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A SEMIOTIC APPROACH TO FUTURE TIME PERSPECTIVE

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A SEMIOTIC APPROACH TO FUTURE TIME PERSPECTIVE

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This dissertation is dedicated to my daughter Anne.

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A SEMIOTIC APPROACH TO FUTURE TIME PERSPECTIVE

CHAPTER 1

INTRODUCTION

Over the course of the past 37 years, since the earliest pioneering work of Israeli (1930), interest in time perspective (TP), particularly future time perspective (FTP), has increased. While the results of studies of TP have sometimes been equivocal, the majority of findings lend support to the idea that persons who have a better developed TP tend to have a higher level of success in our society than those who do not. This has been shown, for example, in studies of delinquents (Siegman, 1961), neurotic and psychotic adolescents (Levine & Spivak, 1957), adult schizophrenics (Wallace, 1956), and convict morale by Farber (1944).

One of the major assumptions of many of these investigations has been that TP, particularly FTP, is somehow related to impulse control. Other studies, however, have taken the broader approach which Lewin (1951) and Frank (1939) have discussed regarding psychological time, viewing it as a dimension of life space, holding that general differences in the amount of life space affect behavior. That is,

the smaller the life space, the less self-enhancing the behavior. Unfortunately, as Wallace and Rabin (1960) point out in their excellent review of temporal experience, Lewin's formulations are ambiguous. While he discusses TP, Lewin does not offer any clue to an operational definition of the concept.

Recent work by Kastenbaum (1961, 1963), and Heimberg (1963), has demonstrated the existence of nine or more dimensions of TP, at least four of which are unrelated. Kastenbaum appears to be the first to have made the distinction between personal as opposed to cognitive or impersonal TP, although the distinction was implicit in earlier works. The distinction between the personal and cognitive aspects lies in whether an event respectively is or is not related to the person as he views it. For example, a farmer is quite concerned about the weather in his county, but is unconcerned about the climate in Africa. Heimberg, in a factor analysis of several different TP measures, including personal and cognitive tests of TP, has found that these two different aspects are not correlated. She was not at the time, however, attempting to find empirical support for Kastenbaum's "personal" versus "cognitive" distinction of TP, although some of the measurement techniques she studied did fall into each of the two categories. Craik (1965), in his proposal for a large scale study of temporal behavior, has also recognized the existence of many temporal dimensions. Fraisse (1963), in his scholarly study of psychological time, has also set forth a lucid study of TP which he terms "temporal horizons." Minkowski (1958), writing on the

existential approach, has proposed that TP be divided into seven zones, ranging from the remote past to the remote future. Thus many have taken the position that TP is a complex concept containing many dimensions.

While many have set forth their views on TP, their concern with TP has usually been in terms of its relation to a broader personality theory. The major purpose of this investigation is to obtain empirical support for a new approach to the study of TP which will be set forth shortly. This theoretical approach is specifically concerned with FTP. Furthermore, certain important FTP variables have been studied in addition to those which are related to the theoretical approach set forth in this study. Thus, this study comprises an effort to study FTP in a way that will not only provide empirical support for the theoretical approach to be set forth but will also provide an empirically-based source for further conceptualization about FTP. In addition to the FTP variables under study, certain demographic variables have been included in an attempt to find out more about the aspects of FTP studied here.

CHAPTER 11

STATEMENT OF THEORY

As was mentioned in the introduction, one of the most consistent findings concerning TP, particularly FTP, is that at least to a limited degree, the more developed a person's TP, the more likely he is to be successful, particularly in the United States. Without wanting to become involved in the thorny problem of values, it still appears possible to broadly define "successful" in terms of an ability to overcome hardship and to be financially self-sufficient. From this position the question arises as to the role of TP with respect to behavior. At least a partial answer to this question has been proposed by Frank in his well-known article entitled "Time Perspectives."

For the first time in his history, man has realized that human nature can be changed because it is constituted of the ever-changing past, and the ever-changing future time perspectives that he himself imposes upon what has happened and what will happen. This is the emancipation that psychology is giving man today, as he learns courageously to face his past, attenuate it to the dimensions that frees his present and renders pliable his future (1939, p. 310).

Attention is called to the fact that Frank emphasizes the position that man gives meaning to time. Furthermore, in his discussion of the development of TP, Frank states it is the consequences of various reinforcement schedules such as those occurring in feeding and toilet

training that are of importance. Fraisse (1963, p. 288) makes a similar point in his discussion of the intrusion of wishes of others on the child's developing temporal horizon. Carrying Frank's approach a step further, it is assumed that it is the events that are personally relevant to the individual which affect the development of his TP and which most frequently govern his behavior.

