AN INVESTIGATION OF FUTURE TIME PERSPECTIVE IN SCHIZOPHRENIA

Thesis for the Degree of Ph. D.

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Melvin Wallace

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This is to certify that the

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Albert J. Rabin
Major professor

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AN INVESTIGATION OF THE CONCEPT OF FUTURE TIME PERSPECTIVE IN SCHIZOPHRENIA

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A THESIS

Submitted to the School of Graduate Studies of Michigan State College of Agriculture and Applied Science in partial fulfillment of the requirements for the degree of

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AN ABSTRACT

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This study was concerned with an investigation of two aspects of the concept of "future time perspective", "extension" and "coherence". The specific hypotheses regarding these variables that were examined in the present research were:

(1) When schizophrenics are compared to normals, significant differences in "extension" will be found between these groups.

(2) When schizophrenics are compared to normals significant differences in "coherence" will be found between these groups.

One sample of 34 patients, diagnosed as schizophrenic, and a group of 34 patients at a general medical and surgical hospital were given three tasks which involved: (1) the spontaneous, and the later, a forced ordering of a series of ten future events (Task I); (2) four stories in response to verbal instructions which included the beginning of each story (Task II); and (3) estimates of the age of occurrence of 15 future events, supplied by the examiner, which were later placed in order of expected occurrence (Task III).

The results obtained on the basis of a comparison between the experimental and control groups by use of a non-parametric procedure, the H-test, indicate that (a) on all measures except those found on Stories 1 and 2 of Task II, the scores on both the "extension" and "coherence" variables presented by the schizophrenic group were significantly different than the corresponding scores of the control group, and (b) on all tasks, including those which reveal a lack of significant difference, the median score of the control group was larger than that of the experimental sample.

Additional non-hypothesized findings included: (a) the performance of a sample of "long-term" schizophrenic patients did not deviate to any significant extent from that of a "short-term" schizophrenic group on either variable, except on Task I when one measure of "coherence" was derived, (b) normals and schizophrenics do not differ significantly with regard to measures of correlation which refer to the degree of relationship between the spontaneous sequence of a series of future events and the actual chronological order of these events, and (c) correlations between the spontaneous sequence of the presented series of future events and a forced chronological ordering revealed statistically significant intergroup differences.

The obtained results, for the most part, confirmed predictions which were derived from the following general hypothesis: "future time perspective" is significantly affected by psychopathological disturbances. The lack of significant findings in connection with Stories 1 and 2 of Task II was interpreted on the basis of the fact these two experimental procedures, in contrast to Stories 3 and 4, were highly structured, and presumably relatively free of threat, thus allowing the particular schizophrenic subjects under investigation to function optimally.

In general then it may be stated that "future time perspective", in its "extension" and "coherence" aspects, is influenced by the schizophrenic process to such an extent that both the length of the future time span, and the degree of organization of its contents, are significantly reduced for a sample of schizophrenic patients as compared to a group of normal controls. Further research, involving longitudinal studies and the

investigation of other nosological groups, is needed before a final evaluation may be made of the role of "future time perspective" in both "normal" and abnormal personality functioning.

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TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

In recent years one phase of psychological research has been devoted to attempts to investigate phenomena related to temporal experience, especially in terms of their relevance to personality functioning. Many of the reports in connection with this topic stem from empirical studies of relatively normal individuals, such as college students (18, 19). Other contributions to this area include formulations regarding the purpose and role of temporal concepts in everyday experience and discussions of time perspective (31, 32, 37, 39, 41, 42). Still a third series of pertinent references is to be found in several accounts of temporal disturbances in psychopathological conditions (e.g. 4, 21, 41, 42).

In spite of this sizable number of studies concerning the role of temporal experience in psychological functioning, many questions with regard to the precise nature of the phenomena involved are yet to be answered. To some extent such a state of affairs seems to be attributable to the following factors: (1) many of the published accounts of research in this area are descriptive in nature, and merely note the manner in which temporal concepts are utilized; (2) other investigations, which do represent systematic attempts to integrate new findings into existing personality theories have been few in number or wholly within the realm of speculation; (3) since the views presented, with but few exceptions, are based upon results obtained with relatively small samples, the general

applicability of the results obtained may be questioned; and (4) definitions of the concept of the future as a psychological datum have been ambiguous and non-specific.

In the present research an attempt has been made to eliminate, or at least to minimize, some of the weaknesses that have been outlined above. In the first place, one specific temporal concept, "future time perspective", has been selected for special attention. It will be defined as the timing and ordering of personalized future events. Secondly, both psychoanalytic and other contemporary views related to this topic will be discussed, with a view toward proposing a first approximation of an integrated theoretical account which might explain the relation of "future time perspective" to mental disorder. On the basis of this theoretical position, hypotheses concerning the relationship of "future time perspective" to level of personality adjustment, and a methodology for their systematic investigation, will be proposed. It is felt that such an approach, in which theory and experimentation are allied through a deductive process, may provide a basis for shedding new light on the significance of the role of the future in both normal and abnormal personality functioning. Before proceeding to a consideration of the present research, however, a review will be presented of the pertinent psychological literature related to the topic of temporal factors in personality functioning.

TEMPORAL FACTORS AND PERSONALITY (REVIEW)

General Considerations

The role of temporal experience in psychological functioning has long been the subject of speculation and empirical investigation. Many topics in this area have been studied, especially within the last few decades. One recent emphasis, for example, involves what has been termed *time sense* (6, 9, 10, 11, 14, 57), which, for most writers, refers to almost all types of time experience. *Time orientation* has also been discussed (13, 50), usually with reference to the accuracy with which objective time concepts are ascertained. Another focus of interest has been the analysis of the phenomena involved in the *perception of short intervals of time* under specific conditions, such as hypnotic states (10, 11) and dreams (1, 31) or in connection with problems involving, for example, the immediate present (13) and interpretive learning (50). References to these and similar topics are to be found in theoretical discussions involving not only the development of temporal notions but also the relationship of such concepts to personality growth and functioning. It is to a consideration of such views that the following subsections are devoted.

General Notions of Time and Personality Development

Theoretically-oriented psychodynamic views. The relationship of early infantile experience to both personality development and the acquisition

of the time concept is implicitly referred to in the writings of several psychoanalysts (6, 13, 52, 58). Although not concerned with this problem directly, Freud himself suggested that the notion of time was derived from the manner in which the Perceptual-Conscious system functioned (26, 27). For Freud, this system was the medium through which impulses passed to cathected external objects, and stimulation from the outside world returned. When these cathexes were withdrawn, however, breaks in the continuity of this dynamic process occurred, leading oft n times to a complete absence of functioning. Such discontinuities in the passage of impulses between the external world and unconscious perceptual systems lay "at the bottom of the origin of the concept of time" (26, p.100).

Although this formulation is by no means explicit with regard to the development of the time notion, it does imply that the time concept is not innately given but develops as a result of the inter-play between a perceptual mode of mental functioning and contact with the external world. Moreover, Freud's view appears to suggest that the time notion is not developed from a single withdrawal of a cathected impulse but from many such withdrawals, extending over a relatively long period. Freud's position with regard to the notion of temporality, then, appears to imply a gradual process which is strongly dependent upon the influence of perceptual factors.

In discussing a similar point of view with regard to the acquisition of temporal concepts, other psychoanalysts have attempted to relate the emergence of such concepts to the theory of psycho-sexual development.

In most of these reports, interest is centered upon the phases of psychosexual development at which time notions emerge. Yates (66), for example, implies that the initial development of the appreciation of time occurs at the oral level, since it is at this period that patterns of body rhythm become closely associated with periodic satisfactions of bodily needs, especially those related to hunger. Fenichel (21) and others (3, 19), however, focus upon the anal phase of development as primary, and note the acquisition of the time sense. Other psychoanalysts, (6, 46) on the other hand, consider later phases of development to be more significant in this process.

Despite such differences in emphasis, the reports cited above, and others (e.g. 30), maintain that experiences at all levels of psychosexual development markedly influence the "time sense". Although earlier psychosexual levels may be stressed as basic to the emergence of the concept of time, more advanced developmental levels are also considered to be significant in shaping and modifying the course of its evolvement.

All of the above views are characterized by the fact that Freud's concepts of personality development are utilized to describe the evolution of notions of temporality. Consequently, at least by implication, there would appear to be some basis for the speculation that the appearance of temporal concepts is related to various levels of personality development, at least as they are conceptualized in psychoanalytic formulations.

Empirical views. Other, non-Freudian investigations of the maturation of notions of temporality (e.g. 2, 29), based upon extensive empirical

data, are essentially in agreement with the theoretical position outlined in the previous paragraphs. Piaget, for example, quoted in (30), suggests that the earliest experience of time stems from a sensory-motor cognition of the waiting period between feedings, a view which is similar to that of Yates (66), quoted above. The child's egocentricity and his relatively poor resources for differentiating clearly between the external world and himself, Piaget maintains, interfere with the development of objective concepts of time. As this early phase is outgrown, such concepts begin to emerge although they are not verbalized until the age of four. During this silent period, however, the ability to extend the idea of time into both the past and future continues to develop. When egocentricity starts to diminish during the seventh year, the child begins to reflect upon his notions of temporality, and to compare them with the temporal notions of others. With added experience, modifications occur, and concepts are acquired which are more socialized, and thus, more adequate.

Other investigators, however, tend to disagree with Piaget's formulation of the age of maturation of the time notion. Oakden and Sturt (52), for example, find that the child has little ability to conceive of the continuity and development of time until the age of eleven. According to these writers, the adult concept of time does not fully mature until the thirteenth or fourteenth year. Bromberg (7) also points out that the time concept develops late in childhood, not before the age of ten or twelve. Children first understand time as being

numbers on a clock, daily occurrences, etc., until finally the adult notion of time is attained.

A lack of agreement is also noted in many studies of the evolution of specific temporal concepts of past, present, and future. Ames (2) found that such temporal notions "come into use in a relatively uniform sequence from child to child and at about the same relative time in the life of every child", a view also advocated by Bromberg (7). An analysis of data from direct observation and questionnaires revealed that between the age of eighteen to twenty-four months the child lives predominantly in the present even though some ability to project into the future may be developed during this period. From 2 to 3 years of age the child begins to utilize the concepts of past, present, and future in his verbalizations, but with a greater emphasis upon the future than on the past. An increase in the number of references to these time divisions occurs between age 3 and age 4, but this period is also accompanied by some confusion between future and past activities. Nonetheless, Ames reports, this age brings with it a much greater projection into the future. At age five, the days of the week are used appropriately. At six the four seasons are understood. The concept of the month is known at age seven, and by age eight, even extremes of the time span can be handled adequately.

