possess a "certain flexibility of repression...(p. 376)." This notion of a flexibility of repression was elaborated upon by Kris (1952). Kris used the term "regression in the service of the ego" to describe certain shifts in psychic functioning which he had observed to be characteristic of the creative artist. He suggested that the process of artistic creation involved two stages:

Schematically speaking, we may view the process of artistic creation as composed of two phases...inspiration and elaboration...The first has many features in common with regressive processes: Impulses and drives, otherwise hidden, emerge. The subjective experience is that of a flow of thought and images driving toward expression. The second has many features in common with what characterizes "work" - dedication and concentration (p. 59).

The "inspiration" phase of the creative process may be recognized for its close similarity to the Platonic notion of "inspired madness." In structural terms, Kris (1952) viewed the inspiration stage as involving a controlled regressive shift in the level of psychic functioning. This suggested that the artist possesses the capacity for

gaining easy access to id material without being overwhelmed by it, of retaining control over the primary process...(p. 25)

In this regression, ego control is maintained over id deriva-

tives and primary process material. Under ego control, primary process material can be consciously experienced. That is, there is greater communication between the ego and the id than under normal conditions of psychic functioning. Kris (1952) considered that this controlled regression was subjectively experienced as pleasurable.

Following Kris' (1952) suggestion that this regression was "in the service of the ego," and making use of Hartman's (1958) ideas regarding the ego's role in adaptation, Schafer (1958) elaborated upon Kris' original formulation. He suggested that Regression in the Service of the Ego as referring to:

...the ego's permitting relatively free play to the primary process in order to accomplish its adaptive tasks. The ego detours through regression toward adaptation. It is warranted to speak here of regression insofar as primary process or its close derivatives, normally warded off, are allowed a place in conscious experience; and it is warranted to speak of the process being in the service of the ego insofar as the regression serves ego interests (such as being creative or empathic), is relatively easily reversible, and is amenable to productive working over by the ego in terms of its adaptive pursuits (p. 125).

Schafer suggests, in the above quotation, that the regressive process is relatively easy to reverse, and that it is amenable to reworking by secondary process in the service of the ego's adaptive efforts. Other theoreticians have also concerned themselves with the reversible nature of this con-

trolled regression. Kris (1952) considered that one aspect of Regression in the Service of the Ego involved,

...the capability of making rapid or at least appropriately rapid shifts in levels of psychic functioning (p. 24).

Similarly, Bellak (1958, 1969) considers Regression in the Service of the Ego, or Adaptive Regression, to be an oscillating process. Levy (1961) has noted that the concept of oscillation is one of the requirements necessary for a complete definition of Regression in the Service of the Ego.

We are speaking of oscillation, but we may very reasonably ask what is, in fact, oscillating? The notion of oscillation or shifts in level of psychic functioning implies that the individual is shifting from the controlled regression to some other level of psychic functioning. In speaking of oscillation, we are here referring to either a shift from Primary Process to Secondary Process functioning, or a shift from Secondary Process to Primary Process Functioning. That is, a shift from one level of psychic functioning to another is called oscillation.

The concept of oscillation implies that there is another phase in the creative process, in addition to the stage of controlled regression. This is what Kris (1952) has spoken of as the stage of "elaboration." Psychic functioning, during the elaboration phase, is regulated by the secondary process. It is during this elaborational phase that the primary process material experienced during the regression

phase is systematically subjected, so to speak, to the light of day. In contrast to the regression phase of the creative process, Levy (1961) has used the term progression to characterize this second phase. Progression is very largely a cognitive effort although it also involves, by definition, a structural shift in the levels of psychic functioning. This largely cognitive effort is performed under control of the secondary process. As Levy (1961) notes, this cognitive-synthetic phase of the creative process involves analysis, synthesis, elaboration, and transformation of primary process material into communicable configurations.

Levy (1961) has presented a concise definition of regression in the service of the ego, which serves as a summary for much of the above discussion.

"Regression in the service of the ego" is a complex, adaptive, psychic process which takes place in one individual, and which can be said to take place if and only if that individual

- a) allows primary process material (or modes of thinking) or its close derivatives to enter conscious experience, i.e. he regresses, and
- b) shifts easily between primary process levels of functioning and secondary process levels of functioning, i.e. he oscillates, and
- c) analyzes, synthesizes, elaborated, modifies, and transforms primary process material into terms that are communicable to at least one other individual, i.e. he progresses (p. 52-53).

This complex psychological process represents the psychoanalytic theory or creativity. If this theory is valid,

then we would expect that the creative person would be more likely to engage in this three-component process (adaptive regression) than his non-creative counterpart.

As noted above, psychoanalytically based explorations of creativity represent only one approach to this issue. Other writers and researchers have explored creativity from a wide number of considerably different theoretical viewpoints. In the following section there will be a brief discussion of a few non-psychoanalytic views of creativity, which in some cases seem to concur strongly with the propositions put forth in the psychoanalytic theory of creativity.

Non-Psychoanalytic Views of Creativity: The Work of Barron, MacKinnon, and Guilford

Based upon his extensive research with creative persons, Barron (1963) offers some tentative conclusions regarding the nature of the psychological functioning in the creative person. Some of the conclusions relevant to the present study are presented below:

"They see things as others do, but also as others do not.....(They have more ability to hold alot of ideas in their head at once, and to compare more ideas with one another, hence to make a richer synthesis....The creative individual not only respects the irrational in himeself, but also courts it as the most promising source of novelty in his own thinking. When such admissibility is granted to the ordinarily tabooed thoughts and impulses which have undergone an earlier

repression in the interests of immediate adaptation, the individual may at times appear to others to be unbalanced. The unbalance, which comes about in such a fashion is, however, according to my view, essentially integrative and as such is health tending... They note or observe their impulses more and allow them expression... Creative people have exceptionally strong egos. The self is strongest when it can go far back regressively (allow primitive fantasies, tabooed impulses into consciousness and behavior) and return to a high degree of rationality. The creative person is both more primitive and more cultured, more destructive and more constructive, crazier and saner, than the average person... When the distinction between the subject (self) and the object is most secure, this distinction can with most security be allowed to disappear for a time (mysticism, love). This is based on true sympathy with the not-self, or with the opposite of the things which comprise defensive self-definition. The strong ego realizes that it can afford to allow regression, because it is secure in the knowledge that it can correct itself (p. 158-159)."

Translating these findings into the language of psychoanalysis, one notes that all the conditions for adaptive regression are met in this passage. Barron notes that while the creative person is able to maintain an intact sense of reality testing, he is also able to see things in new and innovative ways. He maintains a higher level of integrative or synthetic functioning. He has greater access to primary process material and to primary process modes of thinking. In fact, he actively seeks out such modes of functioning. Barron adds

that while such regressive functioning appears to others as pathological, it is in fact the sign of an extremely effective level of ego functioning. He notes that such regressions are always under effective ego control. He also touches upon a phenomena that probably helps to explain the common misconception that most creative people function in a manner similar to that of a schizophrenic. That is, in addition to having access to primary process material and modes of thinking, Barron suggests that the creative person is also able to temporarily suspend the distinction between the self and the world of external objects. Although this is a truly regressive phenomena, it is again (as Barron emphasizes) under effective ego control. Thus it would appear that Barron's formulations are essentially similar to those discussed in the preceeding section.

MacKinnon (1962,1965) presents the results of an intensive psychological assessment of both creative and uncreative architects. His findings are very similar to those of Barron's and are summarized in what follows. He notes (1962) that his most creative group was characterized by an "openness to experience and especially to experience of one's inner life." He also observes that they were "relatively disinterested in policing either their own impulses and images or those of others." Thus we might say that he found his creative sample to have greater access to primary process material and modes of thinking. In the same paper, MacKinnon

notes that in the creative group, "one can find rather clear evidence of psychopathology, but also evidence of adequate control mechanisms..." This would suggest that openness to primary process is accompanied by effective ego functioning, and adaptive, rather than maladaptive regression.

MacKinnon's use of the term psychopathology must be qualified, for it is defined in terms of MMPI scores. He found that the creative group had elevated scores on certain of the clinical scales. However, these elevations were only "five to ten points above the general population's average score of 50."

Thus these are not really marked deviations and probably are a reflection of the creative person's greater openness to primary process modes of experience. MacKinnon does note that these are essentially minor deviations, particularly when they are considered in the overall context of ego functioning. Namely that these men were highly successful in their personal and professional lives. That is, the regression in functioning is under adequate ego control and occurs within the context of an overall healthily functioning ego. In his 1965 paper, MacKinnon reviews these findings, and also notes that the creative group was more able to effectively master "tension, conflict, and anxiety." This again would suggest a high level of ego functioning. He also notes that ego functioning in the creative group is characterized by a high level of synthesis and integration. In summarizing the characteristics of the creative group, MacKinnon (1965)

notes that the creative architects

"are perhaps the prototype of the person of strong ego, the man of will and deed. Confident of themselves and basically self-accepting, they are to an unusual degree able to recognize and give expression to most aspects of inner experience and character, and thus are able more fully to be themselves and to realize their own ideals (p. 280)."

Although both Barron and MacKinnon have used somewhat different terminology in explaining their findings, it would appear that their basic concepts are very similar to those proposed in the psychoanalytic theory of creativity.

Another non-psychoanalytic approach has been followed by workers such as Guilford. Guilford's work represents a basically cognitively-oriented approach to the study of creativity. His point of departure is what he calls the Structure of Intellect model. This consists of three orthogonal factors or dimensions which are depicted in the form of a cube. These three dimensions - the type of content involved, the types of operations involved, and the nature of the product - provide a conceptual model with which to organize a large number of discrete functions which Guilford has found to be involved in creative processes. Each dimension has a number of subcategories so that there are theoretically 120 independent intellectual factors which can be examined. Such an approach has the notable advantage of providing an unusual degree of specificity in detailing the

cognitive operations involved in the creative process. Its disadvantage is that it explores only cognitive aspects of psychological functioning. While the psychoanalytic theory of creativity is regrettably vague in some respects, it does have the great advantage of providing a comprehensive and integrated model of psychological functioning. However, the two approaches are by no means mutually exclusive of one another. As Hartman (1958) has noted, cognition is an ego function. What this means is that Guilford has examined in great detail one aspect of ego functioning. His procedure is instructive and perhaps at some point the psychoanalytic theory of creativity may be elaborated with an equal degree of detail.

At this point it is necessary to briefly discuss the issue of a criterion for creativity. Since this study concerns itself with creativity, it seems advisable to explore somewhat how we might best make a determination of creativity. After a general discussion of this issue, there will be a brief presentation of how this issue has been practically dealt with in terms of carrying out research.

Criteria for Determining the Level of Creativity

How does one determine that an individual is "creative?" It has been traditionally assumed that a person involved in the "arts" is a creative individual. Is it necessary to express one's self in an artistic manner in order to be considered creative? One might argue that engineers, scientists,

businessmen, housewives, etc. can all be creative individuals. On the other hand do we wish to say that simply because a person expresses himself in a fine arts medium that he is therefore creative? Such questions could be offered indefinitely and serve to show the considerable difficulty involved in arriving at criteria for determining the level of creativity of a given individual. As the title indicated, the present study is concerned only with the issue of artistic creativity. Specifically, we are concerned with those persons who are engaged in some form of expressive visual art. Thus we will not address ourselves to the larger question of creativity in general. We will only attempt to focus upon the issues related to determining a person's level of artistic creativity.

Such a step does not really remove us from the frying pan, however. We are still left with the task of determining who is a creative artist and who is an uncreative artist. Is such a determination made solely on the finished product of the artist?; is the process of producing the work what differentiates the creative from the uncreative artist?; or are the criteria for creativity independent of either product or process? So far we have found it easier to ask questions than to provide substantive answers.

Traditionally, the judgement of creativity has been based on the actual productions of an artist. Critics or others schooled in certain principles of aesthetics have

evaluated an artists work and deemed the product to have a certain degree of creativity. It might be argued that creativity should not be determined by recourse to an artist's productions since it requires a good deal of technical skill and training to produce a work of art which critics would consider creative. This is probably quite true. However, the need to develop some type of criteria for research purposes, forces us to make some type of decision regarding the criteria for judgements of creativity.

Holt (1970) notes that "two principal approaches to a criterion measure of creativity have been used in research that attempts to test Kris' (and Freud's) hypotheses."

"The first is to select groups of people who are in other respects as well matched as possible, but who differ in their creative behavior, usually as judged by expert evaluation of their creative products. The second is to administer tests of creativity to an unselected group of available subjects, that is, to ask them to be creatively productive in certain specified ways and then to evaluate their products according to explicit criteria (p. 17-18)."

Holt suggests that the two approaches are to some extent one and the same. The present study uses the former approach to a criterion measure of creativity. Holt notes that this approach has the advantage of enabling one to work with a sample which represents widely divergent points on the judged continuum of creativity.

At this point it would seem appropriate to present a

modest review of empirical findings bearing on the concepts of creativity and adaptive regression. The study of creativity has resulted in a vast number of empirical findings. It would seem that discretion would dictate trying to review only those studies which have directly examined the relationship between creativity and adaptive regression as measured by the Rorschach. A comprehensive review of research on creativity is provided by Stein and Heinze (1960).

Empirical Studies of Creativity and Adaptive Regression as Measured By the Rorschach

A pioneering study of creative persons, which utilized the Rorschach is the work of Roe (1960). She studied the protocols of 20 painters who had all received at least national recognition of their artistic abilities. The criteria used involved such things as membership in the National Academy of Design, having works in the permanent collection of the Metropolitan Museum of Art, etc. Using traditional Rorschach indices, she was unable to develop any differentiating criteria upon which to predict creativity. Several comments are pertinent to these findings. Although the traditional Rorschach measures did not provide satisfactory criteria for differentiating creative persons, it is quite possible that Rorschach measures which were specifically developed to measure the concept of adaptive regression might have provided more fruitful results. This possibility is strengthened by Roe's finding that among other things the

artists tended to show "overproduction of responses with sexual content" and "unusually great W production."

Translated into the language of psychoanalysis, one might say that these painters produced a large number of primary process responses and showed a marked tendency toward integration of synthesis, respectively. Examined in such terms, these findings are not so disappointing as they initially appear.

