1968

Direct Experimental Manipulation of Time Perspective Through Verbal Operant Conditioning Techniques.

Melvyn Alan Berke

Louisiana State University and Agricultural & Mechanical College

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BERKE, Melvyn Alan, 1937-
DIRECT EXPERIMENTAL MANIPULATION OF TIME
PERSPECTIVE THROUGH VERBAL OPERANT
CONDITIONING TECHNIQUES.

Louisiana State University and Agricultural and
Mechanical College, Ph.D., 1968
Psychology, clinical

University Microfilms, Inc., Ann Arbor, Michigan
DIRECT EXPERIMENTAL MANIPULATION OF TIME PERSPECTIVE THROUGH VERBAL OPERANT CONDITIONING TECHNIQUES

A Dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The Department of Psychology

by

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May, 1968
ACKNOWLEDGMENTS

The writer wishes to express his appreciation to his committee, Dr. Joseph G. Dawson, Chairman, Dr. Bill M. Seay, Dr. O. Hubert Campbell, Dr. David C. Yang and Dr. William G. Haag for their support and encouragement throughout the development of this study.

I am also indebted to Dr. John R. Stabler, Thomas Dieker, Jerry Peterson, Faith Easton and Paula Gardner for administering the F.T.P. inventory to their respective classes.

Thanks are also due to Mrs. Vera M. Foil for the typing of this manuscript.

A special note of thanks is extended to the author's wife, Naomi, for her support and assistance.
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ABSTRACT

The present investigation was an exploratory attempt to ascertain behavioral correlates, through the use of a verbal operant conditioning paradigm, of two populations differentiated as to temporal perspective. In view of the methodological shortcomings of previous studies a recently developed objective future time perspective inventory was employed (Heimberg, 1963).

On the basis of Heimberg's inventory two groups of 40 male college students were selected; the first possessed a foreshortened and the second a more lengthy future time perspective. The high future group was comprised of Ss who scored between one and two standard deviations above the mean total score of all males responding to the inventory (N = 345). Students whose scores fell between one and two standard deviations below the mean population value constituted the low future group. Each of the two groups was further subdivided into two subgroups of 20 Ss. One-half of the high and one-half of the low future Ss were conditioned, via the Taffel-type procedure, to future tense verbs. The remaining Ss in each subgroup were conditioned to past tense verbs.
All Ss in all groups were conditioned on a 75% variable ratio schedule. The acquisition phase of the study consisted of four trial blocks, each block consisting of twenty stimulus cards. Following acquisition all subjects were extinguished. The extinction phase consisted of three trial blocks, each consisting of twenty stimulus cards. Baseline responses to past and future tense verbs were obtained during the first or operant trial block.

The questions with which the study was concerned were:

1) Does the inventory predict operant responses to past and future tense verbs?

2) Will differential rates of acquisition and extinction occur when the groups are reinforced for responses both congruent and divergent from their temporal orientations?

Although results obtained were in the predicted direction the inventory was not predictive, at a statistically significant level, of operant responses to past and future tense verbs. Analysis of the trial blocks' main effect, for both the acquisition and extinction phases, revealed significant changes in overall performance thereby demonstrating the verbal conditioning effect. While hypothesized differential rates of acquisition and extinction

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did not reach statistical significance differences were in the predicted direction.

Factors related to the conditioning paradigm employed were discussed and suggestions made for modification of the procedure. Because the concept future time perspective is an organismic variable it was also suggested that a series of studies, utilizing several kinds and schedules of reinforcements, be instituted. Several such studies were described.
CHAPTER I

INTRODUCTION

It is probable that man's first ideas concerning temporality were philosophical antedating even the crudest instruments of measurement. It also seems likely that time was considered to be the responsibility of nature or the gods. Dubois (1954) speculated that even in this prehistoric period there was some dim appreciation of time as a life span, with acceptance of biological time from birth to death as common to all human beings. As philosophy evolved, this concept developed and ultimately crystallized into a generally accepted religious belief that mortal life is but a preparation for immortality.

The invention of time pieces, as posited by Brooks (1952), changed the general direction of human interest from heaven to earth, from eternity to the reality of the day. Somewhat later these earliest time pieces (hourglass, water clock, sundial) were superseded by bells which marked the hour of prayer and hence the first regular intervals for specific events were denoted. Much later, and with increased knowledge of astronomy and mathematics, it was discovered that the most accurate measurement of time could be obtained from observation and study of the movements of
heavenly bodies. It was not until 1884, at an international conference in Washington, D.C., that most nations adopted time reckoned from Greenwich at 0, the time meridian of longitude.

Physical or objective time, "... in which one moment possesses the same validity as any other" is to be clearly differentiated from psychological or subjective time (Eissler, 1952, p. 5). Schilder (1936) emphasized that the latter is a sensation which is immediately experienced in ourselves and is one of the more fundamental faculties of the psyche. To investigate one's awareness of time raises fundamental problems about the origin of experience. Gunn (1929) observed that many of these difficulties arose because of the lack of recognition that time is conceptual as well as perceptual. We perceive time as an awareness of amounts of duration, but as we increase and organize our knowledge and bring to bear our powers of synthesis, analysis, and abstraction we achieve a conception of temporality. Gunn maintained that perceived time is limited, sensibly continuous, and possesses a directional quality. It is related to the stimulus at the moment of experience. On the other hand, the notion of conceptual time is unlimited, infinitely divisible and mathematically continuous.

Adler (1954), in his discussion of temporality, states that one's time hypotheses serve to stabilize one's
environment and aid in both the reception of and protection from stimuli. The main purpose of the receptive function is to discover the direction and nature of the external environment. Adler considers the protective aspect a more important function in that it strives to maintain a state of homeostasis. In a similar vein Sarbin (1952) suggests that, in the same way the body image involves a spatial referent for the inferred self, time too, is one of the primary dimensions in which the self is constructed.

**Historical Background**

The interest of modern psychology in temporal phenomenon dates back to the last century. The scientific study of time was among the early undertakings of Wundt's laboratory. These investigations were structured partly by Kantian philosophy and partly by Newtonian physics. It was the goal of the Leipzig laboratory to achieve generality and universality for a psychological unit of time. The Newtonian framework assumed an absolute time and hence the goal of these early workers was to establish the specific time sense that apprehended time (Adler, 1954). Within such a view individual differences existed only as error. The traditional focus of interest in the experimental investigation of time centered about the characteristics of the stimulus. Mid 19th century studies were concerned with
such factors as estimation of time intervals in regard to Weber's law, sex differences, filled versus unfilled intervals, physiological influences, and effects of drugs (Boring, 1933; Nichols, 1890; Woodrow, 1951).