A somewhat different set of results is reported in a study by Friedman (29). In testing 697 children in elementary school (including kindergarten pupils), this experimenter utilized a technique which was

composed of twelve events. Each event was to be placed in one of four categories: a long time ago; a short time ago; a short time to come; and a long time to come. It was found that the older pupils (grades four through six) showed a great improvement over the younger pupils in the ability to understand these indefinite concepts. On the basis of his findings, Friedman concluded:

> There is not so much logic in the child's thinking concerning the future as in his thinking concerning the past. The child lives in the present and his experiences have occurred in the past. Building up a perspective about the future requires more development . . . The idea of tomorrow appears to be less definite than is the concept of yesterday (29, p.340).

An investigation of the time perspectives of eight-year old children led Eson (17) to a somewhat similar conclusion. According to this writer, the child of eight is primarily concerned with the present, and projects into the future only on those few occasions when he is stimulated to anticipate a future event. His conception of the past is also fairly restricted, being limited to those experiences which he has had, but whose consequences are still pending. Eson also investigated that he termed "temporal emphasis" or the stress given to the past and the future in the thoughts and conversations of his subjects. Seven groups representing five different age ranges were studied. The sample included two groups of ten-year-olds, one composed of males, the other females; two groups of sixteen-year-olds, again one group of each sex; one group of twenty-five year old males; and one group of sixty-five year old males. Eson was interested in testing the hypothesis that the ranges of time perspective increase in the direction of both past and

future in fairly equal proportions with advance in age. The subjects were asked to list those items which they had thought about or spoken about during the two week period preceding the interview. An analysis of some of this data in terms of its past or future reference reveals that each of the groups placed a greater emphasis on the future than on the past.

Summary. An individual's concept of time emerges early in childhood and develops gradually. By the time a child is two or three years old, he has acquired a notion, more or less limited, of a past, a present, and a future time, but until the eighth year, the child is primarily concerned with his immediate present. The time concept, with ever widening past and future references, continues to develop through the thirteenth or fourteenth year when the adult concept first emerges.

It is to be noted that such a formulation gives precedence to the role of the early formative years in the acquisition of temporal notions. Therefore, emphasis is placed upon those periods which appear to be significant not only for the evolution of temporal concepts but also for the development of personality. It is to be seen that such a view is implied in the psychoanalytic reports cited previously. Moreover, it is of importance to note that Piaget's discussion of this general topic, quoted in (30), also implicitly points to a connection between the unfolding of temporal concepts and developmental changes in personality

functioning. A further developmental parallel is suggested by the consideration given, in the above formulations, to later phases of personality formation, such as the latency and post-adolescence periods, and the evolvement of temporal concepts. It may be seen, therefore, that the above views, although differing in emphasis, appear to be in favor of the hypothesis that the acquisition of time concepts may be related to the growth of personality.

FUTURE TIME PERSPECTIVE AND PERSONALITY DEVELOPMENT

In the previous pages an attempt was made to review some of the contributions to the literature regarding the acquisition of the concept of temporality and its relation to personality growth. It will be seen, in the following discussion, that several recent publications appear to be concerned with but one aspect of the time notion, "future time perspective". On the basis of a consideration of these views, an effort will be made to propose (1) a definition of "future time perspective" and (2) a theoretical formulation regarding not only its origin and evolvement but also its relation to the development of personality.

Related Views

According to several authors (e.g. 1, 32), the anticipation of future events plays an important role in day-to-day psychological functioning. In this connection, Bertrand Russell, quoted in (_) writes:

> The civilized man is distinguished from the savage mainly by prudence, or to use a slightly wider term, forethought. He is willing to endure present pains for the sake of future pleasures, even if future pleasures are rather distant . . . True forethought only arises when a man does something towards which no impulse urges him, because his reason tells him that he will profit by it at some future date. (p. 475)

A related point of view is to be found in a publication by Allport (1), who states: "Intelligent and perspicacious planning for the future is always a significant feature of any mature life." He cites Buhler's study of distinguished individuals and maintains that the lives of these people were well ordered and steered toward some selected goal.

In a similar, but somewhat more elaborate discussion of this topic, Heath (32) suggests that there is a strong trend in most individuals to emphasize and demarcate, as being more significant, those events which will occur in the future. In fact, an individual's conception of the latter part of his life, before it occurs, involves goals and anticipations and may therefore have a greater significance for him than the earlier part of his life which consists primarily of pleasant and unpleasant memories. Heath further suggests that man is much more aware of the future than he is of the present or the past.

The findings of several recent empirical investigations appear to be related to the views discussed in the preceding paragraphs. Israeli (35), for example, reported that the future was considered to be most important by a large group of college students who were examined by means of a questionnaire. In two other investigations, in which the concept of time perspective was being studied, Farber (16, 17) also utilized questionnaire techniques with college students as subjects. On the basis of the results obtained in these studies, it was concluded that an individual's current mood is more influenced by his "psychological

future time perspective" than the situation in which he finds himself. A similar conclusion is presented by Farber (20) in another research report concerned with morale in a group of prison inmates.

As was noted in the previous section, Lson (17) investigated the hypothesis that the range of time perspective increased in the direction of both past and future in fairly equal proportions with advance in age. An empirical test revealed that each of seven groups, representing five different age levels, placed more emphasis upon the future than the past.

In still another investigation pertaining to the role of the future in psychological functioning, Fink (21) studied time perspective in an institutionalized group of aged subjects. The techniques that were employed included a modification of Lson's methodology (in which references to the future and the past were noted in a list of topics presented by each subject) and a modified version of the Thematic Apperception Test. Fink concluded that an institutionalized group of aged patients demonstrated a time perspective which was more concerned with the past and less with the future than that found in a matched, non-institutionalized group.

The Meaning of Future Time Perspective

The theoretical views stated above tend to suggest that considerations of future events play a significant role in everyday psychological functioning. As has also been pointed out, this contention seems to be

supported by the findings obtained in several empirical investigations. On the basis of these results, it appears that one aspect of handling conceptions of the future may be termed "future time perspective". In the discussion to follow, a definition of this concept will be derived from a critical evaluation and reinterpretation of current accounts of notion of time perspective.

General views of time perspective. The Lewinian concept of time perspective has been the focus of several investigations. The reports of Eson (17) and Fink (23) in this regard have been cited. It may be remembered that the former writer was primarily concerned with "temporal emphasis" or the stress given in thought or conversation to the past and the future. Fink, on the other hand, focused upon the concept of time perspective, which he defined as "the psychological past, present, and future as they exist for and influence the individual". A related but somewhat modified view is given by Krech and Crutchfield (37) who suggest that time perspective is "the psychological past and future as they exist for and influence the individual at the present moment". In the original formulation by Lewin (41), time perspective referred to the "totality of an individual's views of his psychological past and psychological future existing at a given time".

For the most part, each of the previous conceptions of time perspective is logically derived and meaningful within its specific theoretical context. Nonetheless, all of these views present serious obstacles to research in the area of time perspectives. To a large extent, these

difficulties stem from the fact that the terms included in the above definitions are themselves in need of clarification and specification. Concepts such as "psychological past" and "psychological future", for example, are subject to many interpretations, and therefore, if included in their present form in empirical studies of time perspective, would tend to lend ambiguity to the obtained findings. If, prior to such investigations, suitable definitions of these and other pertinent concepts were provided, however, more clear-cut and meaningful results might be obtained. In passing, it is to be noted that an approach of this type necessarily tends to limit the comprehensiveness of any empirical approach to time perspective, for the precise meaning of the obtained results would be largely dependent upon the particular definitions chosen for the concepts involved.

Another obstacle in the way of adequate research in this area is the difficulty in selecting an appropriate methodology. To some extent the specific definitions chosen for any interrelated set of concepts would limit the types of methodological tools that might be employed in either a quantitative or qualitative investigation. Within the range of possible methods and techniques, however, the choice and utilization of any device or group of devices would in itself tend to restrict the meaning of the concept under study. As Pratt (55) has pointed out, any fact is a function of the method by which it is derived. Consequently, the results of any experimental study of time perspective would have to be evaluated in terms of the methods, as well as the specific set of

definitions, that were employed. Such considerations are especially appropriate in the present context, since the formulations of time perspective quoted above leave much to be desired in the way of adequate definition and pertinent methods of approach.

The definition of "future time perspective". At first glance the reports of Eson (17) and Fink (2), cited previously, appear to be investigations of time perspective. In light of the preceding considerations, however, a question may be raised as to whether Lewin's concept was studied by these researchers. An examination of the results reported suggests that what Fink and Eson actually were concerned with might be better referred to as time orientation (that is, whether a person is past-oriented or future-oriented). In the discussion to follow, a somewhat different interpretation of the Lewinian notion of time perspective will be utilized to provide a basis for a definition of "future time perspective".

In describing the development of time perspectives, Lewin (42) pointed out that the growth of a psychological time dimension continues into adulthood. During this developmental process, plans and activities, involving increasingly longer time-units, become more meaningfully organized. In another publication, Lewin (41), following Frank (2), comments further upon this view:

> During development an enlargement of the time perspective takes place. The small child lives in the present; his time perspective includes only the immediate past and the immediate future. This smallness of time perspective is characteristic of what is usually called "primitive behavior". The time dimension of the life space of the child grows with increasing age; more and more distant future and past events affect present behavior. (p. 75).

In the preceding quotation Lewin appears to suggest that the development of time perspective begins in early childhood and develops with age. It is to be emphasized that this position is not incompatible with the discussion of general time concepts cited previously. In his formulation of the evolution of time perspective, however, Lewin differentiates this concept from other temporal notions, and suggests that it becomes more extended both into the past and the future as age increases. An elaboration of this view, in which attention is focused upon the future, leads to the introduction of a heretofore unspecified, although often implied, concept, "future time perspective". In the present discussion this notion is defined as the time and ordering of unfulfilled future events.

In viewing the future, most people are primarily concerned with highly personal goals and ambitions which may or may not be possible of fulfillment. In either case such expectations are conceived of in terms of definite courses of action, leading to goal-achievement, which are embedded in specific intervals of time. In other words, for most individuals, conceptions of the future may involve not only an emphasis upon the achievement of a specific purpose at some time in the future, but also an awareness of the particular sequence of sub-goals that are to occur before the ultimate end may be reached. It would follow, then, that, in many cases, thinking about the future may be characterized not only by considerations of specific time intervals, but also by particular sequences of interdependent events which are both antecedents of, and necessary for, the occurrence of the expected event or situation.