Eidson (1958) in a comparative study of artists and non-artists, found that artists think and perceive in ways which are unconventional. He also found that artists were able to "loosen or relax their thinking without any accompanying personality disorganization." That is, they were able to regress without the ego functions being overwhelmed.

Hersch (1962) studied the Rorschach protocols of 20 artists (the same protocols used by Roe), 20 non-artists, and 20 schizophrenics. Using a system of categories based on Werner's comparative developmental theory, Hersch grouped his scores into two groups- mature and primitive. In comparing creative and non-creative Ss he found "that the cognitive functioning of the creator...tends to be characterized by the greater availability of both relatively mature and relatively primitive processes "as compared to the functioning of the non-creative, normal S." Translating this into psychoanalytic terminology, one might say that the creative individual has more access to primitive perceptual processes than the non-

creative person, and that these primitive processes are under effective ego control.

In comparing creative Ss with schizophrenics, he found that while schizophrenics and artists did not differ in the amount of primitive material produce, the artists showed a significantly greater amount of mature responses. Translating this into psychoanalytic terms we note that the creative S is like the schizophrenic in that he has access to primitive perceptual processes. However, he differs from the schizophrenic in that he appears to have these regressive modes under effective ego control.

In comparing normal Ss and schizophrenics, Hersch found that the normals showed a greater frequency of mature categories than did the schizophrenics. Again translating into psychoanalytic terminology we would say that the schizophrenic has less effective ego control over his perceptual processes than does the normal S.

In this discussion of Hersch's findings the term perceptual has been repeatedly used. This is a consequence of the nature of Hersch's categories. As Holt (1970) has pointed out, Hersch has measured perceptual regression in his study, and has "not in any way" measured primary process or the ego's control of primary process.

Another study which predates the development of a formal scoring system for measuring adaptive regression (Holt, 1960,1968) is the work of Myden (1960). Although this work

has been somewhat criticized on methodological grounds (Holt, 1970), the results are of considerable interest. Using the Rorschach, Myden found that:

"The creative group consists of individuals who do not use repression as a primary defense. This permits them to use fantasy and id feelings as a component of their prevailing thought processes. They expend little of their psychic energy trying to repress such id feelings and thus nearly all of their psychic energy is available for constructive creative processes...They show a greater amount of psychosexual ambivalence which may reflect merely the lack of their repression of conflicting id feelings... (p. 166)"

Myden concludes by noting that the creative individual has greater access to and greater freedom in expressing primary process material. The creative individual is able to "allow primitive drives and fantasies with all their wishes, fears, displacements, and condensations to reach awareness" without the ego becoming overwhelmed in the process. This is essentially an empirical validation of the concept of adaptive regression. However, as noted above certain methodological problems detract from the full impact of the findings.

Holt (1970) states that "for the psychoanalytic theory of thinking to become useful in research,....an explicit and detailed method of measuring manifestations of the primary process was essential. Moreover, the method had to include a way of assessing the degree to which such regressive thought products are adaptive or maladaptive." Faced with this ex-

tremely ambitious and important task, Holt set out to develop a system for scoring primary process manifestations in Rorschach responses. From the first efforts (Klopfer, Ainsworth, Klopfer & Holt, 1954, pp. 547-549) through the first draft of a comprehensive manual (Holt & Havel, 1960) and up to the current 10th draft of the manual, Holt has developed an increasingly sophisticated and comprehensive method of measuring primary process manifestations in Rorschach responses. A brief outline of the manual is included in the Method Section. This manual has provided the ideal instrument for exploring the psychoanalytic theory of creativity. As might be expected, the manual has stimulated considerable research, some of it related to the concepts of creativity and adaptive regression.

The studies reviewed below are only those which have used a criterion of creativity based upon judgements of Ss' graphic productions, and have scored Ss' Rorschach protocols according to the Holt manual. Holt (1970) provides a review of studies which have used other criteria for judgements of creativity.

Cohen (1960) studied two groups of undergraduate art majors. They were divided into two groups- a "highly creative" group and a randomly selected group of art students. The creative Ss were selected on the basis of ratings by their professors. Rorschachs were administered and scored by an early version of the Holt manual. Using 28 traditional

Rorschach indices (W, M, R, C, etc.) Cohen found that none of these measures differentiated the two groups. However, he did find that creative Ss, produced more primary process responses. Once the data was corrected for total number of responses, by Analysis of Covariance, however, the significant difference between groups disappeared. In comparing groups on the measure of adaptive regression, Cohen found that the creative group showed significantly more adaptive regression than the control group. Another finding relevant to the present study is that creative Ss showed superior degrees of form level for all responses combined as well as among only primary process responses.

Rogolsky (1968), using a design similar to Cohen, studied creativity in third-grade children. The drawings of these children were evaluated by professional artists. The top and bottom 15 percent were used for further study. She found no significant differences between the two groups on the adaptive regression measure and also found no significant difference in the degree of form level for primary process responses. At first glance, these findings appear to be in direct contradiction to Cohen's findings. However, if one examines both sets of findings in the light of the development of psychic structure, a ready explanation suggests itself. The development and refinement of ego and superego functions is the major developmental task facing the latency age child. To accomplish these tasks, the latency child typically diverts

large amounts of psychic energy to these tasks, thus presenting a surface picture of being rather constricted in terms of primary process functioning. Similarly one could make a strong case for the notion that at latency the psychic structure is simply not sufficiently differentiated to engage in the rather complex process of adaptive regression. Undoubtedly there are precursors or "anlages," but the whole notion of sublimation, (which is really a prerequisite for adaptive regression) presumes that sublimations are first developed in latency. With this in mind it would seem unlikely, on theoretical grounds, that latency age children could be differentiated on the basis of variables which require such a high degree of development in terms of structure. Thus it is not surprising that her results failed to differentiate between creative and uncreative third-graders.

A final study worthy of note is the work of Dudek (in press). Although there appear to be some serious methodological difficulties with this study (Holt, 1970), it does provide some interesting findings. Dudek studied three groups of Ss- successful artists (painters, sculptors, and writers), who had received both critical and popular recognition, members of these professions who were not considered to be creative, and successful but non-artistic persons (e.g. business, professions, etc.). Traditional Rorschach indices failed to differentiate the groups. However, a rather idiosyncratic adaptation of the Holt system (1960) did reveal

certain intra-group differences. Amount of primary process differentiated the groups with artists producing significantly more primary process responses. Also she found that successful artists produced more "regressive" responses than unsuccessful artists and non-artists. Although she did not have a measure of whether the regression was adaptive, she reported her subjective opinion regarding this question. She felt that the successful artist was able to produce primary process material within an essentially healthy context, that he was not overwhelmed by incapacitating anxiety in the course of producing the primary process material, and that shifts in level of psychic functioning appeared to proceed smoothly. The controls, on the other hand, "seemed to show a disintegration of defenses and of the synthetic faculties under the force of 'intensity' of having gained access to primary process material or modes of thinking.

These studies seem to suggest then that the creative person does have more access to primary process material and modes of functioning. In addition, the regression involved in gaining access to such material appears to be adaptive, among creative Ss. Such findings lend considerable support to the psychoanalytic theory of creativity. It is worth noting that these findings also support the non-psychoanalytic formulations and findings regarding creativity which have been proposed by MacKinnon (1962, 1965) and Barron (1963).

Having presented a review of some of the empirical studies dealing with adaptive regression and creativity, we are

now in a position to resume discussion of other theoretical issues pertinent to the present study. Having reviewed the concept of adaptive regression, we now turn our attention to the concept of pathological or maladaptive regression.

Pathological or Maladaptive Regression

In contrast to the shifts in psychic functioning which are under ego control and which serve the purpose of increased adaptation, is the pathological or maladaptive regression which is a characteristic of schizophrenia.

As Fenichel (1945) has indicated, Freud considered the schizophrenic process to be intimately related to the concept of regression. Unlike neurotic disorders, which also reflect a regression, schizophrenia was viewed as regression to a state of "primary narcissism." There is a withdrawal of all object cathexes, resulting in the schizophrenic's withdrawal from objects and from reality. For Fenichel, schizophrenia represents a breakdown of the ego. Thus, the schizophrenic regression is not under ego control. It proceeds in the absence of effective regulation by the ego. This is precisely why the schizophrenic regression is both pathological and maladaptive.

Arieti (1955, 1959) has made valuable contributions to understanding the nature and function of the schizophrenic regression. According to Arieti (1959) schizophrenia is characterized by a progressive teleologic regression. By regression, Arieti means to include Freud's notion of temporal

regression, as well as his concept of formal regression. According to Arieti, the regression in schizophrenia is both a return to earlier levels of adaptation (temporal regression) and a regression to more primitive levels of psychic functioning (formal regression). In passing we may note that formal regression is what occurs during regression in the service of the ego. Thus, there appears to be some theoretical similarity between adaptive and maladaptive regression. As we proceed, however, certain critical differences will also be noted.

The term teleologic is meant to indicate that the schizophrenic regression is purposeful. The purpose of the regression is to reduce or remove anxiety so that a new state of psychic equilibrium can be established. According to Arieti (1955),

If, in a situation of severe anxiety, behavior at a certain level of intellectual integration cannot take place or does not bring about the desired results, a strong tendency exists toward behavior at lower levels of integration in order to effect those results-reduction of anxiety (p. 191).

In addition, the schizophrenic regression is progressive. It is progressive, because it fails in its purpose of trying to remove or reduce anxiety. The situation is described by Arieti (1959) as follows:

...the schizophrenic patient will regress to, but not integrate at, a lower level: he will remain dis-

organized. The organism then defends itself from this disorganization with further regression to an even lower level. The process repeats itself in a vicious circle that can lead to a complete dilapidation (p. 475-476).

If Arieti's theoretical formulations regarding the form of the schizophrenic regression are valid, then we would expect the schizophrenic to utilize more primitive levels of psychic functioning (primary process) than the normal. In addition we would expect to find that the schizophrenic utilizes less mature levels of adaptation than the normal. The former expectation is derived from Arieti's contention that the schizophrenic regression is partially a formal regression. The latter expectation is derived from the contention that the schizophrenic regression also involves a temporal regression.

The expectation that schizophrenics function at more primitive levels carries with it the implication that schizophrenics will therefore show less secondary process functioning than the more well adjusted normal. Similarly, we would expect the schizophrenic to show fewer shifts in level of psychic functioning. The progressive nature of the regression would serve to counteract any tendency toward an oscillating shift in levels of psychic functioning.

Empirical Studies of Regression in Schizophrenia as Measured by the Rorschach

At this point it seems appropriate to review some of

the empirical findings that bear upon these issues. The main focus of this review will be upon measuring the nature and characteristics of the regression in schizophrenia, as manifested in the Rorschach. In that the present study is mainly concerned with primary process and structural functioning attention will be devoted to only two main groups of studies: 1) those which developed from the genetic psychology of Werner and which utilized the Friedman (1952) system for scoring the Rorschach; and 2) those studies which have utilized the Holt manual for scoring primary process manifestations in Rorschach responses.

Friedman (1952) attempted to evaluate the nature of perceptual functioning in schizophrenia, using Werner's genetic psychology as a theoretical frame of reference. He hypothesized that a perceptual regression did occur in schizophrenia, and developed a scoring system to test this hypothesis. His main findings demonstrated that schizophrenics did not differ from children (3 years to 5 years, 3 months of age) with regard to certain indices of perceptual functioning. On the other hand, normal adults did differ from both of the above groups on these same indices. He concluded that, "Like children, and unlike normal adults, their (the schizophrenics) perceptual functioning is predominantly of a global, diffuse, syncretic, rigid, and labile nature and marked by relative lack of differentiation and hierarchic integration." Friedman also notes that the regression in

schizophrenia is not total and that "the schizophrenic's perceptual functioning cannot be conceived of as being identical with that of the child." He notes that certain aspects of the schizophrenic's perceptual functioning reflect higher levels of development than that shown by a young child. A number of subsequent studies (Friedman, 1953; Hemmendinger, 1953; and Siegel, 1953), using the Friedman scoring system, have substantiated these initial findings.

These studies demonstrate that regression, at least a perceptual regression, does occur in schizophrenia. The question must then be raised as to the nature of this regression. Is it uncontrolled? Is it adaptive or maladaptive? To some extent, these questions were answered in the study by Hersch (1962) cited earlier. Conceived within the theoretical framework of Werner's theory and using categories from the Friedman scoring system, Hersch studied the Rorschach protocols of artists, normals, and schizophrenics. As noted earlier, some of his findings are relevant to the above questions. As will be remembered, Hersch grouped the Friedman categories into two groups of scores- mature and primitive. In comparing normal Ss and schizophrenics, he found that normals responded with a greater frequency of mature categories than did the schizophrenics. In the language of psychoanalysis, we would say that the schizophrenic has less effective ego control over his perceptual processes than does the normal S. It is also worth noting that in comparing creative Ss

with schizophrenics, he found that while schizophrenics and artists did not differ in the amount of primitive material produced, the artists showed significantly more mature responses than did the schizophrenics. Again translating this into psychoanalytic terminology, we note that in terms of perceptual functioning, the creative S is like the schizophrenic in that he has access to primitive modes of perceptual functioning. However, he differs from the schizophrenic in that he appears to have these regressive modes under effective control.

These findings suggest that the regression in schizophrenia differs from the regression experienced by the artist. In the former, (at least in terms of perceptual functioning) the regression appears to be maladaptive, while in the latter the regression is under more effective ego control, and can thus be considered to represent an adaptive regression.

However, the scope of these findings is rather circumscribed. As noted earlier, Holt (1970) has clearly demonstrated that the Friedman categories used by Hersch measure perceptual regression and do not "in any way" measure primary process or the ego's mode of functioning in coping with primary process manifestations, when they occur. There appears to be no study in which adaptive and maladaptive regression have been compared in terms of primary process manifestations and the manner in which the ego functions,

under the pressure of primary process breakthroughs. However, the Holt manual has been used to study primary process manifestations and ego functioning within the schizophrenic syndrome. A brief review of some of these studies is of interest.