Support for the above position is found in Kastenbaum's (1963) study of cognitive and personal futurity. He found no difference in the length of future time spans given to story completion stems by geriatric patients and young adults when these stems were of an impersonal or cognitive nature. However, when the stems were of a personal nature, the younger adults wrote sentences with longer time spans than their seniors.

In consideration of the above-mentioned distinction, the assumption is made that the most relevant aspects of TP as it affects behavior are those aspects which pertain to the personal or actual life of the person, as opposed to more distant or abstract aspects.

It should be noted that the assumption regarding personal TP as being the most relevant aspect of TP with respect to behavior still does not answer the broad question of what TP is about. Here the position is taken that TP is inextricably bound to events. Personal TP is thus bound to personal events, either remembered from the past or construed for the future. This position is somewhat similar to that of Lewin's life-space concept which involves events as perceived by the individual.

In his discussion of personal events, Fraisse also discusses the event in terms of the concept of "temporal sign."

To begin with, every event has a sort of "temporal sign." In our memory every action is associated with all of the circumstances which accompanied it. . . . These concomitant circumstances give us specifically temporal signs which take on their full significance when they are part of a conceptual framework, but originally they have the nature of experience (1963, p. 160).

Writing in a similar vein, Frank (1939) holds that while the details of a past event may be blurred, the meaning is remembered. Similar sorts of meaning processes are also construed with respect to the future. Thus, personal events, construed or remembered, are assumed to function as temporal signs. The concept of temporal signs leads to consideration of whether temporal signs function in the same manner as signs in general. If they do, then temporal signs might profitably be studied from the point of view of semiotics.

C. W. Morris (1964) defines semiotics as "the science of signs," and semiosis as "a sign process whereby a sign sets up a disposition to react in a certain way to a certain kind of object under certain conditions." A sign is anything that the persons attends to, which starts the process of semiosis. Morris describes the process of semiosis as follows:

Semiosis (or sign process) is regarded as a five-term relation--v, w, x, y, z--in which v sets up in w the disposition to react in a certain kind of way, x to a certain kind of object, y (not then acting as a stimulus), under certain conditions, z. The v's, in the cases where this relation obtains, are signs, the w's are interpreters, the x's are interpretants, the y's are significations, and the

z's are the contexts in which the signs occur (1964, p. 2).

Morris points out that the above-mentioned discussion is not proposed as a definition of a "sign," but simply gives the conditions for recognizing certain events and objects of attention as signs. Instead he prefers to regard the definition of a sign as an "open question." The reason for this choice appears to lie in Morris' proposal that his general theory of signs is applicable to the study of animals as well as men. That is, he is proposing an "interdisciplinary enterprise."

Of importance for this study is the concept of an interpretant which is the disposition to react in a certain way because of a sign. Interpretants, treated behaviorally, have three aspects which are of concern for this study:

1. A sign is designative in that it signifies observable properties of the environment or action; e. g. , being told there is a black object in the next room, one is set for certain visual experiences upon entering the next room.
2. A sign is appraisive in that one reacts toward a designated object as though it had a valence; e. g. , upon being told that something tastes good, he takes a positive attitude toward the object.
3. A sign is prescriptive in that it sets up a disposition to act in a given way with respect to a given object or event; e. g. , a student intent upon making good grades spends considerable effort at his studies.

The major question of this investigation is whether certain specific kinds of measurements of FTP can be re-cast in semiotic terms. That is, are there specific FTP dimensions that function analogously to semiotic interpretants?

However, before discussing the specific TP measurements which are held to be analogous to the above-mentioned semiotic processes, it is necessary to discuss these processes. In his book on semiotics (1964), Morris offers moderate evidence that his semiotic approach can be applied by people to various kinds of signs having widely different-appearing qualities. That is, the three aspects of semiotics under discussion are of sufficient definition and communicability that reasonable inter-subjective agreement can be obtained for anything that might serve as a sign. Morris cites the unpublished study of his student, James Alsobrook, as part of his evidence. Alsobrook used 67 bipolar scales, most of which were taken from Osgood's studies of semantic differential. He asked a group of 24 college students (8 graduates, 16 undergraduates) to rate each of the scales in terms of how much each scale was designative, appraisive, or prescriptive. For example, using one of Osgood's "evaluative" factors or scales as a sign to be rated, one student rated it as being 21% designative, 79% appraisive, and 0% prescriptive. When these ratings were taken across all the scales, there "was an agreement of 79 percent as to whether a scale was predominantly designative, appraisive, or prescriptive" (1964, p. 53). In a replication of Alsobrook's study using 8 graduates and 8 undergraduates,

Morris obtained an agreement of 87 percent on the predominance of a given sign with respect to a semiotic dimension. Furthermore, Morris found that there was 69 percent agreement as to the relative strength of designation, appraisal, and prescription in the scales. Thus, there is evidence to indicate that not only can the semiotic approach be communicated and used for category assignment, but also that the definitions are explicit.