Such a process, which describes what is intended by the concept of "future time perspective", may be conceptualized in terms of two variables, "extension" and "coherence". The former concept is derived from Lewin's formulation of time perspective (41), noted above, which appears to emphasize as a major factor the length or extent of the past or future time span which can be conceptualized. On the basis of this view, it would follow that one significant component of "future time perspective" is this concept of "extension" into the future.

Although not explicitly discussed by Lewin, a second aspect of time perspective will be suggested. Termed "coherence", this notion is concerned with the degree to which the elements or events in the future or past time span are meaningfully related. Such a concept may also be utilized to refer to the degree of logical order which is imposed upon the contents of a time span. It is viewed as a measure of the ability to handle the contents of the time span, and, in the present context, is considered to be another important aspect of "future time perspective".

Summary. According to several of the above-cited reports, considerations of the future play a prominent role in mature psychological functioning. On the basis of references to the future found in accounts of time perspective, the concept of "future time perspective" was derived. In the present discussion, this notion is defined as the timing and ordering of personalized future events. Two aspects of this concept are also specified: (1) "extension", which refers to the length of the future

time span which can be conceptualized; and (2) "coherence", which involves the degree of organization of the elements that comprise the content of the future time span.

The Development of Future Time Perspective

Two aspects of "future time perspective", "extension" and "coherence", will be focused upon in the present discussion. The formulation to follow represents an attempt to account for the development of "future time perspective" in terms of these two concepts, and is based upon a series of theoretical contributions to the area of time orientation and time perspectives.

Childhood experience in the development of "future time perspective". According to Frank (25) ideas concerning future events are an outgrowth of specific types of parent-child interactions. In earliest infancy, Frank points out, the individual attempts to satisfy his needs directly, and immediately. At an early age, however, feeding and other training procedures are initiated by the parents under specific plans of action which may stress certain time intervals. In many sub-cultures, for example, a great premium is placed upon rigid adherence to specific schedules of breast or bottle feeding. With toilet training, a procedure in which the child is more active in controlling his impulses, restrictions with regard to the performance of sequences of acts over a period of time are also specified by the parents and must be strictly followed.

In dealing with parental demands concerning personal cleanliness, for example, the child finds that he risks disapproval and possible punishment if he violates standards set by his parents. He therefore begins to learn to assign greater value to the achievement of gratification after the performance of a set of socially-given, inter-related acts in which need-satisfaction (the goal) becomes the final element in the behavioral sequence. The internal stimulus which previously gave rise to immediate eliminative behavior now becomes a cue for conceiving of, and enacting, a particular pattern of meaningfully organized events over a certain time interval through which the necessary conditions for elimination can be satisfied. As growth proceeds and other behavior patterns are learned, immediate situational events begin to become associated with the awareness of many patterns of sequentially-related acts, in which the terminal point or the end-result assumes primary importance.

It is to be noted that a process of this type appears to describe the concept of "coherence" which was utilized previously to refer to the ability to conceive of and organize conceptions of the future. The above formulation, however, focuses upon experiences occurring at the anal or toilet-training stage of personality development, a period during which the learning of specific event-sequences, leading to future goals, is begun. It may be suggested, therefore, that the emergence of "coherence" may be closely associated with, and possibly an outgrowth of, behavioral patterns that make their initial appearance during this phase of personality growth.

Other views appear to suggest that the emergence of another aspect of "future time perspective", "extension", also might be related to experiences occurring at the toilet-training or anal phase of personality development. In a discussion of anticipation (which is defined as the capacity to foresee or predict future events), Arieti states:

> Anticipation originates during the anal period. At this stage of development, the child becomes able to postpone immediate pleasure for some future gratification . . . The child learns to give up his tendency to relieve the tension of his bowels and postpone the act of defecation, in order to obtain the immediate or distant approval or love of his parents . . . At this state, however, his perception of time is still very primitive and inadequate (3, p. 475).

In view of this formulation, and that presented by Frank (25), cited previously, the possibility is suggested that the appearance of both "extension" and "coherence" may be intimately related to phenomena usually associated with an early phase of personality development. Such a view appears to have much in common with some of the psychoanalytic descriptions of the development of temporal notions cited in previous sections. It appears that both general and specific temporal concepts (e.g. "future time perspective") may be discussed in terms of their appearance at specific levels of personality development. The utilization of an identical theoretical scheme to account for the emergence of both temporal concepts and personality traits suggests the possibility that at least a partial developmental similarity may be posited between the two sets of factors.

Further support for this speculation, especially insofar as the concept of "future time perspective" is concerned, stems from other

sources, which focus upon the role of class-determined child-training programs in the development of conceptions of the future. In, perhaps, the most extensive theoretical treatment of this topic, Davis (12) notes the influence of socio-economic class on parental training programs, and suggests that such a factor largely determines the extent and kind of future orientation that will be found in a given adolescent. On the basis of this formulation, LeShan (39) derived the hypothesis that future orientation differed in children as a function of social class affiliation. It was found, upon empirical test, that middle-class children present responses involving longer time spans on story-completion tasks than do lower-class children. In discussing these results, LeShan proposes that children in middle-class families receive more training in the postponement of need-gratification than do children in the lower socio-economic group. As a result, middle-class children are able to handle longer time spans more efficiently.

In view of the preceding proposal, it appears that programs of child-rearing, determined by specific class membership, foster the growth of modes of behavior which may involve immediate or delayed need-gratification. On the basis of this view, it may be hypothesized that repeated experiences of either type provide the growing child with a basis for acquiring expectations which focus upon immediate or distant future events. Conceived of in this manner, the above approach appears to be closely associated with the concept of "extension" which has been defined in a previous section in terms of the length of the time

span into the future that can be conceptualized. Consequently, it may be suggested that the development of this aspect of "future time perspective" appears to be related to class-sanctioned child-training practices. It is also to be noted that such training procedures may play a prominent role in the entire array of parent-child relationships, which, in other contexts (e.g. 40, 60), are considered to be an important determinant of personality growth. It, therefore, may be inferred that what has been termed the "extension" aspect of "future time perspective" is related to the formation of personality.

It is to be emphasized that the preceding formulation, and those cited previously, tend to be in general agreement with regard to the following premises: (1) The appearance and evolution of "future time perspective" is related to the early phases of development considered to be significant for the growth of personality; and (2) more specifically, the emergence of both the "extension" and "coherence" aspects of "future time perspective" is most closely associated with that phase of personality growth concerned with toilet-training during which specific types of parental training procedures are markedly operative.

Social factors in the development of "future time perspective". Utilizing a somewhat different approach from that found in previously discussed points of view, Hulett (39) and Lewin (43) concern themselves with the relation between group processes and the unfolding of conceptions of the future. According to the former writer (39), the social roles that are

developed as a result of group experiences markedly influence time perspectives. Each group, Mulett suggests, provides associates who are exhibited as models of behavior, and present opportunities for practice in meeting future social situations. Moreover, through myths and legends, the group provides an approved philosophy of the future. On the basis of these experiences, the individual not only acquires "expectancies" that others in social situations will respond in certain ways but also learns to plan his behavior accordingly.

In a somewhat related theoretical approach, also concerned with group factors, Lewin (63) discusses two types of "social environment" and their relation to time perspective. If a person lives in a social environment which is authoritarian, the future is largely determined by the leader. A person in this type of group tends, therefore, to be concerned only with [illegible] goals. On the other hand, an individual who is a member of a democratic group is instrumental in structuring both his own and the group's future, and consequently, may exhibit a future-oriented perspective.

Both of the above formulations appear to be pertinent to a discussion of the relationship between "future time perspective" and personality development. For example, the emphasis given to group memberships and group interactions appears to coincide with that found in theoretical approaches (8, 63) which stress the role of group affiliation in descriptions of the growth of personality. Since associations with groups, such as the family and the adolescent "gang" have

been formulated in this manner, the possibility of a relationship between the acquisition of "future time perspective" and personality formation is suggested.

A further implication of the views of Lewin (45) and Hulett (33) involves a focus upon the earliest group unit, the family. Operating in a milieu which is heavily influenced by considerations of class position, and functioning as a social environment in and of itself, this group structures the future anticipations of its members. In this process, the family performs a dual function. First, it places a premium upon the fulfillment of near or distant future goals, thus influencing the growth of what has been termed "extension". Thus, the extent to which a "democratic" or "autocratic" pattern is operative in a family situation might markedly alter the child's developing ability for broad or limited projection into the future. Secondly, the family encourages particular courses of action leading to goal-achievement which may involve limited or extensive inter-dependent patterns of behavior. Therefore, it may be suggested that the family group provides a context for the emergence of "future time perspective", both in its "coherence" and "extension" aspects.

Interpreted in this manner, the above theoretical position does not appear to be incompatible with the psychoanalytically-oriented views reported in preceding sections. Instead of utilizing the frame of reference of the individual per se in discussing the development of time perspective, the former approach is more concerned with social and group processes, both during childhood and adulthood. Such a theoretical

emphasis, it may be noted, appears to overlap somewhat with the psychoanalytic focus upon the formative years of infancy and early childhood. Nonetheless, the views of Hallett (33) and Lewin (43) appear to be primarily concerned with a later period of development, during which extra-familial group affiliations are prominent. Considered in these terms, it may be suggested that the two major points of view utilized to describe specific aspects of the development of "future time perspective" are complementary.

Summary. It has been suggested that the emergence and evolution of both the "extension" and "coherence" aspects of "future time perspective" are closely associated with personality growth, especially during the early formative years. Support for this contention appears to stem not only from the publications of several psychoanalytically-oriented writers, but from formulations presented by social psychologists and sociologists as well. Although some degree of overlap is to be found in these points of view, it has been observed that each of these approaches addresses itself to a somewhat different period of development. As a result, it may be suggested that the previously discussed theoretical orientations, which are concerned with both the growth of personality and the evolution of "future time perspective", are complementary.

TEMPORAL FACTORS IN PSYCHOPATHOLOGICAL CONDITIONS

It has been pointed out that many writers appear to favor the view that the evolution of the time notion in general, and "future time perspective" in particular, is closely related to what is conceived to be the normal development of personality, both in its ontogenetic and social aspects. One of the most significant implications of such a proposal concerns the postulation of a relationship between disturbances in temporal concepts and psychopathological conditions. As will be seen in the following discussion, this hypothesis is implicitly referred to in a number of publications which note that distortions in temporal concepts, including those concerned with the future, are found in mental disorder.