Zukowsky (1961) compared the Rorschach protocols of normals, reactive schizophrenics, and process schizophrenics. While the normals and schizophrenics did not differ in the number of primary process responses, the schizophrenics gave more blatant or "primary" primary process responses than did the normal Ss. While Holt's measure of adaptive regression did not differentiate the normals from the schizophrenics, "the data were strongly suggestive" that the groups could be differentiated on this dimension had the sample been larger. Similarly there was some tentative support to the notion that under the added strain of primary process functioning, the normal Ss maintained a higher level of coping and adaptive functioning than did the schizophrenics. These results support the notion that schizophrenics are more blatant in their primary process manifestations than normals. The results also suggest that the schizophrenic's ego functions less in the service of adaptation and more in the service of defense. Finally, these findings lend support to the notion that the schizophrenic regression is essentially maladaptive.

Silverman, Lapkin, and Rosenbaum (1962) administered Rorschachs to a group of schizophrenics and a combined group

of psychoneurotics and personality disorders. Protocols were scored by the Holt system. The authors found that schizophrenic records contained "significantly more manifestations of thinking that bear the formal characteristics of the primary process." They also found that these manifestations of primary process were under less adequate ego control in the schizophrenic group. The former finding supports the notion of a formal thought disorder in schizophrenia, while the latter again lends support to the contention that the schizophrenic adaptation is a maladaptive one.

In summary, these studies lend support to the notions that schizophrenics are more blatant in their production of primary process manifestations, and that their ego functioning is less adequate. This leads one to conclude that the regression in schizophrenia is maladaptive whether viewed in terms of perceptual modes of functioning or whether viewed in terms of primary process manifestations, and ego functioning in the face of primary process functioning.

Having reviewed the theoretical issues and empirical evidence bearing upon the concepts of adaptive and maladaptive regression, it may be useful to briefly summarize the similarities and differences between them.

Summary of the Similarities and Differences Between Adaptive and Maladaptive Regression.

The following structural similarity between adaptive and maladaptive regression has been noted:

In both cases there is a regressive shift in the level of psychic functioning (formal regression). In both, primary process material is consciously experienced. This regressive shift in the structure of psychic functioning which characterizes both the creative person and the psychotic, may be the basis for the historical connection between creative genius and insanity.

As we proceed with the differences between adaptive and maladaptive regression, it will become abundantly clear, that in spite of the one similarity discussed above, there are major differences which serve to distinguish the psychic functioning of the creative artist from that of the psychotic.

The following structural differences between adaptive and maladaptive regression have been noted:

- 1) Unlike adaptive regression which is under ego control, maladaptive regression reflects a loss of ego control.

- 2) Whereas adaptive regression reflects a temporary regression in the level of psychic functioning (formal regression) which is characterized by frequent oscillations between levels of psychic functioning, the maladaptive regression is progressive and is not typically reversible, without therapeutic intervention.

- 3) Whereas adaptive regression is characterized by a progressive or integrative phase, the maladaptive regression fails to ever achieve a stable level of integration.

The following teleologic difference may also be noted:

In contrast to adaptive regression which is a playful and pleasurable experience which acts in the service of ego adaptation, the maladaptive regression represents a frantic attempt to reduce and control overwhelming anxiety. It also represents an adaptive effort on the part of the ego (restitution). However, whereas adaptive regression promotes increased ego adaptation, maladaptive regression fails to achieve its goal of stable integration.

In conclusion, it should be noted that the above listing of similarities and differences carries with it the implication that certain testable hypotheses regarding adaptive and maladaptive regression can be readily developed from this list. These hypotheses, to be presented in a later section, will make reference to this listing of similarities and differences between adaptive and maladaptive regression.

Pathological Regression and Psychotic Creativity

At this point let us examine the relationship between pathological regression in schizophrenia and creative activity among schizophrenics. Kris (1952) has formulated what he considers to be the psychodynamic significance of the creative urge in schizophrenia. He views this creative activity as "part and symptom of the attempt at restitution (p. 92)." In developing this notion, he states,

The disturbance of psychic economy, pathognomic of the schizophrenic process, concerns the relationship of the ego to the environment, to reality. In Freud's view, this relationship is loosened or impoverished,

cathexis of the world around is diminished, and in extreme conditions disregard of and indifference to reality become supreme....The loosening of the relation to the world around is counteracted and covered by vehement attempts to recathect objects outside. (p. 93)

Thus Kris is of the opinion that the creative activity of the psychotic represents an attempt to recathect objects in the external environment. This creative behavior reflects an effort by those portions of the ego which still remain intact. These efforts represent an attempt to halt the progressive regression, and to re-establish firm reality contacts.

In passing we may note that this is the major theoretical rationale for art therapy. Encouraging the patient's attempts to re-establish reality contact via his artistic productions is a therapeutic means of dealing with the schizophrenic regression.

In the present study, it will be assumed that the more creative a schizophrenic is in his restitutive efforts, the more successful he is in re-establishing firm reality contacts. Although there is apparently no empirical evidence to support this assumption, it appears to be justified, for the time being, on a solely theoretical basis. The hypotheses derived from this assumption will be tested, and this should serve as a test of the assumption's validity.

STATEMENT OF THE PROBLEM

A number of questions result from the above discussion. For example, what is the relationship between creativity and psychosis? What aspects of psychological functioning differentiate the creative normal from the psychotic? Conversely, in what aspects of psychological functioning are the creative normal and the psychotic similar? Likewise, questions may be raised regarding the creative psychotic. In what aspects of psychological functioning is the creative psychotic similar to the non-creative psychotic, and in what way is he different? Also how does the creative normal differ from his uncreative, but normal, counterpart. The present study attempts to provide empirical answers to these questions. Accordingly it is now appropriate to propose a number of hypotheses based upon the preceding discussion.

HYPOTHESES

Operational definitions of the theoretical constructs used below are presented in the section on Method.

I. Comparing the Schizophrenic Group and the Normal Group:

As compared to the normal group, the schizophrenic group will have:

a) significantly more primary process intrusions (as defined in the method section).

b) a significantly lower level of coping and defensive functioning (as defined in the method section).

c) a significantly lower Adaptive Regression score (as defined in the method section).

II. Comparing the High Creative and Low Creative Groups

(Schizophrenics and Normals Combined):

As compared to the low creative group, the high creative group will have:

a) a significantly higher Adaptive Regression score.

b) a significantly higher level of coping and defensive functioning.

III. Comparing High Creative Normals and High Creative Schizophrenics:

As compared to High Creative Schizophrenics, High Creative Normals will have:

a) no significant difference in the amount of primary process intrusions.

b) a significantly higher level of coping and defensive functioning.

c) a significantly higher Adaptive Regression score.

d) significantly more oscillation (as defined in the method section).

e) significantly more integration in their cognitive-synthetic functioning (as defined in the method section).

IV. Comparing High Creative and Low Creative Normals:

As compared to Low Creative Normals, High Creative Normals will have:

a) significantly more primary process intrusions.

b) equal levels of coping and defensive functioning.

c) a significantly higher Adaptive Regression Score.

d) significantly more oscillation.

e) equal amounts of integration in their cognitive-synthetic functioning.

V. Comparing High Creative and Low Creative Schizophrenics:

As compared to High Creative Schizophrenics, Low Creative Schizophrenics will have:

a) no significant difference in the amount of primary process intrusions.

b) a significantly lower level of coping and defensive functioning.

c) a significantly lower Adaptive Regression Score.

d) significantly less oscillation

e) significantly less integration in their cognitive-synthetic functioning.

METHOD

Basic Design of the Study

The present study involves a 2 x 2 design. One independent variable is the dimension of psychological health. The two levels of this independent variable include a schizophrenic group and a normal group. The second independent variable is the degree of creativity manifested by S in his artistic productions. The two levels of this variable include a low creative group and a high creative group. The normal group (n = 20) and schizophrenic group (n = 20) are each further subdivided into an equal number of high creative (n = 10) and low creative (n = 10) Ss, yielding a total sample of n = 40.

Subjects

For both the schizophrenic and normal groups an initial pool of 30 potential Ss was obtained. In all cases these were persons who were currently engaged in painting or some other form of expressive visual art. That is, all Ss had cathected art as an activity. All schizophrenic inpatients enrolled in art classes at McLean Hospital (a private psychiatric hospital in Belmont, Massachusetts) were contacted and asked to participate in a project involving persons active in art. In all cases these patients agreed to participate in the research. However, since this did not result in a group of 30 potential Ss, it was necessary to obtain a number of schizophrenic inpatients from the Massachusetts

Mental Health Center (a state hospital in Boston, Massachusetts). These potential Ss were enrolled in the art class at the hospital. The names of all inpatients in the class with a diagnosis of schizophrenia were obtained, and a number of them were randomly selected until the pool of potential Ss reached a total of thirty. These potential Ss were also contacted and asked to participate in the research. With only one exception all agreed to take part. One more name was randomly selected in order to replace the patient who was unwilling to take part in the research.

The normal group was selected from students in beginning and advanced art classes at Lincoln-Sudbury Regional High School located in Sudbury, Massachusetts. A group of 30 potential Ss was selected in such a manner as to be approximately matched with the schizophrenics for age, educational level, amount of previous art training and experience, and sex. In addition the groups were roughly equated for socio-economic level. Each potential S was contacted and asked to participate in a project involving persons active in art. In all cases the persons selected agreed to participate in the research.

For the reasons elaborated below, Ss were not matched on the basis of intelligence. Both Holt and MacKinnon have cited evidence that intelligence appears to be essentially unrelated to measures of creativity. MacKinnon (1962) states:

"As for the relationship between intelligence and creativity.... we have found within our creative samples essentially zero relationship

between the two variables, and this is not due to a narrow restriction in range of intelligence (p. 487).

MacKinnon notes that over the entire range of intelligence there is probably a positive correlation between IQ and creativity, since he notes that none of the creative groups he studied included "feeble-minded" Ss. He concludes:

"It is clear, however, that above a certain required minimum level of intelligence which varies from field to field and in some instances may be surprisingly low, being intelligent does not guarantee a corresponding increase in creativeness. It is just not true that the more intelligent person is necessarily the more creative one (p. 488)."

In this regard, it should be noted that all Ss were considered by their respective teachers to be at least of average intelligence. No retarded persons were included in the study. In fact, in many cases the teachers felt that the Ss were probably of higher than average intelligence.

Holt (1970) has also reached the same conclusion regarding the presumed relationship between intelligence and creativity. He notes, "Incidentally, in the total sample, adaptive vs. maladaptive regression...was essentially unrelated to intelligence as measured by the Ohio State Psychological Examination...(p. 29)."

Another reason was also involved in the decision not to control strictly for intelligence. It is well known the IQ of schizophrenics is not necessarily an accurate reflection of their optimal level of intellectual functioning. This

is understandable when we stop to consider that a major symptom of the syndrome is cognitive disruption, resulting in the so-called thought disorder. Thus, an attempt to match the schizophrenic and normal groups on IQ would probably provide a seemingly rigorous, but spurious measure of control to the sample.

Judgements of Creativity

Within the normal and schizophrenic groups, Ss were assigned to the high creative or low creative group based upon an evaluation of their artistic productions. Judgements of creativity for schizophrenics and normals were made separately. In the schizophrenic group, judgements were made without any knowledge of the patient's relative mental health.

A group of three practicing professional artists first arrived at a consensual definition of what constituted a creative piece of art. The definition is presented below:

"Imaginative conceptualization. That is, originality in the use of color, design (composition and shape), line, and subject matter. Is able to look at familiar things and ideas in unique and interesting ways. Is not bound by conventional approaches to these aspects of artistic expression."

After arriving at this definition, the judges then attempted to apply these criteria to the judgement of 10 pieces of art from individuals who were not to be included in the sample. That is, no potential Ss were included in this practice run.

Once each judge ranked the 10 works, they compared rankings and attempted to resolve any large discrepancies between rankings. They also discussed how they had reached their conclusions. This procedure tended to further clarify the criteria to be used in ranking.

Then each judge independently ranked two to five graphic productions from each of 30 schizophrenics and from each of 30 normals. Judgements for the normal and schizophrenic groups were made separately. Interjudge reliabilities for rankings of both the normal and schizophrenic groups are presented in Table 1.

TABLE 1.

Interjudge Reliabilities for Rankings of Creativity Based Upon
S's Art Work

Judges Compared	Rank Order Correlation	Significance
<u>Normal Group:</u>		
1 vs. 2	.95	$p < .01$
1 vs. 3	.84	$p < .01$
2 vs. 3	.81	$p < .01$
<u>Schizophrenic Group:</u>		
1 vs. 2	.98	$p < .01$
1 vs. 3	.96	$p < .01$
2 vs. 3	.97	$p < .01$

The rank-order correlations are impressively high, considering the minimal amount of training that preceded the actual judging. Once reliability was determined to be satisfactory, a mean creativity rank was computed for each potential S. The ten highest-ranked persons within each group (for both normal and schizophrenic groups) were designated as high creative. The ten lowest-ranked persons in each group were designated as low creative.

Table 2 provides the means and standard deviations of the four groups for each of the variables on which the Ss were equated. The schizophrenic groups were essentially the same in the distribution of diagnostic subtypes represented within each group.

TABLE 2

Comparison of Groups on Age, Grade Level, Number of Years of Art Training, Number of Previous Hospitalizations, and Length of Current Hospitalizations, in Months

	<u>Normal</u>		<u>Schizophrenic</u>	
	High Creative	Low Creative	High Creative	Low Creative
<u>Age</u>				
$\bar{X}$	16.60	16.30	16.30	16.60
SD	0.80	1.00	1.19	1.36
<u>Grade Level</u>				
$\bar{X}$	11.10	11.10	10.80	11.00
SD	0.83	0.83	0.75	1.00
<u>Years of Art Training</u>				
$\bar{X}$	2.60	2.50	2.40	2.40
SD	0.66	0.92	0.92	0.80
<u>Number Previous Hospitalizations</u>				
$\bar{X}$	----	----	0.20	0.10
SD	----	----	0.40	0.30
<u>Length Current Hospitalization (months)</u>				
$\bar{X}$	----	----	14.40	11.90
SD	----	----	11.90	8.92

Testing

The Rorschach was then administered to these 40 Ss, following the procedure recommended by Holt (1968). Following the suggestion of Friedman (1952) it had been planned to exclude any protocol with less than ten responses. However, this was unnecessary since the shortest protocol contained twelve responses, and the mean number of responses was twenty-nine. All Ss were limited to a maximum of five responses per card. The rationale for this procedure is based upon considerations of efficiency. That is, does the inclusion of additional responses add sufficient interpretive material to the protocol to justify the amount of additional time expended? Both Schafer (1954) and Klopfer (1954) have provided the rationale and justification for limiting the number of responses per card.