An important related issue which concerns Morris is whether the three aspects of semiotics under discussion can be considered as dimensions in a mathematical sense.

Some readers will object to the use of the term "dimension" in this connection, and they may prefer such terms as "factor" and "respect." The semiotic "dimensions" are not dimensions in the strictest mathematical sense (as are the value dimensions of Chapter 2). But the values of the variables are partly independent, and while no scale is known which is common to all of them, the values of each dimension are to some extent quantifiable (1964, p. 5).

Considering the Alsobrook study as well as Morris' replication and extension of it, it does seem appropriate to assume that the three aspects of semiotics can be treated as independent dimensions. Furthermore, in an earlier discussion of how Mead's analysis of the act (1938) is related to semiotic phases, Morris' "suggestion is that signification is tridimensional, and that these three dimensions are explicable in terms of three phases or aspects of action" (1964, p. 4). Thus the present author believes that Morris' concern over the legitimacy of treating designation, appraisal, and prescription as dimensions is unduly

cautious. Certainly Morris himself speaks of these aspects as being dimensions. Furthermore, his studies suggest that these aspects may not only be treated as dimensions but as independent dimensions.

Before proceeding further, it is appropriate to summarize the discussion thus far. It has been proposed that, at least in a broad sense, the degree of success that a person has in life is related to his TP. Frank, in pointing out the possibilities of man's being able to reconstruct his TP, implies that TP is causally related to behavior. He bases his idea on man's being able to reconstruct his TP on the assumption that it is man who gives meaning to time and who can therefore change the meaning, increasing his chances of success. The proposition was developed that since various reinforcement schedules presumably operate in the evolution of a TP, personally relevant events are more reinforcing and therefore are more important for the development of a person's TP than events which are not relevant.

Another point set forth was that a TP is inextricably related to an event and, moreover, to a personally relevant event. The import of this position will become clearer in the discussion of the measurements used in this study. The view was also expressed that events (which always exist on a time continuum) may be treated as temporal signs. At this point, the question was raised as to whether temporal signs might profitably be studied from the semiotic approach. Finally, the discussion of the designative, appraisive, and prescriptive aspects of semiotics brought out the problem of whether they can be treated as

independent dimensions. The position was taken that such treatment is legitimate.

Before proceeding to a discussion of the FTP analogies of semiotics, it is necessary to comment on the nature of the temporal "sign" to which the analogies refer. It will be recalled that the previous discussion of semiotics dealt with signs that were observable. That is, the signs in Alsobrook's and Morris' studies were words printed on cards which all could point to and see. Morris' definition of what "things" might serve as signs is, however, much broader. "Self-observational reports on sign processes are, however, not ruled out by a behavioral semiotic, since they are themselves a kind of sign behavior" (1964, p. 3). Therefore, events that are construed for the future are within Morris' broad definition of what constitutes a sign.

In proceeding to the discussion of the proposed FTP analogues to semiosis, it will be recalled that the three aspects of an interpretant are designation, appraisal, and prescription. The "temporal dimensions" which are here set forth as being analogous to the above are "density," "evaluation," and "locus of control," respectively. All of these dimensions meet the requirement of being associated with personally relevant events in that their measurement involves asking the subject about events that pertain to his own life situation.

The FTP dimension of future density is proposed as the FTP analogue to the semiotic dimension of designation. Future density is measured by the number of events that a person lists, these events

being ones which he believes will have a reasonable probability of happening. Kastenbaum describes the density dimension as follows:

... a person may see many prospects before him or few. One person anticipates many experiences and looks forward to functioning in a variety of social, vocational, and avocational roles. Another person expects few things to happen in his life, and can imagine himself in an exceedingly limited number of situations and activities. One way of putting it is to speak of an individual's future as being more or less "dense" (1961, p. 204).