Disturbances in General Time Concepts

Many investigators have considered temporal distortions to be basic to severe mental illness. Fischer (24), for example, maintained that there was no schizophrenic symptom which was not a space-time disorder. For Minkowski (39), extreme distortions of subjective time were the central symptom of schizophrenia, and prominent in other psychoses as well. Dooge and Kahn, quoted in (44), suppose that timelessness is quite common in schizophrenia, and that schizophrenics may even lose the sense of time almost completely. Lewis wrote:

> . . . Though I would not be understood to refer all morbid phenomena to a disorder of time consciousness, I think it appears in and colors most of the manifold changes of the functional unity, which we agree to subdivide into perception, affect, and the rest of our fictions. It is a primary alteration of consciousness and mental disorder ([illegible], p. [illegible]).

A somewhat different orientation is found in a publication by Werner (62). According to this view, the reports of patients with temporal disturbances reveal a much greater egocentricity and concreteness in their utilization of temporal concepts than is common to the normal person. Such a usage of concrete notions of time, Werner suggests, is similar to that found in the temporal experience of primitive peoples and children. Consequently, it is postulated that psychopathologically disturbed individuals reveal a temporal regression in which the normal adjustment of personal time to world time no longer is carried through completely.

Psychoanalytic writers also appear to support the notion of regression in their discussions of the disturbances in temporal concepts that are found in many psychopathological conditions. For many of these writers, specific types of temporal distortions are associated with difficulties encountered at early levels of psychosexual development. Yates ([illegible]), for example, points out that prolonged discrepancy between the appearance of infantile needs and their satisfaction, especially at the oral period, may lead to a state of acute anxiety. To prevent the recurrence of such a state, the child may temporarily place himself outside of the sense of time. In so doing, he loses both the sense of reality and the awareness of the passage of time. ([illegible]

(5, 58) [illegible] close connection between [illegible] appreciation and temporal distortions). When such a procedure is frequently repeated, Yates continues, schizophrenia may result. Usually, however, adults who have undergone such childhood experiences lose contact with reality only temporarily, in states of great anxiety and tension.

Yates also notes that complications at feeding will be followed by difficulties in toilet training, the next phase of development in which temporal considerations are thought to be significant. Reichel (21) and others (57, 1) stress the fact that fixations at this level (the anal phase) are primary in the later development of obsessive-compulsive neurosis. Such conditions, these writers point out, are characterized by particular disturbances in the handling of temporal concepts. The obsessive-compulsive patient is said to sunder time from external events, and treat it as a thing in itself rather than utilizing it in normal fashion, as a connecting link with reality.

Temporal disturbances at both the oral and anal periods of personality development are also discussed by Obermorf (53). According to this account, the disarrangement of accustomed schedules for eating, sleeping, and defecation may lead to the emergence of hostile or anxious behavior. In adulthood, these and similar reactions may be reflected in psychopathology involving derealization and depersonalization, in which abnormal reactions to the elements of past, present, and future time are found.

Summary. It is proposed, in the above accounts, that disturbances in temporal experience may be related to emotional difficulties. Moreover, there is some suggestion that at least some types of psychopathology are characterized by specific temporal distortions. On the basis of these views, there appears to be support for two contentions: (1) that the initial appearance of malfunctioning with regard to temporal concepts is concomitant with emergence of various kinds of emotional disturbances; and (2) that formulations similar to those which trace adult psychopathology to earlier developmental difficulties may also be pertinent to inquiries into the origins of temporal disorders. Such a view appears to be suggested in a publication by Schneider (58) who wrote: "The manner in which a person handles time . . . is very closely linked to the structure of his character and to the nature of his neurosis".

Distortions in Conceptions of the Future

In addition to the disturbances in temporal notions outlined above, the potential for handling conceptions of the future also appears to be altered in psychopathological conditions. On the basis of observations of mental patients, Strauss (59) assumes that time disorders are basic to various melancholic delusions and obsessions. Depressed patients are characterized by their inability to abandon the past and advance toward the future. In fact, the road into the future becomes blocked, and the depressed individual is thrown back to the past. The future loses its meaning as a field of potential activity in which prospective solutions

to life's problems may be worked out. As a result, reactions in current situations are severely inhibited.

Eissler (15) suggests that healthy individuals experience the present as a bridge between the past and the future with its potential accomplishments, a view also proposed by Perls (50). In the depressed patient, Eissler continues, this harmony is thrown out of gear. The present no longer serves as a means toward the future and the depressed individual is compelled to ruminate and brood and to see the future as if it were a "shapeless gap".

In general discussions of temporal distortions in mental disorder, Lewis (44) reports that cases which are characterized by feelings of depersonalization and a sense of unreality reveal an inability ". . . to look into the future or to anticipate a future for oneself . . ." The future is also barred for the inhibited obsessional patient.

In focusing upon neurotic difficulties which involve conceptions of the future, Meerloo (47) calls attention to a condition which is termed "anticipation neurosis". In this type of disturbance, the major emotional concerns are said to be related not so much to childhood conflicts and early traumatic experiences, as to repeated expectations that similar unpleasant experiences will again occur. The ego is so determined to avoid such circumstances that it takes active steps to avoid them. Plans for the future are laid, usually in the form of defensive maneuvers which often accomplish their purpose, but may, at the same time, lead to

increased neurotic suffering. An examination of these symptoms, Meerloo suggests, reveals a portion of the patient's anticipations of the future.

Summary

Views have been presented which note that disturbances in the ability to adequately utilize temporal concepts, including those involving the future, are frequently found in psychopathological conditions. For some writers, especially those with a psychoanalytic orientation, many such temporal distortions are conceived to be reflections of psychopathological difficulties. Since such disturbances are generally considered to be traceable to earlier developmental abnormalities associated with specific phases of personality growth, the speculation is advanced that a similar formulation might be utilized in attempts to conceptualize the origins of adult distortions of temporal notions. In the following section, this proposal will be explored in an effort to provide a theoretical basis to explain the role of "future time perspective" in mental disorder.

THEORETICAL POSITION AND HYPOTHESES

In this section, a discussion of the theoretical considerations that underly the present research will be presented. Since these proposals are based, to some extent, upon reports that are cited in earlier pages, especially those concerned with the relation of "future time perspective" to personality development, a resume of these views will be given. Before proceeding along these lines, however, a brief recapitulation of the meanings of the major concepts which were emphasized in previous sections, is in order. Of primary significance is the concept of "future time perspective", which is defined as the timing and ordering of personalized future events. Two aspects of this notion, "extension" and "coherence" are also to be noted. "Extension" is utilized to refer to the length or extent of the future time span which can be conceptualized. "Coherence" is conceived of as a measure of the individual's logical integration of the contents of his future time span. Inasmuch as these terms are to be used in the following subsections, it may be well for the reader to keep their particular meanings in mind.

Personality Development and Mental Disorder

In earlier sections, it was suggested that the early formative years of infancy and childhood play a prominent role in the appearance

of both the "coherence" and "extension" aspects of "future time perspective". It may also be noted that these early phases of personality development have been discussed in terms of their relation to the origins of mental disorder (e.g. 21, 28). In one theoretical approach to this topic, Freud (28) postulated that this early period, conceptualized by him in terms of "oral", "anal", and "phallic" levels, provided the context in which the potential for future mental disturbance was developed. Difficulties originally experienced at these stages were said to be reactivated in adulthood in such a manner that any psychopathological reaction might be traced to the initial developmental disturbance. It may be seen, therefore, that psychoanalytic theory posits a specific and traceable connection between mental disorder and personality development.

For the most part, other contemporary theories of abnormal behavior tend to agree with Freud's view. In one such formulation, Cameron (8) also implies that behavior pathology is the result of difficulties experienced during the period of early personality growth. For this writer, however, personality disturbance stems from failure to acquire adequate skill in role-taking during these early formative years. In psychotic conditions, such as paranoid states, such a failure may be basic and deep-seated and characterized by "life-long habits of social isolation". With neurotic difficulties, on the other hand, proficiency in role-taking is much less disturbed, and is reflective of less severe developmental difficulties. In similar fashion, Meyer (48)

refers to neurotic conditions as ". . . minor disturbances . . . which merely tend to reduce the efficiency of the person . . ." while schizophrenia is "an actual disease . . . which can be traced in many cases to early childhood and to the school years . . ." In focusing upon early interpersonal relationships in his account of personality development, Sullivan (61) also implies that psychotic conditions, especially schizophrenia, involves a more fundamental and long-standing developmental disturbance than neurosis.

It is to be observed that all of the writers cited above suggest that schizophrenic psychoses represent more basically disturbed and long-standing deficiencies in personality development than do the neuroses. One further implication of the above views is that relatively unimpeded personality growth culminates in what may be termed a mature and "normal" emotional adjustment. In attempting to specify more clearly the nature and extent of the differences between psychosis, neurosis, and "normal" personality functioning, Freud (20) postulated that psychosis was more closely associated with disturbances at much earlier developmental stages than those found in neurotic or "normal" adjustment. This formulation was made more explicit by Fenichel (21), who proposed that fixations at the "oral" and early "anal" stages were found in psychosis, while neurosis was characterized by late "anal" and "phallic" disturbances. Implicit in this view is the notion that extreme fixations at any of these early levels are absent in "normal" individuals. Such

a position, it is to be noted, suggests that diagnostic category reflects an estimate of the level of personality development.

Future Time Perspective and Mental Disorder

It has been assumed that there is a relation between "future time perspective" and the early phases of personality development. In addition, it has been observed that the degree and type of psychopathological disturbance is also related to the early stages of personality growth. On the basis of these premises, it would seem logical to suggest that "future time perspective" is associated with difficulties in personality development which are considered to be reflected in adult mental disturbance.

Although no direct consideration of this latter contention is to be found in the psychological literature, a few publications may be discussed which are concerned, at least indirectly, with the role of "future time perspective" or related concepts in psychopathological conditions. In the following paragraphs, consideration will be given to both empirical reports and theoretical accounts which appear to be pertinent in this regard.

Related empirical views. Of the many published accounts of research concerning temporal disturbances in mental disorder, only two studies (15, 34) appear to bear some relation to the concept of "future time perspective". In one of these accounts, Escalona (16) was primarily concerned with an investigation of the concept of level of aspiration

in manic-depressive psychosis. In describing a psychotically-depressed patient who was utilized as an experimental subject, however, Escalona wrote:

> The remarks of (this) subject . . . convey the impression that the painful character of his life situation at large has caused the field guiding his momentary actions, to shrink, particularly in regard to time perspective. He is determined almost completely by the psychological present (p. 289).