Somewhat later several workers attempted to find, within the organism, a physio-chemical mechanism which was the locus of temporality. Hoagland (1933) argued for a master chemical reaction within the nervous system which would yield a subjective time scale. He further declared such factors as temperature and sensory motor activity may modify the speed of the chemical clock and hence affect subjective judgments of time. The concept of biological time was postulated by du Nouy (1937). He found the cicatization of wounds to be slower in proportion to the patient's age. He calculated a mathematical formula for this biological law and stated that each individual possessed his own inner physiological time with a time unit of his own. He then inferred that if one were to measure cosmic time with this time unit, days and years would become shorter as we age.

In his review of late 19th century literature Nichols (1890) stated that most of this work was contradictory and few, if any, definitive statements could be made. In a later review, Gilliland, Hofeld, and Eckstrand (1946) concluded that it was necessary to disregard all physiological hypotheses in favor of external factors as mediators of time
estimation and judgment.

**Developmental Considerations**

Studies of the development of temporality in children have occupied the attention and interest of numerous workers (Ames, 1946; Bromberg, 1938; Eson, 1951; Friedman, 1943-1944; Gesell and Ilg, 1943; and Piaget, 1955). These studies indicate that the concept of time emerges early in childhood and develops gradually. The age of fourteen is generally given as the age at which the adult conception of time is attained. Dubois (1954) has outlined a general formulation of the development of the child's conception of time. He postulates that time is the first contact of the infant's consciousness with reality. As the neonate differentiates himself from the environment time begins to set limits upon him bringing about a state of frustration as his egocentricity and basic drives become infringed upon. With increasing maturity an equation between the present and authority also develops. Infantile omnipotence must gradually be given up as ordinary demands of life are met by a standard of time integrated with the general growth process. If these frustrations and limits imposed by time, in the form of authority, are met with sympathy and understanding, the individual should achieve a proper sense of duration in maturity (Dubois, 1954).
Personality Factors

An area of more recent concern has been the study of temporal phenomena in relation to personality variables. Rapaport (1950) suggests that the experience of temporality appears to be a phenomenon dependent upon affective life. Clausen (1954) and Fredericson (1951) are also supportive of this view. Rapaport has also proposed a relationship between the experience of time and temperament. Few experimental studies in this area have been reported in the literature. Fisher and Fisher (1953) reported that the unconscious perception of the same sex parent as dominant was related to overestimation of intervals one minute and above. Solomon (1950) found that subjects who obtained high T scores on one or more of the Minnesota Multiphasic Personality Inventory (M.M.P.I.) scales tended to make high estimates of periods ranging from 30 to 190 seconds. He also found that for subjects scoring high on the Hypomania (Ma) scale time passed the quickest whereas for subjects scoring high on the Hypochondriasis (Hs) scale time passed the slowest. Binder and Salop (1961) also attempted to relate temporal experience to personality factors as defined by the M.M.P.I. Differences in rates of acquisition to the reinforced response were obtained between high and low scoring subjects on the Masculinity-femininity (Mf) and Hypomania (Ma) scales. Adler (1954)
reported differential responding to various tests and a
time perception questionnaire on the part of character dis¬
orders, neurotics, and a normal college population. His
results revealed that neurotics overestimated while charac­
ter disorders underestimated time intervals. Scores for
the normal group fell between the above extremes.

Psychopathological Considerations

A great deal of clinical and observational data con­
cerning disturbance of temporal experience in various
psychiatric disorders has been reported. The first compre­
hensive study of the phenomenon of time in a clinical case
was reported by Minkowski (1923). He proposed that the
disturbance of the patient in relation to time, his ina­
bility to conceive of the future gave rise to his anxiety
and depression. Similarly, May, Angel, and Ellenberger
(1958, p. 73) stated: "The capacity for transcending the
situation . . . is impaired in the psychopathic disorders
which are described as the disorders of those in whom the
capacity to see themselves as others see them is absent or
does not carry sufficient weight." Schilder (1936) pre­
sented an extensive discussion of temporal disturbances as
associated with various psychopathological conditions.
Dubois (1954) considered temporal distortions as basic to
all types of disorders. Fisher (1929) maintained that there
is no schizophrenic disorder without a related space-time disorder. Similar views were held by Federn (1953), Ferenczi (1925), Kiersen (1951), Lewis (1931-1932), and Minkowski (1926). Many psychoanalytically oriented workers support the view that specific types of temporal distortions are associated with difficulties encountered at early levels of psychosexual development (Arieti, 1955; Fenechel, 1945; Schilder, 1936; Schneider, 1948; and Scott, 1948).

Wallace and Rabin (1960) emphasized that little empirical validation of the above formulations has been reported in the literature. Dobson (1954) found no significant differences among mean estimates of 17, 38, and 72 seconds among groups of neurotic, schizophrenic and normal individuals. However, a group of studies revealed that schizophrenic patients differed from normal individuals in their estimation of various time intervals (Adler, 1954; De La Garza and Worchell, 1956; Johnston, 1939; Lhamon and Goldstone, 1956; and Rabin, 1957).

**Personality Theory**

While most personality and therapy systems recognize the importance of time perspective in cognitive organization, affectual responses, and behavior little direct attention has been given to the matter. The implicit assumption is that given a change in this or that conceptual
process the proper change or allignment in temporal orientation will automatically occur. In view of the relatively poor results in the treatment of some types of neurotics, schizophrenics, and especially the character disorders, who seemingly epitomize a foreshortened F.T.P., a more directive and frontal investigation of temporality appears necessary. The relevance of this study to the geriatric population is also readily apparent.

The Existential school is committed both philosophically and therapeutically to an in depth analysis of temporality. They have been acutely cognizant of the fact that most profound human experiences, i.e., joy, love, anxiety, etc., occur more in the dimension of time than space. They study time not in the actual physical sense of duration or objective units, but rather in its existential meaning for the patient (May, Angel and Ellenberger, 1958). Bergson (1944) felt that man's error has been to conceive of himself primarily in spatial terms as though he were an object which could be located, like any other substance, at this or that point in space. The existentialist has placed temporality at the center of the psychological picture proposing that the future is the dominant mode of time for humans. These statements can readily be seen as a derivative of their thesis that man is forever becoming and emerging. The above position has
several points of commonality with the theoretical positions of Jung, Adler, and Rogers (Ford and Urban, 1965).