While the measurement of density by having a person merely list anticipated events seems risky and fraught with inexactness, there are two studies which show that this technique is more useful than would at first appear. Kastenbaum (1961), in a factor-analytic study, obtained future density as well as other FTP measurements from 209 adolescents. He found that the dimensions of density and extension had high loadings on the same factor. That is, the number of events anticipated were related to how far in time a person thought into his future. If it can be assumed that the majority of the average subject's life plans consist of a sequence of events rather than of a group of more-or-less overlapping and simultaneous events, the relationship between density and future extension is to be expected. That is, the greater the number of events, the more likely the longer the time required for them to occur. It will be recalled that density is simply the number of events construed for the future. Extension, on the other hand, is defined as the length of time the person projects into his future, regardless of the number of events involved. Note that these two measures can be obtained

from different sources of data.

In a later study, Kastenbaum (1963) obtained future density measurements from elderly people (median age: 77) and young people (median age: 19). In this study a slightly different method was used where, instead of an open-ended listing as used above, subjects were required to list three important events which they anticipated would happen. The definition of "important" was left to the subject's own discretion. Kastenbaum found that only five of 24 older subjects could even list three future events whereas all of the younger subjects could do so. This difference between the two groups yields a chi square value of 12.44, significant beyond the .01 level of significance. While he discusses some other aspects related to the differences between the density measures of the two groups, Kastenbaum implicitly attributes much of the variance to the shorter life expectancy of the older group. In brief, the general procedure of having subjects list anticipated events is more than a simple and unmeaningful task for the subjects. Such a procedure yields data which have been consistently in the anticipated direction.

The dimension of evaluation is proposed as the FTP analogue of the semiotic dimension of appraisal. Future evaluation is measured by means of the Time Reference Inventory (TRI) developed by Roos (1964). The subject responds to each of the 30 items of the TRI by checking one of the statements labeled "past," "present," or "future," thus indicating that a given item pertains to his past, present, or future. The first 10

items are pleasant or positive events, the second 10 items are unpleasant or negative events, and the remaining 10 items are affectively neutral events. For example, a subject could check the first 8 items as referring mainly to his future and the next two as referring to his present; the next 10 items could be evenly divided between his past and present, with a similar distribution assigned to the remaining 10 items. The result would indicate a positive attitude toward the subject's future with his attitude becoming more negative as he moves from his future into his past. It can be readily seen that the TRI measures more than a person's attitude toward his future. It can encompass his present and past, as well as determining to what extent his temporal concerns even involve the future. Furthermore, by means of having the subject list his age for each event (remembered or anticipated), a measure of future as well as past extension can be obtained. That is, by subtracting the subject's present age from all future events and computing the mean, a measure of future extension can be obtained. A similar procedure with respect to past events yields a past extension measure. While it is not the purpose of this section to discuss the measurement of extension, it is necessarily included to some degree in order to facilitate a better understanding of the studies using the TRI which are discussed below.

The first published research using the TRI was a study of 35 hospitalized alcoholics (31 males and 4 females) and 27 normal adults (5 males, 22 females) by Roos and Albers (1965a). They found that alcoholics selected more positive items as referring to the past than

the normals did ($t=1.97$, $p < .05$, two-tailed test). For the present zone, alcoholics selected fewer positive items ($t=3.51$, $p < .001$, two-tailed test), more negative items ($t=3.49$, $p < .001$, two-tailed test), and fewer neutral items ($t=2.07$, $p < .05$, two-tailed test). There were no significant differences for positive, negative, or neutral items which referred to the future. A previous unpublished study by Roos and Albers using 77 normal adults of both sexes failed to find any significant differences that were attributable to the subject's sex. With respect to future extension, normals scored significantly higher than alcoholics (9.06 yr. vs. 3.49 yr., $t=5.45$, $p < .001$, one-tailed test). No significant differences were found for past extension.

Roos and Albers interpreted their findings as suggesting that alcoholics see the present as being more difficult and the past as more favorable and as being consistent with clinical evidence where such patients have resisted dealing with present difficulties by reminiscing about past events. The finding that the alcoholic group shows the same appraisal of the future as the normal group does not, however, argue against the validity of the future appraisal measure obtained from the TRI. Rather, as suggested by their shorter future extensions, alcoholics spend less effort in thinking about the future than normals, preferring to focus more on the past than the latter group.