After all Ss were tested the protocols were randomly assigned a code number by someone other than the person scoring the protocols, and this code number was the only means of identifying the protocol while it was being scored. Thus, the scorer had no knowledge as to which group a given protocol belonged. That is, all protocols were scored "blindly".

Scoring of Rorschach Protocols .

All protocols were scored according to Holt's (1968) Manual For The Scoring of Primary Process Manifestations in

Rorschach Responses, 10th Edition. In the remainder of this section, the major categories in the Holt system, and the summary scores used in this study are all summarized. Much of this material is extracted directly from Holt (1970) and Zukowsky (1961). A complete list of all scores in the Holt manual may be found in Appendix A.

Form Level

All responses are first scored for form-level according to the manual developed by Mayman (1960). Mayman distinguishes 8 categories (Appendix B) ranging from the sharpest, most accurate (F +) to the most arbitrary (F-) perception of definitive forms, plus two degrees of nondefinitive form (vague and totally amorphous) and a "spoiled" score (Fs) for basically acceptable responses that are more or less ruined in their elaboration. The Mayman form level scores are a good way of judging the S's "reality contact" or "reality adherence"--the degree to which he perceives accurately and clearly without undue haste, sloppiness, anxious clouding or wishful misperceiving.

Combinations and Integrations

Together with the form-level, these scores give an indication of the kind of organizing effort that went into the development of a response. They are thus measures of the effectiveness of the secondary process (synthetic function).

Primary Process (PPR) Scores

Not all responses contain scorable primary process. Scorable primary process occurs in terms of the content of a response or in terms of its formal qualities. A given response may receive more than one primary process score. A full listing of all primary process categories is contained in Appendix A. A full description of each score is contained in the Holt (1968) manual.

The content categories are comprised of seven types of libidinal content (oral, oral-aggressive, anal, sexual-i.e. directly phallic or genital, exhibitionistic-voyeuristic, homosexual, and miscellaneous- including urethral, narcissistic, and birth relevant), and three kinds of aggressive content (sadistic aggression, masochistic ("object") aggression, and results of aggression). Each of these ten types is further subdivided into two "levels" of which Level 1 is more blatant, more id-like, while Level 2 is more socialized. Thus, the distinction between levels in the aggressive categories, for example, hinges on the lethality of the implied aggression: murderous aggression would be scored Level 1.

There are forty formal categories, including eight forms of condensation, six forms of displacement, five of symbolism, four of contradiction, twelve miscellaneous distortions of thought and perception - including, among others, various forms of autistic reasoning, failures of the synthetic function,

loss of distance, etc.-and five forms of verbalization scores. Approximately two-thirds of these scores are classified as Level 1, with the remainder being considered less "primary" and thus scored as Level 2.

Control and Defense Scores

These scores are given to all responses which have received one or more primary process scores. These scores reflect the S's defensive organization, particularly his degree of control over his own regressive thinking. Altogether there are forty-two control and defense categories. These include six sequence scores (e.g. shift from level one to unscorable), fifteen remoteness scores, and four contexts (cultural, esthetic, intellectual, and humorous). The remoteness and context scores are further subdivided into successful and unsuccessful attempts. The control and defense scores also include fourteen pathological defenses, and a few measures of delay and reflection on the response. A complete listing of the control and defense scores may be found in Appendix A.

Overall Ratings of the Total Response

For all responses which have been given one or more primary process scores, consideration is also given to the overall nature of the response.

Defense Demand (DD) conceptualizes the dimension that is dichotomized in the distinction between Level 1 and Level 2; it is a 6-point scale of the response's shock value as an

interpersonal communication. A DD of 1 is given to responses that would not raise an eyebrow at a polite tea-party; a DD of 6 implies the maximum need for some kind of controls to mitigate the intrinsic shockingness of both the content and formal deviations contained in a response.

Defense Effectiveness (DE) is also rated on a 6-point scale from +2 (completely successful control and defense in a wholly acceptable response) through 0 (only moderately successful attempts at control) to -3 (disorganized responses with only pathological attempts at defense). Four main considerations enter into this rating. First one considers the Form Level, which is rated in the manner described above. To each of the possible form level scores, there corresponds a beginning or trial DE rating, which is modified upwards or downwards depending on the nature of the control and defense categories that have been scored. The scorer makes a further modification (if necessary) after considering the affect accompanying the response, on the assumption that when a response is under good control it should not cause any disturbance and may be positively enjoyable, whereas anxiety or other negative (or inappropriate) affects indicate disruption of cognitive functioning and the probability that the regression is maladaptive. Finally, the DE score may be adjusted, within limits (if appropriate), relying upon the scorer's clinical judgement.

Creativity scores are assigned to all responses whether or not there is any scorable primary process. This five-point

rating scale measures the creativity of a given response. The criteria are a rather loosely defined combination of statistical infrequency and "richness" (e.g., sensitive use of determinants, good verbalization). This scale replaces the usual distinction between Popular (scored 1 on this scale) and Original (scored 5 here).

Summary Scores For a Complete Protocol^{1,2}

There are a number of summary scores which attempt to pull together the wide range of categories which are included in the manual. These include various measures of the amount of primary process present in a record, the level of coping and defensive functioning, an index of adaptive versus maladaptive regression, a measure of what is here called oscillation, and a measure of the level of integration in cognitive-synthetic functioning. Each of these measures is described below.

These summary scores represent an attempt to operationalize certain important theoretical constructs which were discussed in the preceding chapter. These operational definitions will be used to test the validity of the hypotheses presented earlier.

¹Combining several scores from the Holt manual in order to operationally define a theoretical construct is adapted from a paper by Professor Erika Fromm (1970). Her influence is gratefully acknowledged.

²All scores in this study are adjusted for the total number of responses in the protocol and total number of primary process responses (when appropriate) by means of analysis of covariance.

1. Degree of Primary Process (PPR) intrusions can be summarized in several different ways. It will be remembered that any response which has received one or more content or formal scores is considered to be a primary process response. The usual manner of computing summary scores consists of using measures such as the total number of responses containing one or more primary process scores, the number of responses containing one or more content scores, the total number of responses containing one or more formal scores. A further subdivision used in the present study is to present the above scores in terms of the total number of Level 1 responses and the total number of Level 2 responses. The reader may note that these measures do not take into account the "density" or quantity of primary process within a given response. With the above measures, a response with one primary process score receives the same weight as a response with five primary process scores. Silverman, et al. (1962) derived a summary measure which they call the "density score." This is obtained by taking the total number of primary process scores in a protocol and correcting this figure for the total number of responses in the record. The degree to which a record is saturated with primary process is measured by the density score. One final measure of the degree of primary process intrusions consists of obtaining an overall measure of Defense Demand within a given record. This is

done in the same manner described above for individual DD scores, corrected for the total number of responses and the total number of Primary Process responses in the record. This provides a measure of how "primary" the primary process is in a particular protocol.

2. Level of Coping and Defensive Functioning can also be summarized in several different ways. A summary measure of Form Level reflects S's overall "reality contact" or "reality adherence" the degree to which he perceives accurately and clearly without undue haste, sloppiness, anxious clouding, or wishful misperceiving. This measure is again simply the sum of individual form level scores corrected for the total number of responses in the record. In the present study the overall form level has been computed for all responses combined, among only primary process responses, and among only Level 1 primary process responses. In addition the Defense Effectiveness score provides a measure of S's overall level of coping and defensive functioning. The overall measure of DE in a given record is simply the sum of individual DE scores, corrected for the total number of responses and the total number of Primary Process responses in the record. In the present study, overall DE has been computed for all primary process responses combined and for just among Level 1 primary process responses.

3. Adaptive versus Maladaptive Regression (ARS) is computed

based on the following formula recommended by Holt (1970):

$$\text{ARS} = \frac{\text{Sum (DD x DE)}}{\text{Total number of Primary Process Responses}}$$

For each response, the DD rating is multiplied by the DE rating. The sum of the resulting positive and negative numbers, is divided by the number of primary process responses in the record. Holt indicates that the theoretical limits of the ARS measure are + 12 to - 18. The positive numbers indicate primary process intrusions which are under effective control, while negative ARS scores reflect disruption in effective ego functioning under the pressure of primary process intrusions. The absolute value of the ARS score reflects the degree to which regression occurs. Thus the ARS measure can be considered to reflect both the extent and nature of an individual's regressive functioning.

4. Oscillation (SC), as used in the theoretical review above, refers to a shifting from one level of psychic functioning to another. The Holt manual contains a series of Sequence Change Scores. Sequence change (SC) consists of a shift from secondary process to Level 1 or Level 2 primary process, a shift from Level 2 to Level 1 primary process, or a shift from Level 1 to Level 2, a shift from Level 1 to secondary process or a shift from Level 2 to secondary process. Shifts towards the primary process end of the scale can be considered as reflections of regression, while shifts toward the secondary

process end of the scale are reflections of progression.

In the present study three types of scores are used: total number of shifts; number of regressive shifts; and number of progressive shifts. All these scores are corrected for the total number of responses in the protocol.

5. Level of Integration in Cognitive-Synthetic Functioning can also be summarized by a number of scores contained within the Holt manual. The combination (C) and integration (i) scores described earlier are simply summed and corrected for the total number of responses contained in the record. As noted earlier, this provides an overall measure of the effectiveness of an S's secondary process functioning (synthetic function).

These five operationally defined theoretical constructs have been used to formulate the hypotheses which are tested in this study.

Reliability of Scoring

In the present study a sample of ten protocols not included in the sample were independently scored by the author and a second rater who was experienced in the 10th edition of the Holt manual. The total adaptive regression score (ARS) was used to test scorer reliability. This measure was chosen since it represents a composite score and thus indirectly reflects the reliability of a number of other categories, including the number of primary process responses, since the ARS score is only given to a response which is scorable for primary process manifestations. In the present study the product-moment

correlation for ARS was .894. This is significant at the .01 level. This figure compares favorably with reliability figures for ARS reported in other studies. Holt (1968) reports that for ARS interjudge reliabilities generally range between .85 and .95. Both Cohen (1960) and Zukowsky (1961) report that their interjudge reliability for the scoring of ARS was .94. It is thus reasonable to assume that the Holt measures are reliable.

Statistical Treatment of the Data

Hypotheses I and II: Each of the dependent variables (Holt scores from the Rorschach) have been tested for significance by a two-way (2 x 2) analysis of covariance, correcting for total number of responses and total number of primary process responses (when appropriate). A significant main effect is considered to be confirmation of the appropriate hypothesis.

Hypotheses III, IV, and V: Each of the dependent variables have been tested for significance by a simple analysis of covariance, correcting for the total number of responses and total number of primary process responses (when appropriate). A significant F-ratio is considered to be confirmation of the hypothesis.

RESULTS

The number of individual analyses performed in the present study is quite large and for that reason, the results of the study are presented in the form of summary tables. All results bearing on a given hypothesis are presented in the same table.

Comparison of Normal and Schizophrenic Ss

Hypothesis I proposed that schizophrenics would manifest more primary process, lower levels of coping and defensive functioning, and a lower adaptive regression score than normal Ss. The findings relevant to this hypothesis are presented in Table 3.

In general, the prediction that schizophrenics would manifest more primary process intrusions than normals was not supported. However, in two instances the hypothesis does appear to be verified. That is, schizophrenics produced more ($p < .01$) Level 1 Content than normals. As will be remembered, Level 1 responses are more blatant, more "id-like." In similar fashion, schizophrenics tended to produce primary process responses with a higher defense demand ($p < .10$). These findings suggest that while there is generally little difference in the amount of primary process produced by schizophrenics and normals, the responses produced differ in their blatancy and intensity - responses produced by the schizophrenics are more blatant.

Table 3 Comparison of Normal (N) and Schizophrenic (S)
 Ss (Hypothesis I) on Rorschach Summary Scores.
 All Scores are Corrected for Total Number of
 Responses by Analysis of Covariance

Summary Score	F	Direction
<u>Degree of Primary Process Intrusions</u>		
Total PPR	0.0275	----
Total PPR Content	0.2024	----
Total PPR Formal	0.0701	----
Level 1 PPR	0.0090	----
Level 1 Content	6.3122***	S>N
Level 1 Formal	0.2263	----
Level 2 PPR	0.0118	----
Level 2 Content	0.1070	----
Level 2 Formal	0.0085	----
Density PPR	0.0070	----
Density Level 1	0.0919	----
Density Level 2	0.0650	----
Defense Demand (&)	3.4766#	S>N
<u>Level of Coping & Defensive Functioning</u>		
Form Level, Total R	3.1810#	N>S
Form Level, PPR (&)	15.6709***	N>S
Form Level, Level 1 (&)	2.9878#	N>S
Defense Effectiveness (&)	48.6115***	N>S
DE, Level 1 (&)	39.2991***	N>S
<u>Adaptive Regression vs. Maladaptive Regression</u>		
ARS (&)	64.6154***	N>S

(&) Score also corrected for total number of primary
 process responses, by analysis of covariance

$p < .10$

* Significant at $p < .05$

** Significant at $p < .025$

*** Significant at $p < .01$

The prediction that schizophrenics would show lower levels of coping and defensive functioning was strongly supported by the data. Three measures of coping and defensive functioning (Form Level for primary process responses, Defensive Effectiveness among all primary process responses, and Defense Effectiveness among Level I primary process responses) significantly differentiated the schizophrenics and normals in the expected direction at $p < .01$. For the two remaining measures (Form Level for all responses and Form Level for Level 1 primary process) schizophrenics showed lower levels of functioning to a degree which approaches statistical significance ($p < .10$). In like fashion, the schizophrenics show strikingly lower adaptive regression scores ($p < .01$).

In summary, schizophrenics showed lower levels of coping and defensive functioning, and lower levels of adaptive regression than normals. In addition schizophrenic Ss gave more blatant or intense primary process responses than normal Ss, although in general they did not differ in the amount of primary process produced.