**Psychosomatic Implications**

A recent and most exciting implication for an intensive study of temporal experience was the discovery of a relationship between cardiac disease and time perspective. Rosenman, as cited in Psychiatric Progress (1966), claimed, "... it can now be stated with confidence that when the personality we call Type A is combined with high serum lipid levels ... there is a substantial probability that coronary heart disease will develop in middle age." After six years of study with 3,500 men a rudimentary description of the Type A personality has been advanced. These persons are described as extremely competitive, aggressive, hostile, and possess an excessive sense of time urgency. Rosenman pointed out that the designation Type A is not a hard and fast classification but rather represents a continuum. The type A1 patient he considered to be most prone to heart disease. This individual is described as more or less continuously and actively in conflict in which an important adversary is the seeming paucity of time. It is Rosenman's belief that the end result of his studies may lead to prophylactic measures with the high risk coronary population.
Future Time Perspective (F.T.P.)

The most recent focus of attention has centered upon the concept future time perspective. Frank (1939) was the first to present a detailed consideration of this concept and to speculate about its relationship to behavior. This view postulated that culturally determined attitudes about temporality constituted a major aspect of the influence of culture upon behavior.

LeShan (1952) postulated that social class, and more specifically child rearing practices, is a prime determinant of temporal orientation. He posited that lower class time perspective is one of quick sequences of tension and relief. Lower class perception of the future was found to be indefinite and vague. Both its rewards and punishments were too uncertain to have sustained motivational value with the resultant consequence of only minimal frustration tolerance for long term goals. The upper-lower, middle, and lower-upper orientations he stated to be of much longer tension relief sequences thus permitting the development of a higher frustration tolerance necessary for future planning. In the upper-upper class the individual was said to perceive himself as part of a sequence of several or more generations and hence the orientation is backward toward the past.
The concept F.T.P. as discussed in the literature, has been defined so broadly as to encompass almost anything involving conceptualization of the future. Numerous methodologies have been utilized in an attempt to study this elusive concept. Thematic story telling and story completion tasks have been quite popular among workers in this area. LeShan (1952) utilized "Tell-Me-A Story" tasks with upper and lower class children, 8 - 10 years of age, and found that stories of upper class children encompassed a longer time span. Barndt and Johnson (1955) compared a group of delinquent and non-delinquent boys matched in terms of age, intelligence, academic achievement and socioeconomic status on length of time covered in both structured and non-structured story completion tasks. Their results revealed that delinquent boys were more past orientated and possessed a shorter time span. Although this study was criticized on statistical grounds (Ellis, Ellis, Mandel, Schaeffer, Sommer and Sommer, 1955) a recent replication of the Barndt and Johnson (1955) study obtained similar results (Davids, Kidder and Johnson, 1962).

Other measures of future time perspective have included the questionnaire and interview. In a study concerned with the relationship between time perspective and morale in a prison population Farber (1944) selected twenty-eight variables from case study and interview material and
concluded that degree of prisoner suffering correlated most highly with attitudes involving temporal perspective, particularly the future, and not with actual length of sentence or time already served.

On the basis of two further studies which utilized questionnaire and interview techniques with college populations, Farber (1951, 1953) concluded that an individual's current mood is more a function of his future time perspective than his actual present situation. Israeli (1934, 1935) investigated time perspective of unemployed miners and psychiatric patients and found, by means of interview rating forms, that future time perspectives of both groups were extremely similar. Israeli (1936) also introduced the future autobiography technique as a method for obtaining future time perspective data.

A frequent technique utilized as a measure of future time perspective has been the Thematic Apperception Test (T.A.T.). Fink (1957) attempted to measure the time orientations of an institutionalized and non-institutionalized geriatric population with a modification of the T.A.T. Each of his groups was further subdivided into a younger (ages 50-60) and an older (ages 61-70) group. Analysis of his data revealed the younger institutionalized men to be more future orientated than their older counterparts. A further
result indicated that, as a group, the institutionalized population was more past orientated.

Survey of the literature thus far has revealed the utilization of numerous measures of time perspective. Methodologies range from the relatively unstructured "Tell-Me-A Story" task and future autobiography to more directive interview and questionnaire procedures. While methodologies have tended to proliferate, evidence for both their validity and reliability is quite scanty. It would appear that workers, while intrigued with the study of temporality, have in their enthusiasm, let themselves be carried away without adequate concern for their methodological procedures. A further point of criticism is the lack of a definitive definition of the concept. It is likely that breadth of definition has been a major obstacle in both development and evaluation of adequate measures of this concept. In light of these methodological shortcomings the fact that these studies have revealed a trend toward significant findings speaks highly for the relevance of temporality as an important psychological phenomenon worthy of systematic investigation.

A search of the literature revealed a recent study which led to the development of an objective F.T.P. inventory (Heimberg, 1963). This inventory is distinctive from
previous measures in that careful steps were taken to both define the concept and provide evidence for its construct validity. Since the present study utilized the inventory as a technique to discriminate between two populations a detailed discussion of its development is warranted.

Man's ability to symbolize enables him to bring the several consequences of an intended act into the psychological present. Any act can thus be viewed as determined by an equation in which several consequences are weighed and balanced (Heimberg, 1963). According to Heimberg, these consequences affect the equation not only in terms of their magnitude and sign, but also in terms of their temporal distance. Thus, a foreshortened F.T.P. meant not only that the length of future time which had current relevance was shorter, but also there was a greater decrement in effectiveness for any consequence at any given distance in time.

Heimberg (1963, p. 3) reasoned that a potential consequence exerted a greater influence on a current choice, "... when the individual has a clear conception of it and its potential effects on his goals, attaches a high subjective probability to its occurrence, and sees his own acts as standing in an orderly and predictable relationship to it." Proceeding from the above Heimberg (1963, p. 3) defined F.T.P. as "... the degree to which the future is seen as predictable, structured and controllable, these
symbolic differences leading to individual differences in the slope of the goal gradient."

The inventory was constructed in an attempt to measure these attitudes about the future. Forty-nine items were devised or adopted from the literature on the basis of the above hypotheses concerning conceptions and behaviors relevant to F.T.P. In a pilot study (Heimberg, 1961) coefficient alpha (Cronbach, 1951) obtained for the inventory, using 49 college undergraduates, was .86. The inventory correlated significantly, as Heimberg hypothesized, with understandability of future and self, evaluation of the future and potency for the self as measured by the Semantic Differential (Osgood, Suci and Tannenbaum, 1957).

In a second study Heimberg (1963) set out to refine and explore the dimensions of the inventory. The pool of items utilized in the pilot study was factor analyzed to provide a criteria for retention of the most useful items. Data for this analysis came from 168 Ss, 119 Fort Bragg enlisted soldiers and 49 college students. Pearson product moment correlations were computed among the items. The resulting correlation matrix was then factor analyzed and twenty-five items were selected.