In a subsequent study using an abbreviated form of the TRI which contained only 12 items, Roos and Albers (1965b) compared 53 retarded institutionalized males with 59 male University of Texas

undergraduates. The mean I. Q. for the retarded group is 63.72, "using one of the Wechsler scales and the Stanford Binet scales" (1965b, p. 835). For the university group the mean I. Q. on the University of Texas Entrance Test was 105.80. Roos and Albers report that the difference in intelligence between the two groups is highly significant. They found that I. Q. and measures of future as well as past extension were not correlated. The age difference between the two groups, however, was not significant (retarded group: mean age 17.68 yr., std. dev. 2.35; normal group: mean age 18.85 yr. std. dev. 0.85).

For the evaluation measures Roos and Albers found that the retarded subjects differed from normals in selecting fewer positive items as referring to the future ($z=2.80$, $p < .006$, two-tailed test) and more positive items as referring to the present ($z=2.53$, $p < .02$, two-tailed test). The retarded subjects also differed from the normals in selecting significantly fewer negative items as referring to the past ($z=2.33$, $p < .02$, two-tailed test). No other differences were reported with respect to appraisal.

In comparing the past and future extensions of these groups, Roos and Albers found the retarded group differed from normals in having a shorter future extension (12.81 yr. vs. 18.14 yr., $z=1.90$, $p < .03$, one-tailed test) and a longer past extension (9.34 yr. vs. 8.41 yr., $z=1.50$, $p < .07$, one-tailed test). The authors interpreted their findings as being consistent with educational experience, which shows that retardates have difficulty setting long-range goals, preferring

immediate or short-range rewards and goals. Furthermore, the findings regarding their more positive outlook toward the present is seen as being consistent with the frequent observation that such individuals tend to have a "happier" or more positive disposition than their more intelligent peers. The finding that such individuals have a more negative outlook on their past was interpreted as suggesting that "although they cling to past memories, they tend to perceive the past as relatively unrewarding" (1965b, p. 837).

In summary, the TRI measures have yielded results which are consistent with clinical and educational experience. This is true not only for the appraisal measures but for the extension measures as well. Moreover, when these measures are combined, it is also possible to obtain a theoretically as well as clinically understandable picture of the groups that were studied. It should also be added that the TRI does not appear to measure variables that are related to intelligence; i. e., educational achievement.

The dimension of internal vs. external locus of control, or, more simply, "locus of control," (LOC) is proposed as the FTP relative of the prescriptive dimension of an interpretant. LOC is measured by means of the I-E scale developed by Liverant and Scodel (1960) and subsequently refined by Rotter (1966). In its present form the I-E scale consists of 29 pairs of forced-choice statements, 23 of which pertain to LOC with 6 filler items interspersed among them. An example of an item pertaining to LOC requires the subject to choose between the

statement that "many of the unhappy things in people's lives are partly due to bad luck," and "people's misfortunes result from the mistakes they make." The first statement represents external control while the latter represents internal control.

As inferred from the above item, LOC asks whether a person feels that he can or cannot exercise some control over the events that occur in his life. As such, this construct is not directly analogous to the semiotic dimension of prescription as were the two analogies discussed previously. That is, both of the FTP dimensions of density and evaluation have at least a direct face validity and apparently interchangeable terminologies with their respective semiotic dimensions of designation and appraisal. This is not the case for LOC. The inclusion of LOC as being "related to" (instead of analogous to) the semiotic dimension of prescription is based on the argument that the kind of action a person takes with respect to a future temporal sign depends on whether or not he believes that he can take a meaningful action as potentially dictated by a sign. That is, if a person does not believe that he can exercise some control over the events that will happen to him, he will not engage in appropriate planning behavior. Here, the course of action is prescribed by an event (or temporal sign). Thus the personal belief that one can exercise control over events (internal LOC) is assumed to be a prerequisite for the ability to act according to a mainly prescriptive future temporal sign. If the person does not feel that he can exercise some control over his fate, he will ignore the prescriptive

implications of the future sign.

As compared to the previously discussed measures of density and evaluation, the I-E scale has had by far the greatest study, not only in terms of validity, but also with respect to internal consistency and test-retest reliability. Rotter cites the work of Lefcourt and Ladwig (1965) as evidence regarding construct validity. They compared the scores of 60 Negro and 60 white convicts from two different correctional institutions who were comparable with respect to age, social class, intelligence, and reason for incarceration. The Negro sample was significantly more external (mean 8.97) than the white sample (mean 7.87). Another study, one of particular relevance to the present investigation, is that of Franklin (1963), in which he found that high school students who were planning to go to college were more internally controlled than those who were not planning to go to college. Thus, those high school students who are planning to go to college respond differently than those high school students who are not planning to go to college.