Comparison of High Creative and Low Creative Ss

Hypothesis II predicted that high creative Ss would have a higher level of adaptive regression and would manifest higher levels of coping and defensive functioning. Findings bearing on this hypothesis are found in Table 4.

The prediction that high creatives would have a higher adaptive regression score than low creatives is strongly supported by the data ($p < .01$). Similarly, on four of the five measures of coping and defensive functioning (Form Level for primary process responses, Form Level for Level 1 responses, Defense Effectiveness among all primary process responses, and Defense Effectiveness among Level 1 primary process responses) high creatives had significantly higher levels of functioning than low creatives ($p < .01$). On the remaining measure (Form Level for all responses), high creatives also have a higher score than low creatives ($p < .10$).

In summary, high creatives had higher levels of adaptive regression, as well as higher levels of coping and defensive functioning than low creatives.

Table 4 Comparison of High Creative (HC) and Low Creative (IC) Ss (Hypothesis II) on Rorschach Summary Scores. All Scores are Corrected for Total Number of Responses by Analysis of Covariance

Summary Score	F	Direction
<u>Level of Coping & Defensive Functioning</u>		
Form Level, Total R	3.2588#	HC > LC
Form Level, PPR (&)	20.2752***	HC > LC
Form Level, Level 1 (&)	8.3252***	HC > LC
Defense Effectiveness (&)	19.6042***	HC > LC
DE, Level 1 (&)	30.2567***	
<u>Adaptive Regression vs. Maladaptive Regression</u>	54.5643***	HC > LC
(&) Score also corrected for total number of <u>primary process responses</u> , by analysis of covariance		
# $p < .10$ * Significant at $p < .05$ ** Significant at $p < .025$ *** Significant at $p < .01$		
<u>Comparison of High Creative Normals (HCN) and High Creative Schizophrenics (HCS)</u>		

Hypothesis III proposed that high creative normals would not differ from high creative schizophrenics in the degree of primary process intrusions. However, it was predicted that high creative normals would have higher levels of coping and defensive functioning, a higher level of adaptive regression, more oscillation, and a higher level of integration in their cognitive-synthetic functioning than high creative schizophrenics. The findings relevant to this hypothesis are presented in Table 5.

Table 5 Comparison of High Creative Normal (HCN) and High Creative Schizophrenic (HCS) Ss (Hypothesis III) on Rorschach Summary Scores. All Scores are Corrected for Total Number of Responses by Analysis of Covariance

Summary Score	F	Direction
<u>Degree of Primary Process Intrusions</u>		
Total PPR	1.1609	----
Total PPR Content	0.3550	----
Total PPR Formal	1.3828	----
Level 1 PPR	2.0661	----
Level 1 Content	5.4729*	HCS > HCN
Level 1 Formal	3.5531#	HCN > HCS
Level 2 PPR	0.2539	----
Level 2 Content	1.1782	----
Level 2 Formal	0.1033	----
Density PPR	0.4607	----
Density Level 1	0.7540	----
Density Level 2	0.6365	----
Defense Demand (&)	1.2027	----
<u>Level of Coping & Defensive Functioning</u>		
Form Level, Total R	10.2352***	HCN > HCS
Form Level, PPR (&)	15.7409***	HCN > HCS
Form Level, Level 1 (&)	2.4167	----
Defense Effectiveness (&)	35.1549***	HCN > HCS
DE, Level 1 (&)	46.7424***	HCN > HCS
<u>Adaptive Regression vs. Maladaptive Regression</u>		
ARS (&)	137.2011***	HCN > HCS
<u>Oscillation (SC)</u>		
Sum SC (<u>Prog</u>) plus (<u>reg</u>) (&)	0.7465	----
Sum SC (<u>progression</u>) (&)	0.9683	----
Sum SC (<u>regression</u>) (&)	0.0471	----
(continued on next page)		
(&)	Score also corrected for total number of <u>primary process responses</u> , by analysis of covariance.	
#	p. < .10	
*	Significant at p < .05	
**	Significant at p < .025	
***	Significant at p < .01	

Table 5 (continued)

Summary Score	F	Direction
<u>Level of Integration in</u> <u>Cognitive-Synthetic</u> <u>Functioning</u>		
Sum Integrations (i)	1.5577	----
Sum Combinations (c)	3.9555#	HCN > HCS
Sum (i) plus (c)	3.3759#	HCN > HCS
Sum 2(i) plus (c)	2.9962#	HCN > HCS

(&) Score also corrected for total number of primary process responses, by analysis of covariance.

p < .10
 * Significant at p < .05
 ** Significant at p < .025
 *** Significant at p < .01

With only two exceptions, the two groups did not differ on the measures of primary process intrusions. The HCS group produced more Level 1 Content responses ($p < .05$), and the HCN group produced more Level 1 Formal responses ($p < .10$). These findings tend to offset one another, thus providing no contradiction to the hypothesis that the two groups are the same in the degree of primary process intrusions.

The prediction that the HCN group would have a higher level of coping and defensive functioning than the HCS group was also strongly supported by the data. Four of the five measures differentiate the two groups at $p < .01$, with HCN

Ss showing greater degrees of coping and defensive functioning than HCS Ss. Form Level for all responses, Form Level for primary process responses, Defense Effectiveness among all primary process responses, and Defense Effectiveness among Level 1 primary process responses all significantly differentiated the groups. Similarly, the adaptive regression score for the HCN group is strikingly higher ($p < .01$) than for the HCS group. On measures of integration in cognitive-synthetic functioning, the HCN group showed higher degrees of integration at levels that approached statistical significance ($p < .10$) for three of the four measures (sum of combinations, sum of integrations plus combination, and the weighted sum of integrations plus combinations). None of the oscillation measures adequately differentiated the two groups.

In summary, high creative normals did not differ from high creative schizophrenics in the degree of primary process intrusions. The HCN group had higher levels of coping and defensive functioning, adaptive regression, and integration in cognitive-synthetic functioning. The groups did not differ on measures of oscillation. For those summary scores which had a significant interaction effect, the group means are given in Appendix C.

Comparison of High Creative Normals (HCN) and Low Creative Normals (LCN)

Hypothesis IV predicted that high creative normals would produce more primary process intrusions, greater adaptive regression, and more oscillation than low creative normals. In addition it was hypothesized that the two groups would not differ in their levels of coping and defensive functioning, nor would they differ in the level of integration in their cognitive-synthetic functioning. The findings bearing on this hypothesis are presented in Table 6.

Table 6 Comparison of High Creative Normal (HCN) and Low Creative Normal (LCN) (Hypothesis IV) on Rorschach Summary Scores. All Scores are Corrected for Total Number of Responses by Analysis of Covariance.

Summary Score	F	Direction
<u>Degree of Primary Process Intrusions</u>		
Total PPR	11.5579***	HCN > LCN
Total PPR Content	13.4378***	HCN > LCN
Total PPR Formal	8.3698***	HCN > LCN
Level 1 PPR	15.3212***	HCN > LCN
Level 1 Content	0.3538	----
Level 1 Formal	15.7417***	HCN > LCN
Level 2 PPR	6.6652**	HCN > LCN
Level 2 Content	12.3617***	HCN > LCN
Level 2 Formal	3.4026#	HCN > LCN
(Continued on next page)		

(#) Score also corrected for total number of primary process responses, by analysis of covariance.

$p < .10$

* Significant at $p < .05$

** Significant at $p < .025$

*** Significant at $p < .01$

Table 6 (continued)

Summary Score	F	Direction
<u>Degree of Primary Process Intrusions</u>		
Density PPR	5.914*	HCN > LCN
Density Level 1	5.2605*	HCN > LCN
Density Level 2	7.2249**	HCN > LCN
Defense Demand (&)	0.6335	----
<u>Level of Coping & Defensive Functioning</u>		
Form Level, Total R	6.9559**	HCN > LCN
Form Level, PPR (&)	4.8698*	HCN > LCN
Form Level, Level 1 (&)	4.7061*	HCN > LCN
Defense Effectiveness (&)	10.3963***	HCN > LCN
DE, Level 1 (&)	20.1483***	HCN > LCN
<u>Adaptive Regression vs. Maladaptive Regression</u>		
ARS (&)	13.0661***	HCN > LCN
<u>Oscillation (SC)</u>		
Sum SC (prog) plus (reg) (&)	0.7589	----
Sum SC (Progression) (&)	1.1332	----
Sum SC (regression) (&)	0.0142	----
<u>Level of Integration in Cognitive-Synthetic Functioning</u>		
Sum Integrations (i)	2.8454#	HCN > LCN
Sum Combinations (c)	5.0444*	HCN > LCN
Sum (i) plus (c)	4.6532*	HCN > LCN
Sum 2 (i) plus (c)	4.3464*	HCN > LCN
(&) Score also corrected for total number of <u>primary process responses</u> , by analysis of covariance. # $p < .10$ * Significant at $p < .05$ ** Significant at $p < .025$ *** Significant at $p < .01$		

With only two exceptions, the measures of primary process intrusion reflect that the HCN group had higher levels of primary process intrusion than the LCN group. Levels of significance range from $p < .10$ (for one variable) to p

$< .01$ (for six variables). The prediction that the HCN group would show greater adaptive regression is strongly supported by the data ($p < .01$). However, none of the oscillation measures adequately differentiated the two groups. On the other hand, on all measures of coping and defensive functioning, the HCN group had higher scores than the LCN group. Levels of significance range from $p < .05$ (for two variables) to $p < .01$ (for two variables). Similarly, all measures of integration in cognitive-synthetic functioning were greater in the HCN group than in the LCN group. Significance levels range from $p < .10$ (for one variable) to $p < .05$ (for the remaining three variables).

In summary, the high creative normals had higher levels of primary process intrusions. They gave more primary process responses, and their individual responses were more packed with primary process scores than in the LCN group. In addition, the HCN group had a higher level of adaptive regression. Contrary to expectation, the HCN group had significantly higher levels of coping and defensive functioning and higher levels of integration in their cognitive-synthetic functioning, than the LCN group. There were no significant differences between the groups in the amount of

oscillation. For those summary scores which had a significant interaction effect, the group means are given in Appendix C.

Comparison of High Creative Schizophrenics (HCS) and Low Creative Schizophrenics (LCN)

Hypothesis V predicted that low creative schizophrenics would not differ from high creative schizophrenics in primary process intrusions. It was also predicted that low creative schizophrenics would have lower levels of coping and defensive functioning, a lower adaptive regression score, less oscillation and less integration in their cognitive-synthetic functioning than high creative schizophrenics. The findings bearing on this hypothesis are presented in Table 7.

Contrary to expectation, the high creative schizophrenics had higher scores on six of the thirteen measures of primary process intrusion. The significance level in all cases was $p < .10$. The HCS group gave a larger number of primary process responses than the LCS group. Also, among Level 2 primary process responses, the HCS group had more primary process scores packed into an individual response, than the LCS group.

Table 7 Comparison of High Creative Schizophrenics (HCS) and Low Creative Schizophrenics (LCS) Ss (Hypothesis V) on Rorschach Summary Scores. All Scores are Corrected for Total Number of Responses by Analysis of Covariance

Summary Score	F	Direction
<u>Degree of Primary Process Intrusions</u>		
Total PPR	3.2205#	HCS > LCS
Total PPR Content	3.9031#	HCS > LCS
Total PPR Formal	2.7458	----
Level 1 PPR	1.1388	----
Level 1 Content	0.0782	----
Level 1 Formal	0.8300	----
Level 2 PPR	4.2129#	HCS > LCS
Level 2 Content	3.0671#	HCS > LCS
Level 2 Formal	3.6314#	HCS > LCS
Density PPR	2.4772	----
Density Level 1	0.3063	----
Density Level 2	3.8206#	HCS > LCS
Defense Demand (&)	0.4272	----
<u>Level of Coping & Defensive Functioning</u>		
Form Level, Total R	0.0705	----
Form Level, PPR (&)	7.5368***	HCS > LCS
Form Level, Level 1 (&)	2.7502	----
Defense Effectiveness (&)	10.8248***	HCS > LCS
DE, Level 1 (&)	8.9739***	HCS > LCS
<u>Adaptive Regression vs. Maladaptive Regression</u>		
ARS (&)	14.7726***	HCS > LCS
(continued on next page)		

(&) Score also corrected for total number of primary process responses, by analysis of covariance

$p < .10$
 * Significant at $p < .05$
 ** Significant at $p < .025$
 *** Significant at $p < .01$

Table 7 (continued)

Summary Score	F	Direction
<u>Oscillation (SC)</u>		
Sum SC (<u>prog</u>) plus (<u>reg</u>) (&)	0.8130	----
Sum SC (progression) (&)	1.4137	----
Sum SC (regression) (&)	0.0014	----
<u>Level of Integration in</u> <u>Cognitive-Synthetic</u> <u>Functioning</u>		
Sum Integrations (i)	5.0521*	HCS > LCS
Sum Combinations (c)	21.7407***	HCS > LCS
Sum (i) plus	18.6877***	HCS > LCS
Sum 2(i) plus (c)	15.6671***	HCS > LCS
(&) Score also corrected for total number of <u>primary</u> <u>process responses</u> , by analysis of covariance.		
#	p < .10	
*	Significant at p < .05	
**	Significant at p < .025	
***	Significant at p < .01	

As predicted, the low creative schizophrenics had significantly lower scores ($p < .01$) for three of the five measures of coping and defensive functioning (Form Level for primary process responses, Defense Effectiveness among all primary process responses, and Defense Effectiveness among Level 1 primary process responses. However, the groups did not differ on Form Level for all responses combined, nor did they differ on Form Level for Level 1 primary process responses.

Similarly, the LCS group has a significantly lower ($p < .01$) adaptive regression score than the HCS group. Also the LCS group shows a lower level of integration on all measures of cognitive-synthetic functioning. Levels of significance range from $p < .05$ (for one variable) to $p < .01$ (for the remaining three variables). None of the oscillation measures adequately differentiated the two groups.

In summary, the HCS group had higher scores on some measures of primary process intrusion, as well as higher levels of coping and defensive functioning, adaptive regression, and integration in cognitive-synthetic functioning. There were no significant differences between the groups in the amount of oscillation. For those summary scores which had a significant interaction effect, the group means are given in Appendix C.