Following the definition of F.T.P. several paper and pencil tests plus the Semantic Differential were used as a basis for deriving evidence for construct validity. Analyses
were based upon 107 Ss upon whom complete data were avail-
able. The following constructs and measures were used to obtain evidence of construct validity:

Locus of control. The construct, as measured by Liverant, Scodel and Cameron's (1960) scale, refers to the degree to which events are perceived as internally rather than externally controlled, i.e., the degree to which future events are perceived as a consequence of one's own behavior. The hypothesis was advanced that internal locus of control would be positively associated with F.T.P.

Anxiety. The Taylor Manifest Anxiety Scale (Taylor, 1953) was utilized as the measure of anxiety. Although Heimberg felt this construct would most probably be negatively related to F.T.P., as she defined it, there was some disagreement in the literature thus no directional hypothesis was put forth.

Psychopathic and neurotic delinquency. The Peterson and Quay (1959) scales were used to measure these constructs. Since the psychopath appeared to possess a foreshortened F.T.P., in which delay of immediate gratification for future consequences was minimal, a negative relationship between this construct and the inventory was hypothesized. Although a negative relationship between neurotic delinquency and the
Anomie. This construct, as measured by the scale developed by Srole (1956), refers to the degree to which the individual perceives his social environment as unstructured, unpredictable, and unsupportive. A negative relationship between the inventory and anomie was posited.

The Semantic Differential. In the pilot study (Heimberg, 1961) the concepts "The Future" and "Me" were investigated and found to be positively related to the inventory. In the latter study (Heimberg, 1963) the concept "Other People" was included. It was hypothesized that understandability of others would be positively correlated with the inventory.

Relationship of the inventory to such variables as intelligence, socioeconomic status, education, and age was also explored. Of the above variables, the only directional hypothesis advanced was that a positive relationship existed between socioeconomic status and the inventory.

The inventory was also compared with four other measures of F.T.P. which have occurred in the literature with considerable frequency. These measures were story completion, future references, and two types of future opinion tasks, i.e., age at the occurrence of particular personal events, and year of occurrence of various
impersonal events.

In summary, on the basis of the definition of F.T.P. directional hypotheses were advanced concerning the relationship of the inventory to internal locus of control, anomie, psychopathic delinquency, level of socioeconomic status, and semantic differential ratings of understandability of the future, the self and other people, evaluation of the future and potency of the self. Eight of the above hypotheses were confirmed; the hypothesis concerning socioeconomic status was not supported. The inventory was found to be significantly and positively correlated with evaluation of self and education. Negative correlations with neurotic delinquency and anxiety were obtained.

Results of the analyses of the four measures drawn from the literature were poor. Correlations among these four measures were very low and they showed little relation to variables theoretically associated with F.T.P. These findings reflect the confused state of current F.T.P. literature.

Stability of the correlations found in the army sample between the inventory and the theoretically relevant variables was explored using 106 university undergraduates. Correlations in the new sample were all quite close to original values despite the change in population.

In final form, the F.T.P. inventory is a twenty-five
item attitude scale, each item scored on a seven point scale from complete disagreement through complete agreement. The higher the score the greater the orientation toward the future. Twenty of the twenty-five items are scored in the reverse direction, i.e., for these items complete disagreement would earn a score seven. The complete inventory may be found in Appendix A.

In view of the relative recentness of the Heimberg Inventory and the fact that no previous work has been done in the direct experimental manipulation of temporally related behavior the present study was undertaken.

Employing a verbal operant conditioning procedure the hypotheses are as follows:

1. There will be a significant difference between the operant levels of the high and low groups' response to past and future tense verbs.

2. Conditioning and extinction will be manifested in all conditions. Those conditions that especially concern E are those in which Ss will be conditioned to verb tenses which are divergent from their F.T.P. inventory performance, i.e., conditioning and extinction of the low future group to future tense verbs.

3. Subjects in the high F.T.P. group will more readily
condition to future tense verbs than will the low F.T.P. group.

4. Subjects in the low F.T.P. group will more readily condition to past tense verbs than will the high F.T.P. group.

5. Subjects in the high F.T.P. group will manifest greater resistance to extinction of future tense verbs than will the low F.T.P. group.

6. Subjects in the low F.T.P. group will manifest greater resistance to extinction of past tense verbs than will the high F.T.P. group.
CHAPTER II

METHOD

Subjects

A total of 80 male subjects were selected from educational and introductory psychology classes at the Louisiana State University. Selection of subjects was determined on the basis of performance on the F.T.P. inventory. The inventory was administered by two faculty members and several graduate assistants approximately two to three weeks prior to the experiment proper. No mention of any relation between the inventory and experiment was made and it is believed that all Ss perceived these two events as independent and unrelated.

Students who scored between one and two standard deviations above the mean score of the male population constituted the high F.T.P. group (N = 345). Students whose scores fell between one and two standard deviations below the mean population value comprised the low F.T.P. group. High and low groups each consisted of 40 Ss. Each group was further subdivided into two equal groups of 20 Ss. Half of the high and half of the low F.T.P. subjects were conditioned to future tense verbs (H-CF, L-CF). The remaining subjects in each group were operantly conditioned to past
tense verbs (H-CP, L-CP). Assignment of subjects to the two experimental conditions was done on a random basis utilizing a table of random numbers. With the aid of a second party a remained unaware as to any particular S's classification, i.e., whether he belonged to high or low future group.

Some comment regarding the designation of the groups as high and low F.T.P. is indicated. While the evidence seems to indicate that a high score on the inventory represented those persons with a lengthy F.T.P. this investigator had reservations in assuming that a low F.T.P. inventory score was representative of a past orientation. In view of this reservation low scoring Ss were designated as low F.T.P. rather than the past orientated group.

Materials

Materials consisted of 160 4 x 6 white unlined Taffel (1955) type stimulus cards each containing the same four personal pronouns, "I," "we," "he," "they," and a different verb conjugated in the present, past, and future tenses. Verbs utilized were those rated for neutrality by Binder and Salop (1961). A further list of neutrally rated verbs was personally supplied to the investigator by A. Buss.

Four pronouns appeared in a single line on the upper third of the card while the three verb forms appeared
on the lower third of the card. Verbs utilized appear in Appendix B. Order of presentation of both pronouns and verb tenses was randomized across stimulus cards.

**Procedure**

All subjects were seen in a windowless office furnished with a desk, four chairs, and two filing cabinets. All extraneous and possibly distracting stimuli were removed from the office. Prior to the experiment proper E spoke with each S for a few minutes in order to eliminate any undue anxiety and establish some measure of rapport.