If interpreted in terms of the concepts being focused upon in the present research, it appears that the above-quoted view suggests that the "extension" aspect of "future time perspective" may be severely restricted in patients characterized by a depression of psychotic intensity. It is to be emphasized, however, that such a contention cannot be considered as conclusively demonstrated on the basis of a sample of a single case. Nonetheless, it may be suggested that the above proposal tends to support the view that distortions in "future time perspective" are related to early difficulties in personality growth, since, as has been pointed out earlier, psychosis is usually attributed to developmental disturbances arising during the early formative years.

In what appears to be the only systematic and experimental approach to the psychopathology of the future that is reported in the literature, Israeli (34) studied "future outlook", a concept which is related to "future time perspective". On the basis of data obtained from questionnaire and interview material, this investigator found that drive with respect to future goals, and the nature of possibilities apparently anticipated served as a basis for differentiating normals and abnormals, melancholics and paranoid schizophrenics. In commenting further on

the obtained results, Israeli wrote:

> The limited outlook . . . denotes a limited perspective scarcely extending beyond the present or an attenuated perspective comprising barely a few future possibilities . . . (p. 118).

At first glance such results appear to shed light upon the relation between future time perspective and psychopathological conditions. A close examination of this study, however, reveals several serious shortcomings. Among these are the following: only the most superficial statistical analysis was employed (ie., a comparison of percentages by inspection); attempts to develop and specifically define categories of outlook patterns were crude and ambiguous; suggested relationships between the patient's future outlook (as derived from interview and questionnaire material) and psychiatric descriptions were only partially quantified; efforts to achieve scientific rigor by means of matching patients in the respective experimental groups suffered as a result of poorly selected and vaguely defined criteria upon which the matching was based; reports of the results obtained provide some general principles but little, if any, effort to develop a theory which might integrate the relationships that were discovered. In short, it appears that the results of this investigation may be considered to be only suggestive at best. Further research which is both theoretically and methodologically sound is necessary before any definite conclusions with regard to the relationship between future outlook and psychopathological symptoms may be drawn. It is hoped that the present research will be a step in this direction, even though a somewhat different conceptual approach will be utilized.

Related theoretical views. A perusal of the psychological literature reveals that, as far as can be determined, only two publications (46, 57) make implicit reference to the contention that disturbances in "future time perspective" are related to developmental difficulties in early personality formation. In one of these accounts, Meerloo (46) focuses upon the distortions in temporal notions that are found in neurotic and psychotic conditions. Mention is also made of the symbolic significance of time, which is described as follows:

> Symbolically time has become the creative fertilizing power, God and Father. Time leads us always to the future, it does not allow us to go back, to regress and return to the womb. Every regressive primitive action against Father Time, against threatening influences from outside . . . The past is happiness, the womb; the future is dangerous, the anxiety of the unknown. In case of severe instinctual conflicts we try to stick to past experience (p. 605).

Over and above questions regarding the validity of these symbolic interpretations, it is to be noted that Meerloo's views imply that intense psychic conflicts interfere with or may even eliminate the ability to consider future events. If it is postulated that these psychic conflicts have their origins in genetically early events, it then appears that Meerloo's position is essentially in agreement with the view that early disturbances in personality development might be reflected in the distortions in future concepts found in adult psychopathology.

A similar point of view is implicit in a theoretical discussion by Schilder (57). In this formulation the proposal is advanced that considerations of reality prevent any real awareness of anticipated events.

It is impossible to imagine what it will be like to be married, to be in love, to have a child, to be rich, to be poor; such future events cannot be directly experienced until they occur. These and similar expectations summarize, in a highly symbolic manner, the present libidinous state of the individual.

If it is assumed that a person's current libidinous state is a reflection of his level of personality development (a premise which is implicit in orthodox Freudian theory), Schilder's view may be interpreted as supporting the contention that conceptions of future events (or what has been termed "future time perspective") are related to the early phases of personality growth. Moreover, since many psychopathological reactions may be conceived to be outgrowths of disturbances in libidinal development, the possibility is again suggested that disturbances in "future time perspective" may be related to early developmental abnormalities which become manifest as mental disorder.

Summary. Although direct references to the relationship between distortions in "future time perspective" and difficulties in personality development are almost completely lacking in the psychological literature, several somewhat related theoretical and empirical accounts were discussed. The empirical studies of Israeli (34) and Escalona (16) were found to be pertinent in this regard, but methodological and theoretical considerations suggest that the reported findings are suggestive at best, and in need of further empirical examination before their implications for "future time perspective" can be more adequately evaluated. On the other hand,

the theoretical views of both Meerloo (36) and Schilder (37) appear to lend some support, at least implicitly, to the premise under discussion.

Hypotheses

As has been noted in previous sections, many writers appear to suggest that the acquisition of "future time perspective" is concomitant with early developments in personality growth. Further, it has been observed that the degree and type of emotional disturbance is also related to abnormalities arising during the early phases of the formation of personality. In this connection it was suggested that contemporary theories appear to favor the view that psychosis represents more chronic and basically-disturbed deficiencies in personality development than those found in neurosis or "normal" adjustment. On the basis of these premises, it would seem logical to conclude that the nature of the relationship between distortions in both the "extension" and "coherence" aspects of "future time perspective" and abnormalities in personality growth can be investigated through the utilization of various types of clinically-diagnosed groupings. In other words, the diagnostic categorization of psychopathological conditions may be employed as an estimate of the level of personality development. A basis is thus provided for examining the relation of this latter factor to "future time perspective". The research to be presented will attempt to focus upon this problem by investigating hypotheses related to the extent of disturbance in

"future time perspective", that is to be found in one major type of functional mental disorder, schizophrenia.

General hypothesis. On the basis of the formulation outlined above, which was based upon the foregoing review of the literature, the following general hypothesis would seem to be in order:

> "Future time perspective" is significantly affected by psychopathological disturbance.

Specific hypotheses. As has been noted previously, two aspects of "future time perspective", "extension" and "coherence" are to be focused upon in this investigation. The specific hypotheses with regard to these two concepts that underlie the present research are as follows:

> (1) When schizophrenics are compared to normals, significant differences in "extension" (defined in terms of tasks discussed below) will be found between these groups.
>
> (2) When schizophrenics are compared with normals, significant differences in "coherence" (defined in terms of tasks discussed below) will be found between these groups.

METHODOLOGY

This section will be devoted to a presentation of the methodology of the experimental investigation that was designed to test the hypotheses noted above. The experimental procedure employed and the particular subjects chosen will be considered in turn.

Procedure

In the following sub-section the three experimental tasks that were utilized in the present study will be described. Moreover, the specific measures of "extension" and "coherence" derived from these experimental tasks will be presented.

Task I

Instructions and Procedure

The first task that was administered is composed of two parts.

Part 1

The following instructions were given to each subject by the examiner:

> Tell me ten events that refer to things that may happen to you during the rest of your life.

Each event given was recorded on a separate card, and its ordinal rank in the series of events was noted. After each response was given, the examiner asked the subject: "And how old might you be when that happened?" The age given for each event in the series was recorded on a separate sheet.

Part 2

Toward the end of the testing session, after the remaining tasks, Task II and Task III, had been administered, the examiner returned to the subject the ten cards on which the events given previously had been written. The following instruction was given: "Arrange these cards in the order in which they might occur." The sequence of events presented by the subject was recorded.

Measures

From the data obtained on Task I, two measures, one of "extension" and one of "coherence", were derived:

1. Extension: The range of years included between the subject's age and the most distant future event given by him.

2. Coherence: A correlation between the ranking of events based upon the age of occurrence given in Part 1, with the order of events presented in Part 2.

To provide supplementary information about this measure of "coherence", the following scores were obtained for each subject:

(a) The correlation between the order of events given spontaneously on Part 1, and the forced chronological ordering of these events presented on Part 2.

(b) The correlation between the order of events given spontaneously and a ranking of these events based upon the ages given to them.

Task II

The second task that was administered to each subject consists of four story-completion items which represent modifications of a technique utilized by Barndt (4). The first two stories involve structured temporal situations; Parts 3 and 4 of Task II, on the other hand, involve rather indefinite references to the temporal dimension.

Instructions and Procedures

Part 1

The subject was given the following instructions:

> I want to see what kind of a story you can tell. I'll start one for you, and then let you finish it any way you wish. I'll start it now. 'At 3 o'clock one bright sunny afternoon in May, two men were out walking near the edge of town'. Now you start there and finish the story for me.

The story given by S was recorded, and if no reference to interval of time involved in the story was included, E asked: "How long a time was involved in this story -- not in telling it, but in the action described?" A record was made of the response to this question.

Part 2

The subject was given the following instructions:

> That was fine. Now I'll begin another story which, as before, you may finish any way you want to. Here it is: 'Ten o'clock one morning Al met his friend Jerry near the center of town.' Now you start there and finish it for me.

The subsequent procedure for Part 2 was identical to that followed on Part 1.

Part 3

The subject was given the following instructions:

> That was pretty good. Now here is the start of another story which you may again finish in any way you wish. 'Joe is having a cup of coffee in a restaurant. He's thinking of the time to come when . . .' Now you finish it for me.

The subsequent procedure for Part 3 was identical to that followed on Part 1.

Part 4

The subject was given the following instructions:

> Here is the last story that I'll give you. I want you to finish it in any way you wish, just like you did on the other stories. Here it is: 'After awakening, Bill began to think about his future. In general, his plans involved . . .' Now you start there and finish it for me.

The subsequent procedure for Part 4 was identical to that for Part 1.

Measure

One measure of "extension" was obtained from each part of Task II. On this task, "extension" refers to the length of time given by the subject in describing the duration of the action in each of his stories.

Task III

Task III is composed of 15 statements describing common life-events. These items were originally chosen on the basis of logical considerations regarding the likelihood of occurrence of such events in the general population of American males. Later refinements which led to the technique in its present form stemmed from exploratory work with normal and schizophrenic subjects.

Instruction and Procedure

The subject was given the following instructions:

> I'm going to read to you a series of events which happen to a lot of people. I want you to tell me how old you might be when the event described might happen to you.

Before reading each event, the examiner said: "How old might you be when . . ." The subject's response to each event was recorded.