Additional Results

Results not directly relevant to the hypothesis are presented in this section. These findings are presented in three separate tables: 1) additional results comparing normals and schizophrenics; 2) additional results comparing high creative Ss with low creative Ss; and 3) results for measures of response creativity.

1) Comparison of normals and schizophrenics - Although no hypotheses were developed regarding differences in the amount of oscillation, or the degree of integration in

cognitive-synthetic functioning, these data are presented in Table 8. No form of the oscillation measure was successful in differentiating schizophrenic from normal Ss. However, three measures of the level of integration in cognitive-synthetic functioning significantly differentiated schizophrenics from normals, with normal Ss having higher levels of integration. As seen in Table 8, these values range from $p < .05$ to $p < .01$.

Table 8 Comparison of Normal(N) and Schizophrenic(S) Ss
on Measures of the Amount of Oscillation and the
Level of Integration in Cognitive-Synthetic
Functioning

Summary Score	F	Direction
<u>Oscillation (SC)</u>		
Sum SC(<u>prog</u>) plus (<u>reg</u>) (&)	0.2495	----
Sum SC(<u>progression</u>) (&)	0.0233	----
Sum SC(<u>regression</u>) (&)	0.6454	----
<u>Level of Integration in</u> <u>Cognitive-Synthetic</u> <u>Functioning</u>		
Sum Integrations(i)	1.2103	----
Sum Combinations (c)	7.0484***	N > S
Sum (i) plus (c)	5.3523*	N > S
Sum 2(i)plus (c)	4.3418*	N > S
(&) Score also corrected for total number of <u>primary</u> <u>process responses</u> , by analysis of covariance.		
#	$p < .10$	
*	Significant at $p < .05$	
**	Significant at $p < .025$	
***	Significant at $p < .01$	

2) Comparison of high creative Ss and low creative Ss - Although no specific hypotheses were formulated regarding differences in the degree of primary process intrusions, the amount of oscillation, or the degree of integration in cognitive-synthetic functioning, these data are presented in Table 9. With only two exceptions, the measures of primary process intrusion reflect that high creative Ss had higher levels of primary process intrusion than low creative Ss. Levels of significance range from $p < .05$ (for one variable) to $p < .01$ (for nine variables). On all measures of integration in cognitive-synthetic functioning, high creatives scored significantly higher than low creatives ($p < .025$ for one measure and $p < .01$ for three measures). None of the oscillation measures adequately differentiated the two groups.

Table 9 Comparison of High Creatives (HC) and Low Creative (LC) SS on Measures of the Degree of Primary Process Intrusion, the Amount of Oscillation, and the Level of Integration in Cognitive-Synthetic Functioning.

Summary Score	F	Direction
<u>Degree of Primary Process Intrusions</u>		
Total PPR	13.2334***	HC > LC
Total PPR Content	14.7456***	HC > LC
Total PPR Formal	10.3447***	HC > LC
Level 1 PPR	11.8615***	HC > LC
Level 1 Content	0.2074	----
Level 1 Formal	10.4739***	HC > LC
Level 2 PPR	10.2130***	HC > LC
Level 2 Content	12.7453***	HC > LC
Level 2 Formal	6.4249**	HC > LC
Density PPR	7.6524***	HC > LC
Density Level 1	4.0098*	HC > LC
Density Level 2	9.9527***	HC > LC
Defense Demand (&)	0.0330	----
<u>Oscillation (SC)</u>		
Sum SC(<u>prog</u>) plus (<u>reg</u>) (&)	0.0002	----
Sum SC(<u>progression</u>) (&)	0.0373	----
Sum SC(<u>regression</u>) (&)	0.0254	----
<u>Level of Integration in Cognitive-Synthetic Functioning</u>		
Sum Integrations(i)	5.5530**	HC > LC
Sum Combinations(c)	12.1366***	HC > LC
Sum (i) plus (c).	10.7842***	HC > LC
Sum 2 (i) plus (c)	9.7972***	HC > LC

(&) Score also corrected for total number of primary process responses, by analysis of covariance.

$p < .10$
 * Significant at $p < .05$
 ** Significant at $p < .025$
 *** Significant at $p < .01$

3) Results for measures of response creativity - Comparisons between groups on measures of response creativity are presented in Table 11. A comparison of normal and schizophrenic Ss revealed no significant differences between the groups on any of the measures of response creativity. On the other hand, one measure of response creativity (creativity for all responses) differentiated high creative Ss from low creative Ss ($p < .01$), with the high creatives showing greater response creativity than low creatives. The other measures of response creativity failed to differentiate the two groups. The possible reasons for this are discussed in the following section (Discussion).

High creative schizophrenics did not differ from high creative normals on any of the measures of response creativity. On the other hand, one measure of response creativity (creativity for all responses) differentiated high creative normals from low creative normals ($p < .01$), with the high creative normals showing greater response creativity than the low creative normals. Similarly, one measure of response creativity (creativity for all responses) differentiated high creative schizophrenics from low creative schizophrenics ($p < .05$), with the high creative schizophrenics showing greater response creativity than the low creative schizophrenics.

Table 10. Comparison of Groups on Measures of Response Creativity (Cr)

Summary Score	F	Direction
<u>Normal(N) vs.</u> <u>Schizophrenic(S)</u>		
Cr, Total R	0.0763	----
Cr, PPR (&)	0.0043	----
Cr, Level 1 (&)	0.2772	----
<u>High Creative(HC) vs.</u> <u>Low Creative(LC)</u>		
Cr, Total R	18,2439***	HC > LC
Cr, PPR (&)	1.6117	----
Cr, Level 1 (&)	0.5279	----
<u>High Creative Normal(HCN)</u> <u>vs. High Creative</u> <u>Schizophrenic(HCS)</u>		
Cr, Total R	0.1449	----
Cr, PPR (&)	0.0021	----
Cr, Level 1 (&)	0.4288	----
<u>High Creative Normal (HCN)</u> <u>vs. Low Creative Normal (LCN)</u>		
Cr, Total R	14.1958***	HCN > LCN
Cr, PPR (&)	0.2554	----
Cr, Level 1 (&)	1.0038	----
<u>High Creative Schizophrenic</u> <u>(HCS) vs. Low Creative</u> <u>Schizophrenic (LCS)</u>		
Cr, Total R	5.9654*	HCN > LCS
Cr, PPR (&)	2.7167	----
Cr, Level 1 (&)	0.0093	----

(&) Score also corrected for total number of primary process responses, by analysis of covariance

$p < .10$
 * Significant at $p < .05$
 ** Significant at $p < .025$
 *** Significant at $p < .01$

Summary of Results

The major findings presented in this section are summarized in Table 11.

1. Normals vs. Schizophrenics. Normals and schizophrenics did not differ in the frequency of primary process intrusions, although schizophrenics tended to give more blatant or intense primary process responses. However, normals showed higher levels of coping and defensive functioning, adaptive regression, and integration in their cognitive-synthetic functioning. The groups did not differ in amount of oscillation or in the degree of response creativity.

2. High Creatives vs. Low Creatives. High creatives had higher degrees of primary process intrusions, higher levels of coping and defensive functioning, higher adaptive regression, higher levels of integration in cognitive-synthetic functioning, and higher response creativity than low creatives. The groups did not differ in the amount of oscillation.

3. High Creative Normals vs. High Creative Schizophrenics.

The groups did not differ in the degree of primary process intrusions. However, the high creative normals had higher levels of coping and defensive functioning, higher adaptive regression, and higher integration in their cognitive-synthetic functioning, than the high creative schizophrenics. The groups did not differ in the amount of oscillation or in response creativity.

4. High Creative Normals vs. Low Creative Normals.

High creative normals had higher degrees of primary process intrusions, higher levels of coping and defensive functioning, higher levels of integration in cognitive-synthetic functioning, higher adaptive regression, and higher response creativity than low creative normals. The groups did not differ in the amount of oscillation.

5. High Creative Schizophrenics vs. Low Creative Schizophrenics. High creative schizophrenics had higher degrees of primary process intrusions (on approximately half of the measures), higher levels of coping and defensive functioning, higher adaptive regression, higher integration in cognitive-synthetic functioning, and higher response creativity than low creative schizophrenics. The groups did not differ in the amount of oscillation.

Table 11 Summary of Results

	N vs. S	HC vs. LC	HCN vs. HCS	HCN vs. LCN	HCS vs. LCS
<u>Degree of Primary Process Intrusions</u>	N=S*	HC > LC*	HCN=HCS	HCN > LCN	HCS > LCS*
<u>Level of Coping & Defensive Func- tioning</u>	N > S	HC > LC	HCN > HCS	HCN > LCN	HCS > LCS*
<u>Adaptive Regression vs. Maladaptive Regression</u>	N > S	HC > LC	HCN > HCS	HCN > LCN	HCS > LCS
<u>Oscillation</u>	N=S	HC=LC	HCN=HCS	HCN=LCN	HCS=LCS
<u>Level of Integra- tion in Cognitive- Synthetic Func- tioning</u>	N > S	HC > LC	HCN > HCS*	HCN > LCN	HCS=LCS
<u>Creativity</u>	N=S	HC > LC*	HCN=HCS	HCN > LCN*	HCS > LCS*

*With the qualifications noted earlier in this chapter
 N = Normal; S = Schizophrenic; HC = High Creative; LC = Low Creative;
 HCN = High Creative Normal; LCN = Low Creative Normal;
 HCS = High Creative Schizophrenic; LCS = Low Creative Schizophrenic

DISCUSSION

We now return to our original questions regarding the relationship between artistic creativity, normality and psychosis. The results presented in the preceding chapter provide answers to the questions raised at the outset. After a brief discussion of the findings regarding differences between normals and schizophrenics, and differences between high creatives and low creatives, there will be a discussion of the psychological functioning of the creative normal-how he is similar to and different from the creative schizophrenic and the uncreative normal. Finally there will be a discussion of the similarities and differences in psychological functioning between high creative and low creative schizophrenics. In the remainder of this chapter the term creative will be used to describe the high creative groups while the term uncreative will be used to describe the low creative groups.

Psychological Functioning of Normals and Schizophrenics

When the psychological functioning of Ss was examined without regard to the degree of creativity, some distinctive findings emerged. Contrary to expectation schizophrenics did not have higher degrees of primary process intrusions than normals. However, the schizophrenics were more blatant in their primary process intrusions, as was predicted.

This finding is in agreement with the results obtained by Hersch (1962) and Zukowsky (1961). However, this is in disagreement with the findings of Friedman (1952 & 1953), Hemmendinger (1953), Siegel (1953), and Silverman et. al. (1962) all of whom found greater evidence of regressive functioning in the schizophrenic group than among normals. The results in the present study are most probably attributable to the fact that the creative normals showed such a marked tendency to utilize regressive modes of functioning. In all likelihood a group of uncreative normals would show considerably less regressive functioning than a schizophrenic group. What this suggests, however, is that a definition of schizophrenia or psychosis can not be founded solely on the basis of the presence of primary process material or primary process modes of thinking. The presence of regressive modes of functioning can no more be a criterion for psychosis than the absence of regressive modes can be used as a criterion for mental health. Such thinking is, of course, very much in line with contemporary psychoanalytic theory. That is, it is not the presence or absence of instinctual derivatives and regressive modes of functioning, but rather the nature of ego functioning under these regressive conditions that determines the presence or absence of psychopathology. Exploring the measures of effective ego functioning (level of coping and defensive functioning,

adaptive regression, and level of integration in cognitive-synthetic functioning) we note that in all cases the normals have more effective levels of ego functioning. Thus it is not the presence or absence of "crazy" (i.e. primary process) material or modes of thinking that differentiates the normal from the schizophrenic. Rather, it is the degree of effective ego functioning during periods of regression that determines whether the regression is maladaptive (as in psychosis) or adaptive (as in the psychoanalytic theory of creativity). Thus the ability to maintain effective ego functioning even during periods of regression is one means to distinguish normal functioning from schizophrenic functioning. Next we will turn our attention to the nature of the psychological functioning of creative and uncreative individuals, regardless of their clinical status.

Psychological Functioning of Creative and Uncreative Individuals

When the psychological functioning of Ss was examined without regard to the presence or absence of schizophrenia, certain aspects of psychological functioning clearly differentiated creative from uncreative Ss. The creative group had strikingly higher degrees of primary process intrusions than the uncreative group. Regardless of clinical status, the creative individual appears to have the capacity to shift to regressive modes of functioning to a far greater extent than the uncreative person. Both in content and modes of

thinking, the creative person showed much higher degrees of primary process intrusions.

It is perhaps this particular feature of psychological functioning that has led to the historical connection between creativity and psychosis. By definition, primary process functioning is primitive, illogical, unconcerned with reality, and socially unacceptable. Thus it must seem to the psychologically unsophisticated observer that since both the schizophrenic and the creative person have greater conscious access to "crazy" (i.e. primary process) material and modes of thinking, they both must be "crazy".

We have seen that greater access to primary process material and primary process thinking is a characteristic which differentiates the creative individual from his uncreative counterpart, regardless of his clinical status. As noted above, however, access to primary process is a necessary condition for psychosis, but it is not, in and of itself sufficient to bring about a diagnosis of psychosis. There is more to psychosis than simply the presence of regressive modes of functioning. What is required is an additional assessment of ego functioning during these regressive shifts. It was noted earlier that adaptive regression is characterized by effective ego functioning during regression, while maladaptive regression was characterized by disrupted ego functioning. What then do we find when we examine the ego functioning of the creative individ-

ual?

Regardless of an individual's clinical status, the creative person consistently shows much higher levels of effective ego functioning. On all measures of adaptive ego functioning, the creative individuals scored higher than the uncreative ones. This was true for their psychological functioning whether they were operating at a primary process or secondary process level. That is at all levels of psychic functioning, the creative person's ego functioning is more effective.

We have said that regardless of one's clinical status (normal or psychotic) the ego functioning of the creative person appears to be more effective and more adaptive than the ego functioning of the uncreative individual. Does this discussion mean that creative schizophrenics are not really schizophrenic? Does the statement that creative individuals have more effective ego functioning mean that they can not still be psychotic? Of course not. Within the schizophrenic syndrome and within the limits of psychological functioning defined as normal there are, of course, relative degrees of harmony and disruption in ego functioning. At this point we only wish to note that the factor of creativity is significantly related to effective ego functioning.