The following instructions were then given:

I am going to present a series of cards to you one at a time. Each of the cards will contain the same four personal pronouns and a different verb. The verb presented on each card is in three different forms. I would like you to make up a sentence using one of the pronouns and one of the verb forms. Any sentence will do. Be sure your sentence contains one of the pronouns and one of the verb forms printed on the card. You need make up only one sentence per card. Do not spend too much time on any one card; be relatively spontaneous in your responses.

E then showed S a sample stimulus card for demonstration purposes. This card contained the same pronouns as appeared on the test cards and three forms of a verb not used in the experiment proper.

Continuing with the instructions E said:

If you have any questions please feel free to ask them now because I will be unable to answer your questions once we begin.
If S had any questions concerning the experimental procedure E repeated that part of the instructions pertaining to the question.

S was then asked to move to a second chair which was placed to the side, a little in front of, and facing away from E. Ss were serially administered the 160 stimulus cards and again requested to make up sentences containing one of the pronouns and one of the verb forms appearing on each stimulus card. To control for the possible existence of order effects one-half of the Ss in each subgroup received the stimulus cards in a reversed order.

During administration of the first twenty stimulus cards, Trial block I, E did not respond in order to determine the operant frequency of responding. During administration of the next 80 stimulus cards, Trial blocks II, III, IV, and V, each block consisting of twenty stimulus cards, all Ss in all conditions were positively reinforced on a 75% variable ratio schedule. The reinforcements consisted of such affirmative comments as "mm-hmm," "good," and "that's fine." Order of reinforcements was randomized.

Trial blocks VI, VII, and VIII, each consisting of 20 stimulus cards, comprised the extinction phase. As in Trial block I, the operant trial, E remained silent during administration of all stimulus cards.
Following the extinction phase the following questions were asked in an attempt to assess the possible existence of awareness:

1. What do you think the experiment was all about? What was the general idea?
2. Did you notice me saying or doing anything in particular? (answer) Why was I doing that?
3. Did you notice any changes in what you were saying from the first of the session to the last? (answer) How did you change? (answer) Why did you change?

The experimenter was fully cognizant of the pitfalls of concluding, from this abbreviated interview, the non-existence of awareness. A further factor which rendered the identification of awareness quite difficult was the inclusion of an extinction phase. It was conceivable that during acquisition the S was, on some level, aware of the reinforcement contingency but during extinction his hypothesis was no longer confirmed. What was intended by utilization of the above awareness inquiry was the identification of those Ss who could state the reinforcement contingency.
CHAPTER III

RESULTS

To ascertain whether the Heimberg F.T.P. Inventory differentiated between the high and low group's operant responses to past and future tense verbs "t" tests for uncorrelated measures were computed. The high group's mean future tense operant was 5.70 as opposed to a mean of 5.00 for the low group. While this difference was in the predicted direction the resultant statistical analysis did not reach significance (t = .85). The past tense operant level was 10.55 for the low group and 10.20 for the high group. While this difference was also in the expected direction it was not found to be significant (t = .31).

Results from the acquisition and extinction phases of the investigation will be considered separately.

Conditioning

The data with which the study is concerned are the trial blocks' main effect and the interaction between temporal perspective (T.P.), as defined by the inventory, and verb tense, i.e., the performance or conditionability of the four subgroups to past and future tense verbs.

The data were analyzed by a fixed model analysis of
variance with repeated measures on the last factor (Winer, 1962). The summary for this analysis appears in Table I. Significant F ratios resulted for the Blocks' main effect, Temporal perspective x Verb tense interaction, and Temporal perspective x Verb tense x Blocks interaction.

The significant Block's main effect indicated an increase in performance across trial blocks. This finding demonstrated the existence of an overall conditioning effect. The learning curve for this analysis appears in Figure 1. Analysis of the Temporal perspective x Verb tense interaction revealed that all subjects, regardless of temporal orientation, responded with a higher frequency of past tense verbs (Figure 2).

While the significant Temporal perspective x Verb tense x Blocks interaction result is apparently supportive of the hypothesized differential rates of conditioning further analysis of the data lends only weak support to the hypothesis. Examination of the learning curves (Figure 3) does not reflect differential rates of acquisition but rather indicates that the significant F ratio was a function of the Verb tense x Blocks interaction which, for the two temporal orientations, were themselves different.

Several post hoc analyses were computed on this data. Difference score "t" tests for correlated measures were computed for each subgroup's future and past tense operant
<table>
<thead>
<tr>
<th>SOURCE</th>
<th>df</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
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<tr>
<td>Temporal perspective (T.P.)</td>
<td>1</td>
<td>2.4023</td>
<td>0.0875</td>
<td>n.s.</td>
</tr>
<tr>
<td>Verb tense*</td>
<td>1</td>
<td>60.0625</td>
<td>2.1898</td>
<td>n.s.</td>
</tr>
<tr>
<td>T.P. x Verb tense*</td>
<td>1</td>
<td>2213.7021</td>
<td>80.7120</td>
<td>.01</td>
</tr>
<tr>
<td>Error (between)</td>
<td>76</td>
<td>27.4721</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blocks</td>
<td>4</td>
<td>38.0561</td>
<td>6.3343</td>
<td>.01</td>
</tr>
<tr>
<td>T.P. x Blocks</td>
<td>4</td>
<td>0.3087</td>
<td>0.0513</td>
<td>n.s.</td>
</tr>
<tr>
<td>Verb tense x Blocks*</td>
<td>4</td>
<td>5.0562</td>
<td>0.8415</td>
<td>n.s.</td>
</tr>
<tr>
<td>T.P. x Verb tense x Blocks*</td>
<td>4</td>
<td>23.6835</td>
<td>3.9420</td>
<td>.01</td>
</tr>
<tr>
<td>Error (within)</td>
<td>304</td>
<td>6.0078</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>399</td>
<td></td>
<td></td>
</tr>
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*Verb tense refers to its congruence or non-congruence with respect to temporal perspective.
Fig. 1. Acquisition Curve Across Trial Blocks.
Fig. 2. Acquisition Graph of Temporal Perspective x Verb Tense Interaction for Four Blocks of Twenty Trials.
Fig. 3. Acquisition Curves of Temporal Perspective x Verb Tense x Blocks Interaction.
level and performance on the last acquisition trial block. Analysis revealed that the high group, conditioned to future tense verbs (H-CF) significantly increased its performance over the operant level ($t = 2.09, p < .025$). A significant increase over operant level was not manifested by the low group conditioned to future tense verbs (L-CF). A difference score "t" test for uncorrelated measures was then computed between the subgroups' last acquisition trial block. The analysis revealed no difference of statistical significance.

Similar analyses were computed for both groups' performance on past tense verbs (H-CP and L-CP). A significant increase over the operant level was found for both subgroups ($t = 2.68, p < .01$; and $t = 2.65, p < .01$) respectively. A difference score "t" test computed between the subgroups' last trial block did not teach statistical significance ($t = .31$).