Evidence concerning the issue of social desirability has been reported by Rotter (1966) where correlations were sought between the Marlow-Crowne Social Desirability Scale and the I-E scale. The median correlation of $-.22$ was obtained for the 1,481 college students studied by five different investigators. As may be inferred from this low correlation, the effect of the social desirability of the items in the I-E scale appears to be minimal, at least under conditions which do not affect the subject's grades in school.

The relationship of the I-E scale measurement to that of intelligence appears to be insignificant, as shown by Strickland's (1962) study of 107 female college students. He obtained a correlation of $-.09$ between the I-E scale and the Ohio State Psychological Examination. In a similar study of 26 male and 46 female college students using the same tests, Cardi (1962) obtained correlations of $.03$ and $-.22$ for the males and females respectively. In a study of 80 male prisoners, Ladwig (1963) obtained a correlation of only $.01$ between the I-E scale and the Revised Beta I. Q. tests. Thus there is ample evidence to show that measurements taken with the I-E scale are not related to intelligence.

Evidence concerning the internal consistency of the I-E scale has also been reported by Rotter (1966). In a study of 50 male and 50 female college students, Rotter obtained split half correlations of $.65$ and $.79$ for the males and females respectively, using the Spearman-Brown formula. Using the Kuder-Richardson formula, the correlations were $.70$ and $.76$ respectively. In a similar study with 30 males and 30 females, Rotter obtained test-retest reliability scores of $.60$ and $.83$ for males and females respectively.

In summary, the I-E scale has been shown to be able to discriminate between groups who differ in the extent of their plans for the future. This scale has also been shown to be relatively insensitive to social desirability considerations where the use of the test scores is not related to the subject's grades in school. Furthermore, the I-E scale has sufficiently high internal consistency correlations to show that the

scale is essentially uni-dimensional. Moreover, the test-retest scores suggest that the behavior tapped by the I-E scale is of an enduring, or more basic, rather than of a transient nature.

Before proceeding to the discussion of the remaining FTP dimensions considered in this study, it is well to summarize those aspects of this section which concern the semiotic approach to FTP. The first assumption made is that time is inextricably bound to events. In particular, our concern for time is mainly wrapped up in personal events. It is then argued that personal events, even those that are construed for the future, can serve as signs in the sense that C. W. Morris uses the term. That is, a sign is anything, internal or external, to which the subject attends (i. e. , reacts to, in an interpretational manner). The discussion then turned to the question of whether the designative, appraisive, and prescriptive aspects of an interpretant are orthogonal.

While Morris appears to waver somewhat on this issue, it is necessary for the purposes of this study to assume that the three aspects under study are mutually independent or orthogonal. This assumption must be made because it is prerequisite to both the correlational and factor analytic procedures that have been carried out.

We then considered the issue of rationally establishing the correspondence between the three dimensions of a semiotic interpretant and their potentially relevant FTP dimensions. The rationale for the correspondence between the two systems is essentially that of a face validity or apparent correspondence. Indeed, it is the purpose of this

study to obtain empirical support for the semiotic approach to FTP. It is therefore proposed that the following semiotic and FTP dimensions are related: Designative to future density; Appraisive to future evaluation; and Prescriptive to LOC. While the statement of formal hypotheses is deferred to a later section, the first purpose of this study is to determine whether or not the proposed analogies can be empirically supported. That is, are the three FTP dimensions mentioned above mutually orthogonal? If such is the case, we then have a theoretical basis which would warrant further development. However, even if these FTP dimensions are related, such knowledge will still enhance our thinking about FTP.

While the three dimensions described above are important for our understanding of FTP, there are at least two other FTP dimensions which merit inclusion in this study. They are future extension (or personal futurity) and future coherence.

On an intuitive basis, it seems that future extension, or the number of years that a person thinks into his future should be analogous to perspective in art. Galileo (1638) was probably the first to link "distance" in time to distance in space. However, with the advent of many different instruments which were all purported to measure "time perspective," the term has become vague without stating its various operational definitions. The principal measure of future extension used in this study (or, more properly, personal future extension) is that used by Wallace (1956) and modified by Graves (1961). Future extension is

measured by asking the subject to write down on separate sheets of paper 10 events which may happen during the rest of his life. The subject is also told to list an age for each event on a separate list. Wallace's measure of future extension was obtained by subtracting the subject's present age from that of the temporally most distant event, thus giving the amount of time into the future to which the subject's thoughts are extended.