In order to fully understand the psychological functioning of the creative normal, it is now necessary to discuss

precisely how he is similar to and different from the creative schizophrenic as well as how he is similar to and different from the uncreative normal. As will be seen, the creative normal is strikingly unique in his psychological functioning.

Psychological Functioning of the Creative Normal

Comparing the psychological functioning of the creative normal with that of the creative schizophrenic, enables us to understand why throughout history, people have assumed that creativity and psychosis were inextricably related. Creative normals do not differ at all from creative schizophrenics in terms of the degree of primary process intrusions. The creative normal shows a degree of regressive functioning which is indistinguishable from the regressive functioning of the creative schizophrenic. To the untrained observer it must indeed seem as though the creative normal is psychotic. Our previous review of theory, however, leads us to further analyze the nature of the regressive functioning. It is not sufficient to simply say that creative normals and creative schizophrenics both show equal degrees of regressive functioning. We must determine whether the nature of the regression is similar. If in fact the quality of the regression is the same in both cases, then we would of course conclude that the creative schizophrenic and the creative normal are essentially alike in their psychological function-

ing.

The heart of the issue centers upon the distinction between adaptive and maladaptive regression. In the introduction it was noted that adaptive regression differs from maladaptive regression in certain notable features. Among these, it was noted that: 1) unlike adaptive regression, which is under ego control, maladaptive regression reflects a loss of effective ego control: 2) whereas adaptive regression is characterized by an integrative phase-in addition to a regressive phase-, maladaptive regression fails to achieve a stable level of integration; and 3) adaptive regression promotes increased ego adaptation while maladaptive regression represents a defensive effort at attempting to reduce or control overwhelming anxiety.

Again it is the nature of an individual's ego functioning that tells the tale. On all measures of effective ego functioning (level of coping and defensive functioning, adaptive regression, and level of integration in cognitive-synthetic functioning) the creative normal is strikingly superior to the creative schizophrenic. In all respects, the regressive functioning of the creative normal is adaptive. On the other hand the wide disparity in levels of effective ego functioning would suggest that the creative schizophrenic's regressive functioning is far less adequately controlled. In fact it seems reasonable to conclude

that by comparison the regressive functioning of the creative schizophrenic is essentially maladaptive.

In summary, we find that the creative normal is similar to the creative schizophrenic in the degree of access to regressive modes of functioning. On the other hand he is strikingly different from the creative schizophrenic in that the ego functioning of the creative normal is vastly superior. This is in line with the findings of Hersch (1962). Hersch found that schizophrenics do not differ from creative normals in the degree of regressive perceptual functioning. The present study suggests that artists and schizophrenics are also similar in their degree of access to primary process material and modes of functioning. The present study indicates that the creative normal's ego functioning is vastly superior to that of the creative schizophrenic. This is also in line with the finding of Hersch that creative artists used more "mature" categories than did schizophrenics.

The above discussion enables us to understand the evolution of the notion that creativity and psychosis are necessarily related. It also enables us to understand that in the critical area of ego functioning, the creative normal and the creative schizophrenic are strikingly different in their psychological functioning. Both groups have similar access to regressive modes of functioning, but the regression observed in creative normals is an adaptive regression-solidly

under effective ego control. On the other hand, the regression observed in creative schizophrenics is under much less effective ego control and is, in essence, a maladaptive regression.

We have examined the manner in which the psychological functioning of the creative normal is similar and different from that of the creative schizophrenic. Now the question is raised as to how the psychological functioning of the creative normal compares with that of the uncreative normal.

Presumably there would be certain aspects of psychological functioning that differentiate the creative normal from his uncreative but normal counterpart. That is, in fact, the case. The creative normal shows a much higher degree of primary process intrusion than the uncreative normal. The creative normal has access to regressive modes of functioning to a degree that clearly differentiates him from the uncreative normal. The nature of primary process material and primary process thinking is such that it gives the impression of reflecting a certain degree of "craziness." Such a finding is very much in agreement with those of Roe (1960), Eideson (1958), Hersch (1962), and Myden (1960), but is discrepant with the results obtained by Cohen (1960). Cohen found that creative normals did not differ from uncreative normals in the amount or degree of primary process intrusion. This one discrepant finding may be the result

of the sample used by Cohen. All of his subjects were college art majors. This may have been such a highly select group that the distinction between creative and uncreative was not sufficient to reflect underlying differences in the degree of regressive functioning.

While the creative normal has been shown to possess more effective ego functioning than the creative schizophrenic, it is quite possible that the ego functioning of the creative normal is less adequate than that of the uncreative normal. That is, it is quite possible that the creative normal is somewhat more disturbed than the uncreative normal. A comparison of the effectiveness of ego functioning in each of the groups will provide the answer.

On all measures of effective ego functioning the creative normal is strikingly superior to the uncreative normal. That is, the regressive functioning is definitely adaptive. What is perhaps surprising is that the creative normals show a degree of effectiveness in ego functioning which surpasses that of uncreative normals. What this tells us is that the ego functioning of the creative normal is of a truly superior quality.

The creative normal is thus seen to be a truly unique individual. His psychological functioning is characterized not only by impressive degrees of access to regressive modes of functioning, but also by truly superior levels of effective ego functioning. Rather than being somewhere between schizophrenia and normality in his psychological functioning, the

creative normal functions at a level of ego integration which clearly exceeds that found in the uncreative normal. Such a finding is implied in the results of Eideson (1958), Hersch (1962), Myden (1960), and Cohen (1960), all of who found that the ego functioning of the creative normal is extremely effective and adaptive. Similarly, Barron (1963) and MacKinnon (1962, 1965) have found that the ego functioning of the creative normal is of a uniquely high quality.

We have seen that the creative person is unique in his psychological functioning. We might wonder what it is that enables the creative individual to function in such a fashion. Is it an initially strong ego that enables the person to function regressively? It is difficult to answer this question from the findings of the present study. However, it does not seem unreasonable to speculate that there is an intimate relationship between the ability to regress adaptively and the development of increased ego integration. The interplay of psychological functioning in adaptive regression ultimately serves the ego's function of adaptation. It is most probable that the regressive functioning observed in creative normals serves, in the long run, to increase the effectiveness of ego functioning. This flexibility of psychological functioning that characterizes the creative normal, tends to progressively serve the cause of adaptation. In contrast, the relative fixity of psychological

functioning observed in uncreative normals enables the individual to maintain an adequate level of ego integration, but prevents him from reaching closer to his ultimate potential. It is less anxiety-provoking to be rather fixed in one's functioning, but there is a price to be paid. Ego development tends to become stagnated and one tends not to continue developing toward their ultimate potential.

In the course of normal development, regressive modes of functioning must be necessarily repressed and subordinated to the more pressing demands for ego maturation and organization. Any genetically later attempt at regressive functioning is typically laden with a certain degree of anxiety. If the individual's ego functioning is sufficiently secure, the person is able to tolerate the anxiety which accompanies such regressions. However, the individual with a less adequate ego organization tends to adhere rather strictly to secondary process modes of functioning.

The creative and uncreative normals are similar in that both have developed adequate levels of ego integration and organization. The creative normal probably differs from his uncreative counterpart in that he is able to better tolerate the anxiety that accompanies regressive functioning. This implies a more highly-developed level of ego organization.

It is proposed that adaptive regressive is a self-perpetuating and progressively-oriented style of psychologi-

cal functioning. That is, the individual who is able to tolerate anxiety and regress adaptively is able to develop increased effectiveness in ego functioning, and is regarded with a style of ego functioning which is adaptively superior. It is a self-reinforcing process so that the individual is able to repeatedly regress adaptively, each time gaining greater mastery and integration in his ego functioning. The creative normal has the courage to explore a world that his uncreative counterpart has been content to leave repressed. The reward for such efforts is a greater realization of one's ultimate potential.

In what remains, we will briefly discuss the similarities and differences in psychological functioning of creative and uncreative schizophrenics.

Psychological Functioning of Creative and Uncreative Schizophrenics

The present study was designed so as to also examine the psychological functioning of creative and uncreative schizophrenics. It was noted earlier that Kris has hypothesized that creative activity among psychotics represents an attempt to recathect objects in the external world and thus stave off progressive regression and withdrawal from the object world. He views this activity as representing a restitutive effort by still intact ego functions. In the present study, it was hypothesized that the creative schizophrenic would not differ greatly from the uncreative

schizophrenic in the degree of primary process intrusions, but that the creative schizophrenic would show more adequate levels of ego functioning than the uncreative schizophrenic. Somewhat contrary to expectation, the creative schizophrenics had a higher degree of primary process intrusions on some of the measures. In general, the creative schizophrenics had more Level 2 (less primary or less blatant) primary process responses. This might possibly be a reflection of a somewhat better control over the schizophrenic regression. Such an interpretation is given strong support when one examines the various measures of effective ego functioning. The creative schizophrenics score much higher on most measures of effective ego functioning than the uncreative schizophrenics. Such a finding implies that the creative schizophrenic is in many ways functioning at a more adequate level than the uncreative schizophrenic, even though both are clearly schizophrenic. As noted earlier, Kris' theoretical formulations are a major rationale for art therapy. Encouraging the patient's attempts to re-establish reality contact via his artistic productions is one means of therapeutically dealing with the schizophrenic regression. The present findings would suggest that this rationale is quite justified.

At this point it is necessary to discuss certain measures in the Holt system which did not satisfactorily differentiate the various groups. The various measures of oscilla-

tion (Sequence Change) did not differentiate the various groups at all. The proposed definition of adaptive regression stated that part of the process involved a shifting from one level of psychic functioning to another (either from primary process to secondary process, or vice-versa). Does the failure of this measure mean that the original definition of adaptive regression needs to be modified? Probably not. This measure is probably too highly differentiated to adequately measure the process of oscillation as it is conceived of in adaptive regression. In all likelihood oscillation is more adequately defined by its gross characteristics. That is, the measures of effectiveness of ego functioning reflect whether the regression is adaptive or maladaptive. A simple numerical counting of shifts in level of psychic functioning is perhaps a conceptually inappropriate way to measure oscillation. At any rate, the fact that the creative normals are not schizophrenic implies that they do not simply function continually at a regressed level. That they are able to carry on effectively is testimony to the fact that oscillation does in fact occur. In other words, it appears that the sequence change variable is of such a narrow band that we tend to miss the forest by attending too carefully to the individual trees.

Also a word is in order regarding the measures of response creativity. The measure of response creativity for all responses combined did adequately differentiate between

creative and uncreative individuals. However, the measures for response creativity among primary process responses were unsuccessful in differentiating creative from uncreative individuals. It is felt that the measures of response creativity are basically very sensitive and valid measures. In the present study their failure to strongly differentiate the various groups is probably due to some contradiction in the instructions contained in the manual. Subsequent communications with Holt have clarified the confusion, but by this time all of the protocols were scored. The conventions used for scoring response creativity in the present study turn out, in retrospect, to have been rather unfortunate, in some respects. It is felt that were the protocols to be rescored with the new criteria, the measures of response creativity would differentiate creative from uncreative Ss to a highly significant degree.

In general, the Holt system has proven to be an extremely valuable research instrument. The system, in spite of its complexity, can be reliably scored. In addition it has shown itself to be an extremely useful instrument for testing the psychoanalytic theory of creativity. It has successfully differentiated creative normals from creative schizophrenics as well as from uncreative normals. This by itself testifies as to its great usefulness. However, the potential application of the Holt system is not limited to the study of creativity. It lends itself admirably

to studying a vast array of psychological issues. Numerous hypotheses derived from psychoanalysis and particularly ego psychology can be readily tested using the Holt manual.

In addition various studies of ego functioning in various clinical and non-clinical syndromes can be readily accomplished with this scoring system.

Summary and Integration of Findings

The present study set out to explore the relationships between artistic creativity, normality, and psychosis. The results have been of considerable interest. In comparing normal and schizophrenic Ss (regardless of degree of creativity), it was found that the two groups could be best differentiated by the effectiveness of their ego functioning. The normals, as expected, showed much higher levels of effective ego functioning. In comparing creative and uncreative Ss (regardless of their clinical status) it was found that creative individuals had much greater access to regressive modes of functioning and in addition manifested much higher levels of effective ego functioning. The major focus of the study was upon the nature of psychological functioning in the creative normal. It was found that the creative normal's style of psychological functioning is strikingly unique. He is similar to the creative schizophrenic in that he has a high degree of access to regressive modes of functioning. He differs profoundly from the creative schizophrenic in that the creative normal's ego func-

tioning is much more effective and adaptive. The creative normal also differs from the uncreative normal in several notable ways. The creative normal has much greater access to regressive modes of functioning than does the uncreative normal. He also evidences even more effective ego functioning than the uncreative normal. It was thus demonstrated that the creative normal is a strikingly unique individual whose psychological functioning is characterized by great flexibility and effectiveness. The functioning of creative and uncreative schizophrenics was also studied and it was found that the ego functioning of creative schizophrenics is more effective than that of the uncreative schizophrenic.

Implications for Future Research

Some possible further research applications of the Holt system have already been discussed. In this section, however, we will direct our attention to some possible further studies using the Holt system to explore aspects of creativity. One possibility is to conduct the identical study with an adult sample which includes artists who are nationally recognized for their creative abilities. Presumably the findings should be quite similar since the major personality structures involved are already quite well formed by adolescence. However, in terms of increasing the validity of the present findings it would be nice to have an actual sample of artists who are widely recognized as creative. Another study might involve a more thorough analysis of the data obtained in the present study. There are a large number of individual scores con-

tained in the Holt system and it would be quite interesting to examine their distribution within the sample. Such a study might help to more specifically detail the exact nature of regressive functioning and ego functioning within the various sample groups. It is also possible that with sufficient refinement, the Holt system can be used to predict certain types of creative potential.