Analysis of the reinforcement schedules was made to determine actual percentages of reinforcement received. Means and ranges of the percentages for each subgroup appear in Table II. Analysis of the differences obtained among the four subgroups revealed no significant differences.

**Extinction**

As with the acquisition data a fixed model analysis
TABLE II
MEANS AND RANGES FOR VARIABLE RATIO REINFORCEMENT RECEIVED BY SUBGROUPS AT 75% LEVEL*

<table>
<thead>
<tr>
<th>GROUP</th>
<th>MEAN</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>H-CF (75%)</td>
<td>74.72</td>
<td>68.75 - 79.31</td>
</tr>
<tr>
<td>L-CF (75%)</td>
<td>75.10</td>
<td>64.70 - 81.25</td>
</tr>
<tr>
<td>H-CP (75%)</td>
<td>76.21</td>
<td>70.83 - 81.25</td>
</tr>
<tr>
<td>L-CP (75%)</td>
<td>74.78</td>
<td>67.92 - 78.78</td>
</tr>
</tbody>
</table>

*All numbers represent percentages.
of variance with repeated measures on the last factor was employed (Winer, 1962). A summary for this analysis appears in Table III.

The results of this analysis revealed significant $F$ ratios for the Blocks' main effect and the Temporal perspective x Verb tense interaction. As shown in Figure 4 the significant interaction effect revealed a higher level of responding to past tense verbs irrespective of temporal orientation. This result is consonant with the acquisition findings. The significant trial blocks' effect demonstrated an overall decrease in responding to the previously reinforced verb tense (Figure 5). As appears in Figure 6 the Temporal perspective x Verb tense x Blocks interaction was not found to be significant. Thus, the hypothesized differential rates of extinction were not supported.

**Awareness**

Immediately upon completion of the experiment each subject was queried in order to ascertain if he was aware of the reinforcement contingency. Subjects who either verbalized the correct contingency or who held this as one of their hypotheses were eliminated and replaced with subjects who met the same experimental criteria. This procedure was based upon Tatz's (1956) findings that some subjects achieved partial solutions while unable to exactly
<table>
<thead>
<tr>
<th>SOURCE</th>
<th>df</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporal perspective (T.P.)</td>
<td>1</td>
<td>1.0124</td>
<td>0.0339</td>
<td>n.s.</td>
</tr>
<tr>
<td>Verb tense*</td>
<td>1</td>
<td>20.0000</td>
<td>0.6702</td>
<td>n.s.</td>
</tr>
<tr>
<td>T.P. x Verb tense*</td>
<td>1</td>
<td>2610.6123</td>
<td>87.4837</td>
<td>.01</td>
</tr>
<tr>
<td>Error (between)</td>
<td>76</td>
<td>29.8411</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blocks</td>
<td>3</td>
<td>32.8332</td>
<td>6.9341</td>
<td>.01</td>
</tr>
<tr>
<td>T.P. x Blocks</td>
<td>3</td>
<td>4.4457</td>
<td>0.9389</td>
<td>n.s.</td>
</tr>
<tr>
<td>Verb tense x Blocks*</td>
<td>3</td>
<td>3.0831</td>
<td>0.6511</td>
<td>n.s.</td>
</tr>
<tr>
<td>T.P. x Verb tense x Blocks*</td>
<td>3</td>
<td>4.4459</td>
<td>0.9389</td>
<td>n.s.</td>
</tr>
<tr>
<td>Error (within)</td>
<td>228</td>
<td>4.7349</td>
<td></td>
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</tr>
<tr>
<td>Total</td>
<td>319</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Verb tense refers to its congruence or non-congruence with respect to temporal perspective.
Fig. 4. Extinction Graph of Temporal Perspective x Verb Tense Interaction for Three Blocks of Twenty Trials.
Fig. 5. Extinction Curve Across Trial Blocks.
Fig. 6. Extinction Curves of Temporal Perspective x Verb Tense x Blocks Interaction.
specify the reinforcement contingency.

Ten such subjects were eliminated from the main statistical analyses. Although the small number of subjects eliminated precluded a meaningful statistical analysis, graphs of their performance during the acquisition and extinction phases appear in Figures 7 and 8 respectively.

In summary the following results were ascertained: Although the trends were in the predicted direction the Heimberg F.T.P. Inventory did not predict, at a statistically significant level, operant responses to past and future tense verbs. Experimental manipulation resulted in statistically significant changes in overall performance over trial blocks for both conditioning and extinction phases. While the hypothesized differential rates of conditioning and extinction, in terms of temporal perspective and verb tense, were not supported differences were in the predicted direction. It was also found that all subjects in all subgroups responded with a greater frequency of past tense verbs.
Fig. 7. Acquisition Curves of Aware Subjects.
Fig. 8. Extinction Curves of Aware Subjects.
CHAPTER IV

DISCUSSION

The present investigation was concerned with ascertaining the existence of a relationship between temporal perspective, as measured and defined by an objective inventory, and performance in a verbal learning situation. If the instrument differentiates people on the basis of temporal orientation identification of behavioral correlates should be ascertainable.

Although the present results were not supportive of hypothesized differential rates of acquisition and extinction, and hence evidence for such correlates was not demonstrated, the question of the inventory's utility remains unsettled. Factors related to experimental manipulation may have contributed to the error variance. It is also conceivable that the instrument relates to a behavioral dimension other than the one herein explored. A third alternative, which awaits further study is that the inventory is not reliably related to behavior and should be discarded.

Subsequent to an examination of possible reasons for the present results suggestions for further research will be outlined.
The first point centers about a methodological issue. The procedure utilized was the Taffel-type task which has become quite popular due to the limited number of possible responses and consequent ease of scoring. The Taffel-type procedure has been criticized as not being truly representative of the operant conditioning paradigm (Krasner, 1965). Greenspoon (1962) has also voiced serious misgivings about inclusion of such research within the operant conditioning paradigm because an essential element of the paradigm is lacking. The Taffel-type procedure in which a specific response i.e., pronoun or verb, is reinforced does not provide for generalization within a class of responses. Modification of the procedure in which a class of responses, i.e., hostile verbs, bodily active verbs etc., is reinforced would provide opportunity for generalization within a class of responses.