In a study of 34 schizophrenic and 34 normal V. A. Hospital patients, Wallace (1956) found that schizophrenics had a median extension of only 12 years, whereas the normals' median extension was 36 years ($H=3.28$, $p < .001$). In a study of 33 alcoholics and 33 non-alcoholics, Smart (1967) found that alcoholics had a median extension of only five years whereas the normals' median extension was 22 years ($U=3.65$, $p < .00016$). Using a modification of Wallace's technique, where, instead of having the subject tell his age for each of 10 events which he listed, Dilling and Rabin (1967) had the subject write down his age for when each of 10 common personal events will happen as determined by the experimenters. Using 20 subjects per group ranging in age from 20 to 50 years, these investigators found that depressive subjects had a median extension of 27 years, schizophrenic subjects a median extension of 35 years, and normal subjects a median extension of 49 years ($H=15.35$, $p < .001$).

In a study of three ethnic groups of adolescents, Graves (1961) found the Anglos to have a longer future extension than the Mexican-

Americans and that both groups had longer future extensions than the Indian group. While Graves obtained his data using the same procedure as Wallace, described above, his procedure of pooling the extensions, etc., does not yield data comparable to that listed in the studies mentioned above.

In his dissertation, Graves (1961) describes a modification of Wallace's procedure of using the most (or "tenth most") remote extension as the basis for computing a subject's future extension score. In a pilot study of 20 adolescents, Graves found the following:

When a Spearman rank-order correlation was run between the tenth most remote item's extension and these relative extension scores which incorporate the extension of all ten events named, the obtained correlation was only .43. When the ninth most remote events were used instead, however, this correlation jumped to .85 (1961, p. 98).

Graves also notes that the intercorrelations of the items with each other were generally of the same size, excluding, of course, the tenth or most remote extension. Furthermore, using 10 subjects, Graves found that the test-retest correlation was .88 for the ninth most remote item when a five week period intervened. Graves does not cite test-retest correlations for the tenth most remote events, although they are presumably much lower than for the ninth most remote events.

Using the Important Events technique, whereby subjects were instructed to list three anticipated important events and their temporal distance from the present, Kastenbaum (1963) studied the personal future extensions of 24 elderly persons (median age 77, range 66-89) and

24 younger adults (median age 19, range 18-24). There were 16 women and 8 men in each sample, the younger subjects being college juniors, and the older subjects residents in a geriatric institution. While Kastenbaum did not publish his data, he did state that the median extensions of the elderly group were less than the younger group's, the difference being significant beyond the .01 level. While it is recognized that Kastenbaum's method required subjects to list only three events, it is assumed that the variable he measured is very close to that studied by Wallace and Graves whose studies were discussed above. Furthermore, support for this assumption is obtained from Graves' finding that the first nine events a person lists have high intercorrelations with even the tenth event being at least moderately correlated.

In summary, the measurements of personal future extension cited above all yield results that are consistent with clinical experience as well as with theoretical indications. That is, persons who are afflicted with either schizophrenia or alcoholism (thus showing less ability to cope with societal demands in a general sense) have shorter future extensions than normals. On a rational basis it is hypothesized that elderly people would perceive shorter futures than younger people. This hypothesis was supported by Kastenbaum's (1963) findings cited above. Furthermore, Graves cited some evidence showing that the test-retest reliability of the measurements was relatively high, indicating that a stable aspect of behavior was being tapped.

The last FTP measurement studied is future coherence. Wallace

(1956) refers to coherence as "the degree of organization of events in the future time span." Future coherence is measured by having the subject list 10 anticipated events on separate cards and also writing down their age for each event. Following the administration of other tests in the same session, the subjects are handed back their 10 cards with the events written on them (but with the ages removed), and told to put the events in the order in which they might happen. Having two resultant rankings of events (one inferred from age and the second being obtained directly), a rank order correlation is computed. The resultant rank order correlation coefficient is the degree to which the subject has coherently organized his future and is the numerical expression of future coherence. It is recognized that this operational definition has surplus meaning. However, it is the term that has been used by Wallace (1956) and Smart (1967).