Items

1. Your first grandchild is born?
2. You die?
3. You lose interest in sexual activities?
4. You are too old to be physically active?
5. Your son achieves his greatest success in life?
6. You retire?
7. Your youngest child leaves home?
8. Your mother dies?
9. You feel that you have reached old age?
10. Your last sexual intercourse occurs?
11. You have reached middle age?
12. Your father dies?
13. You can no longer have children?
14. Your first great-grandchild is born?
15. You can say that you have most of the things you want?

After the subject had answered all of the above items, he was presented with a series of 15 cards upon each of which one of the test items was printed. He was then told:

> Here is a group of cards upon which the events I just asked you about are typed. Arrange these cards in the order that they might happen in your life. Place the event that might happen first, first; the event that might occur next, second, and so on, until you have finished with all the cards.

A record was made of the sequence of the cards that the subject submitted to the examiner.

Measure

On the basis of data obtained on Task III, a measure of "coherence" was obtained. As was the case on Task I described above, this measure involved a correlation between the order of events based upon the ages of occurrence associated with them, and the sequence resulting from a forced chronological ordering of the events.

The Sample

In order to test the hypotheses outlined previously, the performance of a group of schizophrenics was compared to that of a group of normal subjects. The characteristics and criteria utilized in the selection of these two groups are described below.

The schizophrenic group. This group is made up of 34 in-patients at a Veterans Administration neuropsychiatric hospital. These patients were selected on the basis of the following criteria:

1. Age: between 20 and 35. In the sample itself, the mean age was 27.21 years, with the standard deviation, 4.70.

2. Wechsler Vocabulary Level: between 15 and 35. In the actual sample the mean was 22.5 and the standard deviation, 7.37.

3. Education Level: between 8 and 13 years of formal schooling. For the group of schizophrenic patients tested, the mean was 10.8, with the standard deviation, 1.97.

4. Occupation Level: only those individuals with occupations which were categorized as either skilled or unskilled were included. In the sample itself, 9 subjects were classified as skilled and 25 as unskilled.

5. Diagnosis: each patient was required to have an official diagnosis of schizophrenia or schizophrenic reaction, with no history of organic involvement.

6. Co-operativeness: on the basis of appraisals obtained from ward physicians and ward personnel, the factor of co-operativeness was

evaluated for each patient being considered for inclusion in the schizophrenic group. Subjects judged as non-cooperative were not given the experimental tasks. Of those patients who were seen, however, it was found that a goodly number could not or did not wish to comply with the experimenter's requests.[1] As a result, the performances of these individuals were excluded from consideration in the total sample.

In view of recent research findings (36, 56, 63) which suggest that schizophrenic conditions may be differentiated into two distinct clinical entities on the basis of variables such as chronicity of condition, it was decided to subdivide the schizophrenic sample into two groups, 17 short-term schizophrenics and 17 long-term schizophrenics. The specific criteria that were utilized in the selection of these sub-samples may be described as follows:

Short-term Schizophrenics

1. Length of Hospitalization: Two years or less. In the group itself the median length of hospitalization was six months.

2. History of Illness: Two years or less. In the actual sub-sample the median interval of time with respect to the history of illness was eight months.

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[1]At least six of the schizophrenic patients who were seen were unable to offer future events that might take place in their lives (see Task I below) even though they were quite communicative in other respects. Although not included in the final sample, these performances, it is to be noted, tend to support the hypotheses under test.

Long-term Schizophrenics

1. Total Length of Hospitalization: 5.5 years or more. In the actual sub-sample the median length of hospitalization was five years and nine months.

2. History of Illness: Five years or more. In the group itself the median length of history of illness was six years and eight months.

A comparison of the scores of the two schizophrenic sub-samples with regard to the criteria described above is presented in Table 1. Tests of significance with regard to several of the variables under examination (i.e. occupational level, educational level, and Wechsler vocabulary level) revealed no significant differences between the two groups. With regard to the factor of age, however, the differences between the two sub-samples reached a statistically significant level.

The normal sample. The 24 subjects in this sample were chosen from the medical service of a Veterans Administration General Medical and Surgical Hospital. Although the range of medical and surgical problems for which the patients in this group were being treated was quite wide, care was taken to ascertain that neither psychosomatic nor emotional disturbances accompanied their illnesses. Such information was obtained from attending physicians, interviews with the patients themselves, and medical case history material. The selection criteria for this group may be described as follows:

Table 1

A COMPARISON OF 17 SHORT-TERM SCHIZOPHRENICS AND 17 LONG-TERM SCHIZOPHRENICS ON SIX CRITERIA OF SELECTION

	Short-term Schizophrenics	Long-term Schizophrenics	Statistical Technique Used	Score	P
Age:					
Mean	23.29	31.12	t-test	2.25	.03
S.D.	2.37	5.40			
Wech. Vocab:					
Mean	23.94	21.11	t-test	1.10	--
S.D.	8.33	5.94			
Ed. Level:					
9 yrs. and below	2	7	chi square	2.42	--
10 yrs. and above	15	10			
Occup. Level:					
Skilled	7	2	chi square	2.42	
Unskilled	10	15			

1. Age: same as in the total schizophrenic sample above. The normal group resembled the schizophrenic group in this regard, even to the extent of having an identical mean age, i.e., 27.1 years.

2. Wechsler Vocabulary Level: same as in total schizophrenic group above. In the normal sample the mean was 22.19, and the standard deviation, 5.30.

3. Education Level: Same as in schizophrenic sample above. In the normal group, the mean was 10.79 and the standard deviation 1.92.

4. Occupation Level: same as in schizophrenic sample above. In the present sample 14 subjects were classified as skilled and 20 as unskilled.

5. Each subject in this sample was required to have a history completely free from any record of neuropsychiatric illness. A check of this factor was made both by interviews with patients and consultation with physicians in charge of the case.

A comparison of the normal group and the total schizophrenic sample on the four variables upon which the groups were matched is presented in Table 2. A statistical analysis of the data found in Table 2 revealed no statistically significant differences between the two groups with regard to the variables under consideration.

Table 2

A COMPARISON OF 34 NORMALS AND 34 SCHIZOPHRENICS ON FOUR CRITERIA OF SELECTION

	Normals	Schizophrenics	Statistical Technique Used	Score	P
Age:					
Mean	27.21	27.21	t-test	0	--
S.D.	4.30	4.70			
Wech. Vocab.:					
Mean	22.49	22.50	t-test	.02	--
S.D.	7.30	7.37			
Ed. Level:					
9 yrs. and below	10	9	chi square	2.42	--
10 yrs. and above	24	25			
Occup. Level:					
Skilled	14	9	chi square	2.42	--
Unskilled	20	25			

RESULTS

In previous sections, a presentation was made of the particular hypotheses and the methodology that comprise the present investigation. On the basis of this research design, experimental findings were obtained which are summarized in tabular form in subsequent pages. Before proceeding to a description of these results, however, mention will be made of the technique that was utilized for the statistical analysis of the obtained data.

Method of Analysis

Preliminary considerations, concerning the nature of the distributions of scores to be obtained in response to the experimental tasks, suggested that the assumption of normality was questionable. As a result, a non-parametric technique was employed in place of more traditional statistical methods to obtain the desired tests of statistical significance. Of available non-parametric procedures (e.g. 22, 34), the H-Test (36) was found to be most suitable. The selection of this particular technique was based upon the fact that it provides an approximation of a normal variate which allows a more precise estimate of the level of significance of experimental results than may be found by utilizing other non-parametric methods.

In comparing the performance of two groups of subjects on a particular variable, an H-score is obtained by ranking all the observations of both samples treated as a single distribution. On the basis of the sum of ranks of each group, an H-score is derived which is considered equivalent to a unit-normal deviate (i.e. a "z-score"). Reference to tables of normal curve functions provides the appropriate level of significance for a one-tail or two-tail test. In the present study, the latter test was utilized.

On the basis of the above procedure, H-scores were computed for the following comparisons:

I. Intra-group Comparisons (Short-term vs. Long-term Schizophrenics)

1. Task I

a. Differences in sums of ranks of "extension" scores.

b. Differences in sums of ranks of "coherence" scores.

c. Differences in sums of ranks of two scores related to "coherence".

2. Task II

a. Differences in sums of ranks of four "extension" scores.

3. Task III

a. Differences in sums of ranks of "coherence" scores.

II. Inter-group Comparisons (Normals vs. Schizophrenics)

Procedures, identical to those described above for each experimental task, were also carried out in comparing the normal group to the total schizophrenic sample.

Results on "Extension"

The concept of "extension" is utilized in the present research to refer to the length of the time span into the future which can be conceptualized. On Task I, a measure of this variable is derived from the following formula: The most distant age given to an item in the series of ten events presented minus the subject's age. "Extension" scores on Task II, however, represent the length of time given by the subject in referring to the duration of the action in each of the four story-completion tasks.

The specific hypothesis under test may be stated as follows:

When schizophrenics are compared to normals, statistically significant differences in "extension" scores will be found.

For the most part the data presented in Table 3 tends to substantiate this prediction.. On Task I, the distribution of "extension" scores given by the control group diverges markedly from that produced by the schizophrenic patients. Moreover, statistically significant inter-group differences are also found in connection with the measures of "extension" derived from Stories 3 and 4 of Task II. For the remainder of this task (i.e. Stories 1 and 2), however, the obtained "extension" scores did not differentiate between the schizophrenic and control groups at the five per cent level of confidence.

This finding is especially noteworthy in light of the fact that the instructions for the first two story-completion items on Task II

Table 3

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF EXTENSION[1] SCORES ON TWO EXPERIMENTAL TASKS GIVEN BY 24 NORMALS AND 24 SCHIZOPHRENICS

Task	Normals Mdn	Normals Sum of Ranks	Schizophrenics Mdn	Schizophrenics Sum of Ranks	U	P
I	36 yr.	1440.5	12 yr.	905.5	3.28	.001
II						
Story 1	2 hr.	1274	1 hr.	1072	1.24	--
Story 2	2 hr.	1330	1.5 hr.	1016	1.93	.054
Story 3	1.5 wk.	1372	1 hr.	974	2.44	.015
Story 4	4 yr.	1371	.75 yr.	975	2.43	.015

[1]On Task I, a measure of Extension is derived from the following formula: The most distant age given to an item in the series of ten events presented on Task I minus the subject's age. On Task II, measures of Extension are obtained from the length of time given by the subject in referring to the duration of the action in each of the four Story-completion Tasks.