This criticism is germane to the present investigation. While the experimental procedure permitted generalization across a class of responses, i.e., verb tense, this may not have fully met Skinner's (1935) definition of a generic concept. A more profitable manner of exploring the problem, while retaining the Taffel procedure, might utilize verb phrases referring to past and future events. In this manner a more generic class of responses would be reinforced.
Krasner (1965) suggested that the Taffel-type procedure may more closely approximate a problem in discrimination learning. From the S's point of view the experimental situation may represent a learning task in which there implicitly exists a right or wrong answer; "Right" representing the S's ability to discriminate the "real" demands of the E. The relatively simple nature of the task also allows for time and energy to speculate and form hypotheses thus permitting the formation of "intentions," i.e., "should I or should I not go along with what I think he wants me to do?" If S's hypothesis is not confirmed he may form yet another hypothesis.

The above factors may have contributed heavily to the large variability frequently associated with verbal conditioning studies. Following an analysis of acquisition data Greenspoon (1951) reported an initial rapid increase in frequency of the critical response often followed by a decrement and a final upsurge in the last five minutes of acquisition. The present findings are similar to those obtained by Greenspoon (Figure 3). Thus, the formation of hypotheses and intentions, readily permitted by the Taffel procedure, may have accounted for the drop in performance between acquisition trial blocks two and three. These results raise further questions as to the advisability of the
Taffel-type procedure.

A further factor which may have in part accounted for the present results was S's interpretation of the "apparent" positive reinforcement "mmm-Hmm." Mandler and Kaplan (1961) found the vocalization to possess little reinforcing value. Upon discovering that some Ss interpreted the sound as positive and others as negative Ss were separated into groups on the basis of their interpretations and the results reanalyzed. The second analysis revealed differential rates of conditioning favoring the group with the positive interpretation.

In dealing with such concepts as time perspective one must remain cognizant of the kinds of statements they permit one to advance. The concept temporal perspective is an organismic variable and results gleaned from experiments of this nature are relational. Had a relationship between temporal perspective and conditionability been established a causal statement could not have been advanced. It is possible that this relationship could have been a function of factors X, Y, Z, or any combination of them and temporal perspective.

A review of the literature revealed the confused state of affairs extant in the area of verbal conditioning and organismic variables. Not only were results inconsistent, but frequently diametrically opposed when
replicated under "identical" procedures while the same response class was utilized. Some Es have even reported complete failure in obtaining verbal conditioning phenomenon. A brief review of the literature, as concerns several organismic variables and verbal conditioning, is deemed necessary.

Research concerning anxiety and conditionability appears to be in the greatest need of reworking both conceptually and methodologically. Defining groups as high and low anxious three different kinds of results have been reported. Sarason (1958) and Taffel (1955) reported high anxious Ss to be more readily conditionable than their low anxious counterparts. Buss and Gerjouy (1958) reported opposite results. Other investigators have reported no significant differences between these two groups (Binder and Salop, 1963; Campbell, 1960). Numerous studies dealing with need for approval and conditionability have also been reported. While Anderson (1958) and Reidy (1951) found no relationship between conditionability and need for approval Crowne and Strickland (1961) reported the existence of such a positive relationship. Results in the area of suggestibility and verbal conditioning were also inconsistent and at times contradictory (Binder and Salop, 1963; Webb, 1961).

This brief sampling of the literature was intended
as a critique of psychologists' proclivity to single studies based upon standard definitions of concepts, anxiety as a case in point, which most investigators believe is less than adequate. The present investigation is exploratory in the sense that numerous variables need be explored prior to positing any definitive statements. In view of the nature of organismic variables the above is especially relevant.

The present finding of no differential rates of acquisition or extinction under a 75% variable ratio schedule necessitates the asking of a more general question: What is the relationship between the organismic variable temporal perspective and conditioning-extinction under various kinds and schedules of reinforcement? Previous results in the area of schedules and kinds of reinforcement have been relatively consistent and provide an empirical framework upon which to explore this relationship.

De Wolfe (1962) utilizing the Taffel procedure found that percent reinforcement (100-75-50) had no differentially significant effect upon acquisition but resulted in differential rates of extinction. The group receiving continuous reinforcement showed the greatest decrement and the 50% group the least. Similar results were obtained by Fattu and Mech (1955) and Kanfer (1954).

Several investigators have concerned themselves with the relationship between kinds of extinction procedures and
performance during extinction. De Wolfe (1962) found that non-responding during extinction led to the slowest decrement, reinforcement of a conflicting response an intermediate, and negative reinforcement the fastest decrement in responding to the previously reinforced response.

Timmons (1959) examined several kinds of extinction procedures and found omission of reinforcement resulted in the slowest and punishment plus counterconditioning the fastest response decrement. Cohen, Kalish, Thurston and Cohen (1954) reported that omission of reinforcement during extinction resulted in either no decrement or was effective for one specific kind of response rather than a general class of responses. Similarly Frieson and Ekman (1960) found that omission of reinforcement resulted in a decline in frequency of hostile but not friendly verbs.

In light of the foregoing data the following empirical questions are deemed worthy of future investigation and would supply information needed to make a more scientifically defensible statement as to the adequacy of the measuring instrument.

The theoretical foundation on which the inventory rests states that individuals possessing foreshortened future time perspectives are more responsive to external sources of stimulation, lack a stable internal anchorage,
and tend to perceive the environment as less structured, stable and controllable. Thus one might expect that:

(1) Under a continuous reinforcement schedule the low group (Ss with a foreshortened future time perspective) would manifest less resistance to extinction than more future oriented Ss.

(2) Low Ss would be more "manageable" in the sense that they would be more responsive to both negative reinforcements and a counter conditioning schedule.

The present investigator's primary concern is with the concept temporal perspective and secondly with validation of the F.T.P. instrument for use in future research. Methodologies are believed to be merely means to an end. If after investigating the range of relevant variables the method appears unproductive it will be laid aside and different ways of investigating the problem developed.
CHAPTER V

SUMMARY

The present investigation was an exploratory attempt to ascertain behavioral correlates, through the use of a verbal operant conditioning paradigm, of two populations differentiated as to temporal perspective. In view of the methodological shortcomings of previous studies a recently developed objective future time perspective inventory was employed (Heimberg, 1963).

On the basis of Heimberg's inventory two groups of 40 male college students were selected; the first possessed a foreshortened and the second a more lengthy future time perspective. The high future group was comprised of Ss who scored between one and two standard deviations above the mean total score of all males responding to the inventory (N = 345). Students whose scores fell between one and two standard deviations below the mean population value constituted the low future group. Each of the two groups was further subdivided into two subgroups of 20 Ss. One-half of the high and one-half of the low future Ss were conditioned, via the Taffel-type procedure, to future tense verbs. The remaining Ss in each subgroup were conditioned to past tense verbs.
All Ss in all groups were conditioned on a 75% variable ratio schedule. The acquisition phase of the study consisted of four trial blocks, each block consisting of twenty stimulus cards. Following acquisition all subjects were extinguished. The extinction phase consisted of three trial blocks, each consisting of twenty stimulus cards. Baseline responses to past and future tense verbs were obtained during the first or operant trial block.