SUMMARY

Using the theoretical framework of psychoanalysis, the present study undertook to explore the relationship between artistic creativity, normality, and psychosis. Of particular interest was the widely-held notion that creative functioning necessarily implies psychotic functioning. Hypotheses were proposed which postulated certain similarities and differences in the psychological functioning of the creative normal, as compared to the psychological functioning of both the uncreative normal and the creative schizophrenic. In addition the psychological functioning of the creative and uncreative schizophrenic were studied.

The Ss consisted of thirty normals and thirty inpatient schizophrenics. All Ss were currently engaged in painting or some closely related form of visual art. Within each group, Ss were ranked for the degree of creativity reflected in their artistic productions. Independent judgments by three professional artists yielded rank-order correlations ranging from .81 to .98, all of which are significant at $p < .01$. Both the schizophrenic and normal groups were then further subdivided into a high creative group (the ten top-ranked Ss) and a low creative group (the ten bottom-ranked Ss). The resulting four groups did not differ as to age, educational level, amount of previous art training, or socio-economic level. The distribution of sexes was the same in all four groups. Similarly the schizophrenic groups

did not differ in the number of previous hospitalizations or the proportion of diagnostic subtypes within a group.

Rorschach were administered to the forty Ss and scored according to the tenth edition of the Holt (1968) manual for scoring primary process manifestations. The Holt manual provides operationalized measures of such psychoanalytic constructs as the degree of primary process intrusion, the level of effective coping and defensive ego functioning, adaptive regression, and the degree of integration in cognitive-synthetic functioning. Interjudge reliability for scoring of the Holt system yielded a product moment correlation of .89, which is significant at $p < .01$.

The findings are of considerable interest. In comparing normal and schizophrenic Ss (regardless of degree of creativity) it was found that the two groups could be best differentiated by the effectiveness of their ego functioning. The normals, as expected, showed much higher levels of effective ego functioning. In comparing creative and uncreative Ss (regardless of their clinical status) it was found that creative individuals had much greater access to regressive modes of functioning, and in addition, manifested much higher levels of effective ego functioning. The major focus of the study was upon the nature of psychological functioning in the creative normal. It was found that the creative normal's style of psychological functioning is strikingly unique. He is similar to the creative schizo-

phrenic in that he has a high degree of access to regressive modes of functioning. He differs profoundly from the creative schizophrenic in that the creative normal's ego functioning is much more effective and adaptive. The creative normal also differs from the uncreative normal in several ways. The creative normal has much greater access to regressive modes of functioning than does the uncreative normal. He also evidences even more effective ego functioning than the uncreative normal. It was thus demonstrated that the creative normal is a strikingly unique individual whose psychological functioning is characterized by great flexibility and effectiveness. The functioning of creative and uncreative schizophrenics was also studied and it was found that the ego functioning of creative schizophrenics is more effective than that of the uncreative schizophrenic. The various oscillation measures did not yield significant differences between the groups.

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APPENDICES

APPENDIX A

Listing of All Scores Contained in the Holt Manual for Primary Process Scores, the Defense Demand (DD) is Also Presented

Primary Process Categories

CONTENT CATEGORIES

<u>L. Libidinal</u>	DD	
L10	2,3	Oral, Level 1
L10-Ag	2-4	Oral-Aggressive, Level 1
L1A	3,4	Anal, Level 1
L1S	4	Sexual, Level 1
L1E-V	3	Exhibitionistic-voyeuristic, Level 1
L1H	4,5	Homosexual, Level 1
L1M	3,4	Miscellaneous libidinal, Level 1
L20	1-3	Oral, Level 2
L20-Ag	2,3	Oral-Aggressive, Level 2
L2A	1-3	Anal, Level 2
L2S	1-3	Sexual, Level 2
L2 E-V	1-3	Exhibitionistic-voyeuristic, Level 2
L2H	2,3	Homosexual, Level 2
L2M	1-3	Miscellaneous libidinal, Level 2
<u>Ag. Aggressive</u>		
Ag1S	3-5	Sadistic Aggression, Level 1
Ag10b	3-5	Masochistic ("Object") Aggression, Level 1
Ag1R	3-5	Results of Aggression, Level 1
Ag2S	2,3	"Subject" Aggression, Level 2
Ag20b	1-3	"Object" Aggression, Level 2
Ag2R	1-3	Results of Aggression, Level 2

FORMAL CATEGORIES

<u>C. Condensation</u>		
C-ctm 1	4,5	Fusion of Two Separate Percepts (Contamination)
C-ctgn 1	4	Contagion, Level 1
C-int 1	3	Interpenetration (Partial Fusion), Level 1

APPENDIX A (continued)

C. Condensation (continued)

C-co 1	3,4	Composition, Level 1
C-co 2	1,2	Composition, Level 2
C-a-c 2	2,3	Arbitrary Combination of Separate Percepts
C-arb 1	1-3	Arbitrary Combination of Color and Form, Level 1
C-arb 2	1	Rationalized Arbitrary Color

D. Displacement

D-chain 1	4	Chain Association, Level 1
D-dist 2	3	Distant Association, Level 2
D-Clang 1	4	Clang Association, Level 1
D-fig 2	2,3	Figures of Speech, Level 2
D-time 2	2	Displacement in Time (Ana- chronism), Level 2

Sym. Explicit Symbolism

Sym-C1	3	Color or Shading Symbolism, Idiosyncratic, Level 1
Sym-C2	1	Color and Shading Symbolism, Conventional, Level 2
Sym-S1	3	Spatial Symbolism
Sym-I1	3	Image Symbolism, Idiosyn- cratic, Level 1
Sym-I2	1	Image Symbolism, Conventional, Level 2

Ctr. Contradiction

Ctr A1	4	Affective Contradiction
Ctr L1	4	Logical Contradiction
Ctr R1	3,4	Contradiction of Reality (Deliberate Molding)
Ctr R2	2,3	Contradiction of Reality (Inappropriateness)

Miscellaneous Distortions of Thought and Perception

Au Lg 1	4,5	Autistic Logic, Level 1
M L 1	4	Memory Loosening, Level 1
Intr 1	3	Intrusion of Irrelevancy, Level 1
Impr 2	1,2	Impressionistic Response, Level 2
Do 2	1	Fragmentation (Do Response), Level 2

APPENDIX A (continued)

Miscellaneous Distortions of Thought and Perception

Un Rel 1	3,4	Unrealistic Relationships, Level 1
Trans 1	3	Fluid Transformation of Percept, Level 1
S-R 1	3	Self-Reference (Magical), Level 1
Au El 1	4	Autistic Elaboration, Level 1
Au El 2	3	Autistic Elaboration, Level 2
F-msc 1	3,4	Miscellaneous Formal Deviations, Level 1
F-msc 2	2,3	Miscellaneous Formal Deviations, Level 2

V. Verbalization Scores

V11	5	Verbal Incoherence, Level 1
VC1	4	Verbal Condensation, Level 1
VQ1	4	Queer Verbalization, Level 1
VP2	3	Peculiar Verbalization, Level 2
VS2	2	Verbal Slips, Level 2

CONTROL AND DEFENSE CATEGORIES

R. Remoteness

R-min	Minimal Remoteness
R-eth	Remoteness in Person-Ethnic
R-an	Remoteness in Person-Animal (ego-Syntonic)
R-(an)	Remoteness in Person-Animal (ego-alien)
R-pl	Remoteness in Person-Plan
R-ia	Remoteness in Person-Inanimate
R-dep+	Remoteness-Depiction
R-geo+	Remoteness-Geographic
R-time+, time	Remoteness in Time
R-fic s+, s, s-	Reference to Specific Fictional Character, etc.
R-fic n+, n, n-	Remoteness, Fictional, Nonspecific Character, etc.
R-rel+, rel, rel-	Use of Religious Character or Context
R-fan+, fan, fan-	Characters or Context from Dream or Explicit Fantasy
F-fig+, fig, fig-	Figurative Remoteness (Figures of Speech)
R-cond	Remoteness--Conditional

APPENDIX A (continued)

Cx. Context

Cx C+, C, C-	Cultural Context
Cx E+, E, E-	Esthetic Context
Cx I+, I, I-	Intellectual Context
Cx H+, H, H-	Humorous Context (and Pathos)

Refl. Reflection

Refl+, Refl	Reflection on Response (Introspective of Self-Critical)
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Postponing Strategies

Del	Delay
Blkg-	Blocking

Miscellaneous (Mostly Pathological) Defenses

Eu	Euphemism
Mod+	Adaptive Modification of Response toward Secpro
Ratn+, Ratn	Rationalization
Neg+, Neg	Negation
Minz+, Minz	Minimization
Chpb-	Counterphobic Defense
Self-D-	Self-Deprecation
Rep-	Repudiation or Disavowal of a Response
Va-	Vagueness of Percept or Communication
Pri-	Projection (of Responsibility; Paranoid Rage)
Obs-	Obsessional Defenses
Iso-	Isolation
Eva-	Evasiveness and Avoidance
Imp-	Impotence

S. Sequence

S C 1-0	Sequence--Change from Level 1 to Unscorable
S C 2-0	Sequence--Change from Level 2 to Unscorable
S C 1-2	Sequence--Change from Level 1 to Level 2

APPENDIX A (continued)

O. Overtness

O-beh	Overtness--Behavioral
O-vbl	Overtness--Verbal
O-exp	Overtness--Experiential
O-pot	Overtness--Potential

X. No control (record to distinguish lack of control from failure to score)

OVERALL RATINGS OF TOTAL RESPONSE

FL	Form Level Scoring
c, i	Combinations and Integrations
Cr	Creativeness and Originality
DD	Demand for Defense
DE	Effectiveness of Defense

APPENDIX B

Form Level Scoring Categories

The first column on the scoring sheet after the identification of response by card and number is for the form level symbol, which must be given to each response. We follow the system developed by Mayman out of proposals by Rapaport (1968). It is fully presented in an appended manual by Mayman and Holt, but the following set of brief definitions may be helpful.

The column at the left presents numerical equivalents, which may be used to derive an overall quantitative summary score for Form Level. All scores with numbers less than 5 may be regarded as R-secpo.

<u>Rating</u>	<u>FL</u>	
7	F+	Sharp, convincing forms, easily seen by E.
6	Fo	Popular and near-popular forms; fixed list in manual.
5	Fw+	Reasonably plausible, but not terribly convincing forms; takes a little stretching to see.
4	Fw-	Forms that bear only a slight resemblance to the blot area; not very plausible, or based on only one point of resemblance.
1	F-	Arbitrary forms, very little or no resemblance.
5	Fv+	Vague forms that fit the blot quite well (see Mayman, p. 24n.), and non-definitive form combined with appropriate use of color or shading; good CF, ChF, C'F, or (C)F responses ('fire'; 'flowers'; 'dark clouds'; 'splashing water'; 'ink stain, running down a water color.')
4	Fv	Vague forms with no other determinant or forced use thereof (as in C/F or CFarb): 'clouds'; 'islands'; 'cave mouth'; 'piece of dough.'
3	Fa	Amorphous responses, in which form plays no role (and could not, by the nature of the concept). Usually pure C, C' or Ch. 'Sky'; 'water'; 'night'; 'spring' (and other abstract concepts); 'urine' (but 'wine stain' seen as having some sort of

APPENDIX B (continued)

RatingFL

shape, Fv+; likewise, 'blood' may be Fa but is usually Fv+).

2

Fs

Spoiled form responses, to be used when the subject gives what is basically a familiar and good response (Which would have been scored Fo or F+) but introduces some specification that has the effect of markedly lowering the acceptability of the response as a whole.

APPENDIX C

Listing of means for the four experimental groups
on those summary scores for which there is a
significant interaction effect

Summary Score	Signif- icance Level	HCN	LCN	HCS	LCS
<u>Degree of Primary Process Intrusions</u>					
Total PPR	**	23.13	13.29	19.67	17.26
Total PPR Content	#	15.21	8.50	13.62	11.11
Total PPR Formal	**	18.45	7.66	13.67	11.43
Level 1 PPR	***	12.52	4.15	9.07	7.85
Level 1 Content	N.S.	-	-	-	-
Level 1 Formal	***	12.45	3.99	8.00	7.15
Level 2 PPR	N.S.	-	-	-	-
Level 2 Content	#	14.95	8.34	12.53	9.98
Level 2 Formal	N.S.	-	-	-	-
Density PPR	#	55.45	20.14	42.82	34.04
Density Level 1	*	18.79	4.80	12.72	12.84
Density Level 2	#	39.52	15.42	30.23	22.27
Defense Demand(&)	N.S.	-	-	-	-
<u>Level of Coping & Defensive Functioning</u>					
Form Level, Total R	#	162.0	146.5	147.1	146.1
Form Level, PPR(&)	N.S.	-	-	-	-
Form Level, Level 1(&)	N.S.	-	-	-	-
Defense Effectiveness(&)	**	27.22	12.08	9.14	3.46
DE, Level 1(&)	***	14.82	2.15	2.77	-1.83
(continued on next page)					

(&) Score also corrected for total number of primary
process responses, by analysis of covariance

$p < .10$
 * Significant at $p < .05$
 ** Significant at $p < .025$
 *** Significant at $p < .01$

APPENDIX C (continued)

Summary Score	Signifi- cance Level	HCN	LCN	HCS	LCS
<u>Adaptive Regression vs. Maladaptive Regression</u>					
ARS (&)	N.S.	-	-	-	-
<u>Oscillation (SC)</u>					
Sum SC (prog) plus (reg) (&)	N.S.	-	-	-	-
Sum SC (progression) (&)	N.S.	-	-	-	-
Sum SC (regression) (&)	N.S.	-	-	-	-
<u>Level of Integration in Cognitive-Synthetic Functioning</u>					
Sum Integrations (i)	#	1.47	0.13	0.58	0.32
Sum Combinations (c)	#	6.83	2.04	2.98	1.15
Sum (i) plus (c)	#	8.29	2.18	3.56	1.47
Sum 2(i) plus (c)	#	9.76	2.31	4.14	1.78
<u>Creativity (Cr)</u>					
Cr, Total R	N.S.	-	-	-	-
Cr, PPR (&)	N.S.	-	-	-	-
Cr, Level 1 (&)	N.S.	-	-	-	-

(&) Score also corrected for total number of primary process responses, by analysis of covariance.

$p < .10$
 * Significant at $p < .05$
 ** Significant at $p < .025$
 *** Significant at $p < .01$

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