(p. 45 above) portray highly structured situations which contain explicit temporal references. Such is not the case with Stories 3 and 4, where the instructions involve neither well-defined situations nor specific temporal concepts.

An examination of Table 3 also reveals that on each task given, even where the hypothesis under test is not upheld statistically, the median "extension" score of the control subjects is larger than that produced by the schizophrenic group.

One additional result, for which no hypothesis was offered, may also be noted. As may be seen in Table 4, a comparison of the "extension" measures obtained from the "short-term" and "long-term" schizophrenic patients reveals no statistically significant intra-group differences. It, therefore, may be suggested that the total group of schizophrenic subjects represents a homogeneous sample with regard to the variable under test.

Results on "Coherence"

In the present experiment, the concept of "coherence" is employed as a measure of the degree of organization of the contents of the future time span. On both Task I and Task III, this variable is defined as the correlation between the actual* chronological order of a spontaneously presented series of events and the sequence of these events derived from a forced chronological ordering.

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* The actual chronological order refers to the ordering of the subjects' events based on the ages associated with them.

Table 4

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF EXTENSION[1] SCORES ON TWO EXPERIMENTAL TASKS GIVEN BY 17 SHORT-TERM SCHIZOPHRENICS AND 17 LONG-TERM SCHIZOPHRENICS

Task	Short-term Schizophrenics Mdn	Sum of Ranks	Long-term Schizophrenics Mdn	Sum of Ranks	H	P
I	22 yr.	307	11.5 yr.	288	.327	--
II						
Story 1	1 hr.	291	1 hr.	304	.224	--
Story 2	2 hr.	304	1 hr.	291	.224	--
Story 3	1 hr.	296	2 hr.	299	.317	--
Story 4	2 yr.	342	30 days	253	.333	--

[1] On Task I, a measure of Extension is derived from the following formula: The most distant age given to an item in the series of ten events presented on Task I minus the subject's age. On Task II, measures of Extension are obtained from the length of time given by the subject in referring to the duration of the action in each of the four Story-completion Tasks.

The specific prediction under test was:

A comparison of the "coherence" scores of a group of schizophrenic patients and a sample of normal subjects will reveal statistically significant differences.

An examination of Table 5 reveals that the above hypothesis is confirmed. The performances of the control and experimental groups on both Task I and Task III are characterized by significantly dissimilar "coherence" scores. Again, it is to be noted that the median "coherence" score is much higher for the normal group than for the schizophrenic patients on both tasks.

A supplementary, non-hypothesized finding, involving a comparison of "long-term" and "short-term" schizophrenic subjects (Table 6) points to the fact that these sub-samples are homogeneous only with regard to the measure of "coherence" obtained from Task III. On the first experimental procedure, Task I, the obtained "coherence" scores reveal statistically significant intra-group differences.

Tables 7 and 8 summarize the results of two additional analyses which compare the performance of the normal subjects to each schizophrenic sub-group. In the former table, it is indicated that there are no significant differences in "coherence" scores between the control group and the "short-term" schizophrenic patients. As is noted on Table 8, however, the measures of "coherence" that were obtained from the normals and the "long-term" psychotic subjects are markedly dissimilar at better than the .01 level of confidence. It is to be observed, therefore, that with regard to Task I the confirmation of the specific hypothesis

Table 5

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF RHO-CORRELATIONS BETWEEN THE FORCED CHRONOLOGICAL ORDERING OF A SERIES OF EVENTS AND THE ACTUAL CHRONOLOGICAL ORDER OF THESE EVENTS OBTAINED FROM 34 NORMALS AND 34 SCHIZOPHRENICS ON TWO EXPERIMENTAL TASKS

Task	Normals		Schizophrenics		U	P
	Mdn	Sum of Ranks	Mdn	Sum of Ranks		
I	.9257	865.5	.6520	1480.5	3.77	.0002
III	.7766	9_8	.5464	[illegible]08	2.64	.008

Table 6

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF RHO-CORRELATIONS BETWEEN THE FORCED CHRONOLOGICAL ORDERING OF A SERIES OF EVENTS OBTAINED FROM 17 SHORT-TERM SCHIZOPHRENICS AND 17 LONG-TERM SCHIZOPHRENICS ON TWO EXPERIMENTAL TASKS

Task	Short-term Schizophrenics		Long-term Schizophrenics		U	P
	Mdn	Sum of Ranks	Mdn	Sum of Ranks		
I	.8394	202	.4394	393	3.28	.001
III	.5571	262	.4863	333	1.22	--

Table 7

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF RHO-CORRELATIONS BETWEEN THE FORCED CHRONOLOGICAL ORDERING OF A SERIES OF EVENTS AND THE ACTUAL CHRONOLOGICAL ORDER OF THESE EVENTS OBTAINED FROM 34 NORMALS AND 17 SHORT-TERM SCHIZOPHRENICS ON ONE EXPERIMENTAL TASK

	Normals		Short-term Schizophrenics			
Task	Mdn	Sum of Ranks	Mdn	Sum of Ranks	H	P
I	.9257	806.5	.8394	519.5	.91	--

Table 8

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF RHO-CORRELATIONS BETWEEN THE FORCED CHRONOLOGICAL ORDERING OF A SERIES OF EVENTS AND THE ACTUAL CHRONOLOGICAL ORDER OF THESE EVENTS OBTAINED FROM 34 NORMALS AND 17 LONG-TERM SCHIZOPHRENICS ON ONE EXPERIMENTAL TASK

	Normals		Long-term Schizophrenics			
Task	Mdn	Sums of Ranks	Mdn	Sum of Ranks	H	P
I	.9257	654	.4394	672	7.65	.008

under test is attributable to the performance of those experimental subjects classified as "long-term" schizophrenics.

Although not considered in the specific predictions of the present study, two additional variables may be mentioned which are related to the concept of "coherence". Derived from Task I, the measures of each of these variables respectively are as follows.

1. A correlation between the spontaneous sequence of a series of future events, the actual chronological ordering of these events.

2. A correlation between the spontaneous sequence of a series of future events, and a forced chronological ordering of these events.

With regard to the first of these measures, Table 9 indicates that the scores obtained by the sample of schizophrenic patients do not deviate to a significant extent from those presented by the control subjects. In other words, no statistically significant intergroup differences are found in connection with those measures of correlation which represent the degree of relationship between the spontaneous, and the actual chronological, order of a series of future events.

As seen in Table 10, a similar lack of significant results characterizes the performances of the two schizophrenics subgroups on this correlational measure.

The findings in connection with the second variable associated with the concept of "coherence" are presented in Tables 11 and 12. As is noted in the former table, the distribution of scores on the variable under test for the control group is highly divergent from that given

Table 9

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF RHO-CORRELATIONS BETWEEN THE SPONTANEOUS ORDER OF A SERIES OF EVENTS AND THE ACTUAL CHRONOLOGICAL ORDER OF THESE EVENTS OBTAINED FROM 34 NORMALS AND 34 SCHIZOPHRENICS ON ONE EXPERIMENTAL TASK

	Normals		Schizophrenics			
Task	Mdn	Sum of Ranks	Mdn	Sum of Ranks	H	P
I	.5909	1090	.5004	1256	1.02	--

Table 10

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF RHO-CORRELATIONS BETWEEN THE SPONTANEOUS ORDER OF A SERIES OF EVENTS AND THE ACTUAL CHRONOLOGICAL ORDER OF THESE EVENTS OBTAINED FROM 17 SHORT-TERM SCHIZOPHRENICS AND 17 LONG-TERM SCHIZOPHRENICS ON ONE EXPERIMENTAL TASK

	Short-term Schizophrenics		Long-term Schizophrenics			
Task	Mdn	Sum of Ranks	Mdn	Sum of Ranks	H	P
I	.6273	257	.4022	368	1.40	--

Table 11

A COMPARISON OF MEDIANS AND SUMS OF RANKS ON PRO-CORRELATIONS BETWEEN THE SPONTANEOUS SEQUENCE OF A SERIES OF EVENTS AND A FORCED CHRONOLOGICAL ORDERING OF THESE EVENTS OBTAINED FROM 34 NORMALS AND 34 SCHIZOPHRENICS ON ONE EXPERIMENTAL TASK

Task	Normals Mdn	Normals Sum of Ranks	Schizophrenics Mdn	Schizophrenics Sum of Ranks	H	P
I	.5636	987.5	.3213	1358.5	2.28	.023

Table 12

A COMPARISON OF MEDIANS AND SUMS OF RANKS OF PRO-CORRELATIONS BETWEEN THE SPONTANEOUS ORDER OF A SERIES OF EVENTS AND A FORCED CHRONOLOGICAL ORDERING OF THESE EVENTS OBTAINED FROM 17 SHORT-TERM SCHIZOPHRENICS AND 17 LONG-TERM SCHIZOPHRENICS ON ONE EXPERIMENTAL TASK

Task	Short-term Schizophrenics Mdn	Short-term Schizophrenics Sum of Ranks	Long-term Schizophrenics Mdn	Long-term Schizophrenics Sum of Ranks	H	P
I	.5273	250	.167	345	1.64	--

by the experimental subjects. Since the median score of the former sample is larger than that found in the schizophrenic group, it may be suggested that the performance of the normal subjects is characterized by a higher level of relationship between the spontaneous sequence of a series of events and a forced chronological ordering of these events.

Another non-hypothesized finding is referred to in Table 12. An absence of significant results with regard to the variable under discussion is to be noted when the scores of the two schizophrenic subgroups are compared.

DISCUSSION

It was suggested in this study that schizophrenic patients would be characterized by future time perspectives which deviated significantly from those produced by a group of equated, non-psychiatric subjects. For the most part, this hypothesis, tested in terms of two measures, "extension" and "coherence", seems to have been borne out. In the following paragraphs, the obtained findings with respect to each of these variables will be discussed in turn.

Extension

On the basis of the data concerning the variable of "extension", it can be inferred that the results of this study support the hypothesis that schizophrenic patients may be clearly differentiated from normals with regard to the length of the time interval that is utilized in conceptualizing future events. It is also to be observed that the schizophrenic process appears to limit or curtail the extent of this future time span. As was mentioned earlier, the median "extension" score of the control subjects involves a longer time period than the corresponding score given by the schizophrenic patients, even on those tasks (Stories 1 and 2 of Task II) where no statistically significant differences in performance are discovered.