The questions with which the study was concerned were:

1) Does the inventory predict operant responses to past and future tense verbs?
2) Will differential rates of acquisition and extinction occur when the groups are reinforced for responses both congruent and divergent from their temporal orientations?

Although results obtained were in the predicted direction the inventory was not predictive, at a statistically significant level, of operant responses to past and future tense verbs. Analysis of the trial blocks' main effect, for both the acquisition and extinction phases, revealed significant changes in overall performance thereby demonstrating the verbal conditioning effect. While hypothesized differential rates of acquisition and extinction
did not reach statistical significance differences were in the predicted direction.

Factors related to the conditioning paradigm employed were discussed and suggestions made for modification of the procedure. Because the concept future time perspective is an organismic variable it was also suggested that a series of studies, utilizing several kinds and schedules of reinforcements, be instituted. Several such studies were described.
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APPENDICES
APPENDIX A

In this inventory you will find a number of statements. We want to know how much you agree or disagree with each of the statements. To the right of each statement, you will find a rating scale like this:

\[
\begin{array}{ccccccc}
\text{DISAGREE} & & & & & & \\
1 & 2 & 3 & 4 & 5 & 6 & 7 \\
\end{array}
\]

The meaning of the points along the scale (1, 2, 3, ..., 7) is as follows:

1. Completely disagree
2. Mostly disagree
3. Disagree more than agree
4. Neutral
5. Agree more than disagree
6. Mostly agree
7. Completely agree

If you agree completely with a statement, place a mark in column 7. If you agree slightly with a statement, place a mark in column 5. If you mostly disagree with a statement, place a mark in column 2. In this manner you can show how much you agree or disagree with each of the statements.

Answer the way you really feel, not the way you think someone would want you to answer. This is a questionnaire, not a test. Any answer is the right answer if it is the true answer for you.

Read each statement carefully and then make a mark to show how much you agree or disagree with the statement. Be sure you make a mark for each statement. Leave none of the statements blank and make only one mark for each. You should not spend more than a few seconds marking each statement. If it is difficult for you to make up your mind, give the best answer you can and go on to the next one.

Be sure your marks are between the dots, like this:

\[
\begin{array}{ccccccc}
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\end{array}
\]

Now turn the page and indicate how much you agree or disagree with each of the statements.
1. I find it hard to get things done without a deadline. 

2. Often I am upset because I feel that I am not making the best use of my time.

3. I always seem to be doing things at the last moment.

4. I have too much to do.

5. I am afraid of getting older.

6. Sometimes I feel that everything is moving on ahead and leaving me behind.

7. I need to feel rushed before I can really get along.

8. My future seems dark to me.

9. I expect to become the kind of person I most want to be.

10. I look forward to the future with hope and enthusiasm.

11. I have great faith in the future.

12. A man with ability and willingness to work hard will be successful.

13. It is very hard for me to visualize the kind of person I will be ten years from now.
14. I expect that my plans for my future will change many times between now and the time I graduate.

15. I don't know what kind of work I will do in the future.

16. I can't even imagine what my life will be like in twenty years.

17. The future seems very vague and uncertain to me.

18. It's really no use worrying about the future, because what will be, will be.

19. It often seems like the day will never end.

20. I know the kind of job I want when I graduate.

21. Sometimes I feel that the future is a mere repetition of the past.

22. I generally act on the spur of the moment.

23. Sometimes I feel there is nothing new to look forward to in the future.

24. When I am depressed, I often fear I may never be really happy again.

25. I often find myself looking for ways to kill time.
APPENDIX B

ALPHABETICAL LISTING OF NEUTRALLY RATED VERBS

accept  decorate  formulate  mark  pull
adjust  deliver  furnish  match  reach
admire  demonstrate  gain  measure  react
admit  deposit  glance  meet  realize
advise  descend  guide  mention  receive
allow  deserve  happen  mix  recite
answer  devise  help  multiply  recline
appear  direct  hire  name  recover
apply  discover  illustrate  nominate  register
arrange  discuss  impress  notice  regulate
assign  distribute  improve  obey  rejoin
borrow  divide  include  observe  remember
bounce  donate  indicate  omit  repeat
call  drop  influence  open  replace
carry  earn  inform  organize  respond
celebrate  éléct  inherit  paint  retire
change  eliminate  inscribe  participate  return
clean  emerge  inspire  pave  sail
close  employ  install  photograph  scribble
collect  enclose  insure  plan  shrug
combine  encourage  interpret  play  snore
communicate  enlarage  invent  polish  sprinkle
compare  enter  jump  pour  subtract
compile  establish  knock  practice  transfer
conclude  exceed  learn  predict  travel
construct  explain  list  prefer  verify
contribute  file  listen  proceed  visit
correct  finish  load  prolong  walk
count  fix  lock  promise  wash
create  flip  look  promote  watch
decide  fold  maintain  pronounce  whisper
declare  follow  manage  provide  work
VITA

Melvyn A. Berke was born in Cleveland, Ohio on December 1, 1937. He graduated from Charles F. Brush High School in June, 1955 and entered Ohio State University in September, 1955. Mr. Berke transferred to Kent State University in 1957 graduating with honors in June, 1959.

In September, 1959, Mr. Berke was awarded a National Defense Education Act Fellowship for graduate study in psychology at the University of Miami, Florida and received his Master's degree in August, 1962. Subsequent to his graduation he was employed as a Psychologist II at the Cleveland Psychiatric Institute in Cleveland, Ohio.

Mr. Berke entered Louisiana State University in September, 1963 in pursuit of his doctorate. He has been a V.A. trainee and interned at the V.A. Domiciliary in Biloxi and the V.A. Hospital in Gulfport, Mississippi. During his period of internship he was associated with the Harrison County Juvenile Court, Gulfport, Mississippi and was also an instructor in psychology for the University of Southern Mississippi extension campus in Biloxi, Mississippi.

Presently he is employed as Research Coordinator for the Head Start Evaluation and Research Center located at
Southern University in Baton Rouge, Louisiana.

Mr. Berke is married to the former Naomi Rudin and they have two children, Daniel age seven, and Jacquelyn, age three.
Candidate: Melvyn Alan Berke

Major Field: Psychology

Title of Thesis: Direct Experimental Manipulation of Time Perspective through Verbal Operant Conditioning Techniques—An Exploratory Study

Approved:

[Signatures of Major Professor and Chairman, Dean of the Graduate School, and Members of the Examining Committee]

Date of Examination: 5 March 1968