The above experimental findings tend to confirm one of the predictions that is derived from the general hypothesis stated earlier (viz. "Future time perspective" is significantly affected by psychopathological disturbance). In this connection it may be remembered that the sample of schizophrenics utilized in the present study were chosen on the basis of their ability to cooperate and communicate adequately. If the assumption is made that ratings on these criteria reflect, at least to some extent, the severity of the schizophrenic disturbance that is present, it may be suggested that those subjects who were included in the sample of experimental subjects represent most closely those psychotic conditions which are relatively less severe. Therefore, the utilization of such subjects allows the opportunity for a test of only a limited aspect of the above general hypothesis.

On the basis of the preceding considerations, an attempt may be made to explain the lack of significant inter-group differences noted previously in connection with Stories 1 and 2 of Task II (Table). It is to be observed that the simplified and highly structured nature of these two story-completion items provide each subject with well-defined situations, which lead to only a limited number of possible future courses of action. It may be speculated that under such conditions, where external demands are easily understood in a context involving no excessive threat, the schizophrenic patient experiences little or no feelings of anxiety. Consequently, he can more efficiently utilize

whatever resources he has available, with the result that his performance on the experimental tasks tends to approximate more closely the level of proficiency revealed by the normal subjects.

Clinical observations suggest that the schizophrenic is severely threatened when exposed to unfamiliar, unstructured situations which require a specific course of action. At such times, it may be presumed, the schizophrenic individual is beset by an inner turbulence of such an intensity that confusion and disorganization become marked. Since Task I and Stories 3 and 4 of Task II are relatively unstructured, it may be assumed that these experimental procedures give rise to circumstances which threaten the experimental subjects. The resulting emotional disorder then interferes with optimal functioning to such a degree that the magnitudes of the functions presented by the schizophrenic patients are significantly shorter than those given by normals.

In passing, an additional non-hypothesized finding may be mentioned in reference to diagnostic subclassifications, employed in the present research, which were termed "short-term" and "long-term" schizophrenia. A comparison of the performance of these subgroupings reveals no statistically significant differences, a result that is at variance with recent reports (34, 56, 65) which present evidence in favor of a two-fold classification of schizophrenic reactions. It is to be noted that such a result is obtained with a statistically significant intra-group difference in age, noted earlier (Table 1).

Coherence

From the data obtained with regard to the variable of "coherence", it may be concluded that the second specific hypothesis of the present study has been upheld statistically. The experimental results indicate that the degree of relationship between the actual chronological sequence of a series of future events, and a forced chronological ordering of these events, is clearly different for schizophrenic patients as compared to normal subjects. Also of importance is the finding that the median "coherence" score for the latter sample is larger than that found in the schizophrenic group.

The above results indicate that the second aspect of "future time perspective" under examination is also influenced by the schizophrenic process. It appears that normal individuals are superior to schizophrenics with regard to the ability to order the contents of the future time span logically and meaningfully (insofar as chronological considerations are concerned). It is to be observed that such an inference appears to be compatible with the common clinical impression that the potential for internally-consistent and well-organized planning appears to be reduced in schizophrenic conditions.

A more precise formulation of the previously-discussed findings may be suggested on the basis of results which stem from a comparison of the "coherence" scores of the "short-term" and "long-term" schizophrenic subgroups. As described in the previous section, statistically

significant differences are found in connection with Task I, but not Task III (Table 6). Additional analyses reveal that the "coherence" scores of the control group deviate significantly from those presented by the "long-term" schizophrenics (Table 8), but are not distinguished, at the five per cent level of confidence, from the responses given by the "short-term" experimental subjects (Table 7). It may be inferred, therefore, that the confirmation of the specific hypothesis under test, as far as Task I is concerned, is due to the performance of those experimental subjects who were classified as "long-term" schizophrenic patients.

The previous discussion appears to be related to recent proposals (36, 56, 65), mentioned earlier, which are concerned with the establishment of a bipartite diagnostic classification of schizophrenia. It is to be remembered, however, that the"long-term" and "short-term" schizophrenic subgroups under investigation in the present research were not equated for age. As a result, the intra-group findings with regard to both "extension" and "coherence" do not provide a clear-cut basis for a comparison of the performance of the two schizophrenic subsamples.

Other findings of the present research stem from two variables which are related to the concept of "coherence". As was noted in the previous section, normals and schizophrenics do not differ significantly with regard to measures of correlation which refer to the degree of relationship between the spontaneous sequence of a series of future events and

the actual chronological order involved (Table 9). However, correlations between the spontaneous sequence of the presented series of events and a forced chronological ordering reveal statistically significant intergroup differences (Table 11), with the median score of the control subjects larger than that produced by the schizophrenic group. It is to be noted that when the latter sample is asked to arrange future events in order of expected occurrence, shifts from the initial spontaneous order of these events occur which are more deviant than those found in the control group. It has also been seen that the experimental subjects reveal larger discrepancies between the actual chronological order of a series of events and a forced chronological ordering of these events (noted above in connection with "coherence"). Therefore, it may be concluded that schizophrenic patients may be clearly distinguished from normal subjects with regard to that aspect of "future time perspective" concerned with the ordering of highly personalized future events. It is also to be observed that a comparison of the performances of the "short-term" and "long-term" schizophrenic subjects do not reveal statistically significant differences with regard to the two variables associated with the concept of "coherence" (Tables 10 and 12). Therefore, it may be inferred that the proposals (36, 56, 65) cited above, which favor a bipartite classification of schizophrenia are not upheld, at least as far as these variables are concerned.

Implications for Further Research

The results of this experiment appear to indicate that additional research is promising in areas concerned with (1) the formulation of

theories of personality functioning which include references to concepts of temporality, and (2) the development of diagnostic techniques based upon tasks similar to those utilized in the investigation of "future time perspective". In this section, suggestions will be presented for further investigations concerning each of these topics.

Research related to theories of personality functioning. The above findings with regard to both "extension" and "coherence" confirm specific predictions about schizophrenia which were derived from the following general hypothesis: "Future time perspective" differs significantly as a function of the degree and type of psychopathological condition. It is to be noted that this formulation provides a basis for additional predictions concerning the relation of "future time perspective" to (1) nosological categories other than schizophrenia and (2) emotional disturbances of varying severity, regardless of diagnostic classification. Empirical studies of such hypothesized relationships would furnish extensive experimental data which could be utilized for a more comprehensive analysis of the role of "future time perspective" in mental disorder than is possible within the limit scope of the present study.

Another promising source of research findings, pertinent to the topic under discussion, may be obtained from longitudinal studies which focused upon the development of "future time perspective" during childhood and adolescence. With such data available, an opportunity is presented for examining the relationship between many aspects of personality development and the processes involved in the acquisition of "future time perspective".

It is to be observed that the findings obtained from the sources outlined above may also provide a basis for a critical evaluation of a view implied earlier, that difficulties in both personality functioning and the timing and ordering of personalized future events are traceable to disturbances in development during the early formative years. An analysis of this kind has implications for a more complete understanding of both normal and abnormal personality growth and functioning, especially insofar as the concept of "future time perspective" is concerned.

An additional research area, also suggested by the present study, involves a consideration of aspects of temporal functioning other than those involved in the concept of "future time perspective". Investigations of the role of other temporal concepts (e.g. time perception) in emotional disturbance may also provide a source of pertinent information about the nature of mental disorder.

Research related to the development of diagnostic techniques. The psychological literature abounds with references to a sizeable number of personality tests which are utilized in the diagnosis of mental disorder. To a large extent, however, the diagnostic formulations derived on the basis of these techniques stem from qualitative considerations rather than a utilization of precise measurements of specific aspects of patients' performances. In most cases, the nature of the test material precludes such an analysis.

In the present study, the experimental tasks provide quantitative measures of the variables under test. As has been noted, an analysis of

the "coherence" and "expansion" scores of the normal and schizophrenic groups revealed statistically significant intergroup differences. It does not appear to be too far-fetched, therefore, to suggest that the specific procedures employed in the investigation of "future time perspective" may be considered to be a beginning step in the development of one quantitative approach to the problem involved in differential diagnosis. Such a possibility, it may be noted, points to the need for future research, particularly in connection with task refinement, and the compilation of normative data.

SUMMARY AND CONCLUSIONS

This study was concerned with an investigation of two aspects of the concept of "future time perspective", "extension" and "coherence". The specific hypotheses regarding these variables that were examined in the present research were:

(1) When schizophrenics are compared to normals, significant differences in "extension" will be found between these groups.

(2) When schizophrenics are compared to normals significant differences in "coherence" will be found between these groups.

One sample of 34 patients, diagnosed as schizophrenic, and a group of 34 patients at a general medical and surgical hospital were given three tasks which involved: (1) the spontaneous, and then later, a forced ordering of a series of ten future events (Task I); (2) four stories in response to verbal instructions which included the beginning of each story (Task II); and (3) estimates of the age of occurrence of 15 future events, supplied by the examiner, which were later placed in order of expected occurrence (Task III).

The results obtained on the basis of a comparison between the experimental and control groups by use of a non-parametric procedure, the H-test, indicate that (a) on all measures except those found on Stories 1 and 2 of Task II, the scores on both the "extension" and "coherence" variables presented by the schizophrenic group were

significantly different than the corresponding scores of the control group, and (b) on all tasks, including those which reveal a lack of significant difference, the median score of the control group was larger than that of the experimental sample.

Additional non-hypothesized findings included: (a) the performance of a sample of "long-term" schizophrenic patients did not deviate to any significant extent from that of a "short-term" schizophrenic group on either variable, except on Task I when one measure of "coherence" was derived, (b) normals and schizophrenics do not differ significantly with regard to measures of correlation which refer to the degree of relationship between the spontaneous sequence of a series of future events and the actual chronological order of these events, and (c) correlations between the spontaneous sequence of the presented series of future events and a forced chronological ordering revealed statistically significant intergroup differences.

The obtained results, for the most part, confirmed predictions which were derived from the following general hypothesis: "Future time perspective" is significantly affected by psychopathological disturbance. The lack of significant findings in connection with Stories 1 and 2 of Task II was interpreted on the basis of the fact these two experimental procedures, in contrast to Stories 3 and 4, were highly structured, and presumably relatively free of threat, thus allowing the particular schizophrenic subjects under investigation to function optimally.

In general then it may be stated that "future time perspective", in its "extension" and "coherence" aspects, is influenced by the schizophrenic process to such an extent that both the length of the future time span, and the degree of organization of its contents, is significantly reduced for a sample of schizophrenic patients as compared to a group of normal controls. Further research, involving longitudinal studies and the investigation of other nosological groups, is needed before a final evaluation may be made of the role of "future time perspective" in both "normal" and abnormal personality functioning.

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