In a study of 34 schizophrenic patients in the Veterans Administration Neuropsychiatric Hospital and 34 patients from the medical service of a Veterans Administration General and Surgical Hospital who did not have any record of previous psychiatric illness, Wallace (1956) obtained measurements of coherence. The schizophrenic group had a median coherence score of .65 whereas the normal group's median was .93 ($H=3.77$, $p < .002$). Wallace then divided the schizophrenic group into two subgroups of 17 subjects each. The first group had been in the hospital for a comparatively short period of time (median 6 months), whereas the second group had been hospitalized for a longer duration

(median 5 years and 4 months). He found that the short-term group had a median coherence score of .84, whereas the long-term group's median was .44 ($H=2.28$, $p < .001$). Thus the long-term schizophrenic subjects contributed most to the difference found between the normal and schizophrenic groups, the difference between the normal and long-term subjects being reported to be significant beyond the .01 level of confidence. Wallace goes on to state the following:

To meet the criticism that the above experimental findings may reflect merely the effects of institutionalization rather than the influences stemming from the operation of the independent variable, two empirical findings may be mentioned: (a) Comparisons of the two schizophrenic subgroups revealed no significant differences on any measure of extension. With regard to coherence, however, significant intragroup differences were found in connection with Task I, but not Task III. (Task III is a 15-item procedure similar to that used to obtain the coherence measure described above. However, the 15 statements were determined by the experiments and administered to every subject.) On all measures, therefore, except one obtained for coherence on Task I, the schizophrenic subsamples are homogeneous. It does not appear that the factor of length of hospitalization produces stable differences in the performances of the psychotic subsamples. (b) Since the median period of hospitalization for the short-term psychotic group was six months, while that for the controls was two months, some degree of comparability with regard to this factor may be assumed. Comparisons of these groups revealed statistically significant differences on all measures except for one of coherence (Task I). For the most part, then, these findings tend to suggest that factors other than length of hospitalization must be called upon to account for the obtained results. On the basis of these considerations, it appears that the factor of institutionalization per se is not crucial in explaining the results of the present study. Such a conclusion, however, is tentative, and awaits further research in which a more adequate control of this variable is utilized (1956, p. 244).

Smart (1967), in a study conducted at the Alcoholism and Drug Addiction Research Foundation in Toronto, Canada, obtained coherence measures from 33 alcoholics and 33 "social drinkers" who had no previous history of alcoholism. In referring to the measurement of coherence, Smart states the following:

Only 12 out of 33 alcoholics were able to completely order or to assign ages to the 10 events of Task I. Some could order only a few events and could not imagine when the others would occur; others could give no ordering at all. The author was surprised to find that this task was so difficult for non-psychotic alcoholics, most of whom were employed or recently employed, living with families, and functioning in a minimally adequate way in many non-drinking situations (1967, p. 192).

Thus the position taken by Wallace that depressed coherence scores are more of a function of the individual's personality than his duration of institutionalization appears to be supported by Smart's findings. Concerning the 12 alcoholics who could list 10 events, Smart found these subjects to have significantly lower coherence scores than the normal social drinkers (Mann-Whitney $U=2.07$, $p < .02$).

While the issue of what future coherence actually does measure is still somewhat unresolved, the position that it is an ability to impose an organization on anticipated events appears to be consistent with the operations involved in gathering the data. Furthermore, the studies reported above support the contention that coherence is related to some aspect of a person's ability to cope with the demands of our Western culture.

Another measurement obtained in this study is that of past spatial

experience (PSE). For the purposes of this study, PSE is defined as the number of different places a subject has lived for six months or more. As such, it is a measurement pertaining to a person's past and was included in this study for two reasons. First, Kurt Lewin (1951) has contended that life, space and time perspectives are related. Frank (1939) holds that past events comprise the repertory out of which we construe our future. At issue, however, is the problem of definition of life space as well as time perspective. To be sure, there are many ways of defining this concept and it is recognized that life space is as complex as time perspective. Nevertheless, it seems appropriate to begin with the simple-seeming definition described above. Moreover, this definition is held to be an appropriate one inasmuch as it pertains to the personal experience of the subject, an orientation maintained throughout the study thus far. Furthermore, while PSE is not studied from the semiotic approach as are the FTP dimensions per se, it is consistent with Morris' definition of signs. The consistency lies in the assumption that places lived in, in the past are similar to temporal signs in so far as they are both connected with events. Thus PSE was selected for study because it is not only germane to the issue of the relationship of past experience to FTP, but because it is consistent with the personal sign approach of this study.

The second reason that PSE was selected for inclusion in this study is because measuring techniques similar to the one used here have been found to be related to two measurements of FTP. In a study of 100

ninth-grade boys and girls, Vincent and Tyler (1965) studied the relationships between "ego-time-span" (ETS), the number of places the subject "knows something about" outside of the United States and Canada, and the number of "Behavior Settings" into which the subject entered. They defined ETS as the median time of seven future events that the subject anticipated. As such, this measurement is quite similar to that of future extension, discussed previously. The number of places the subject knows something about outside the United States and Canada amounted to a simple listing of locales. Although the number of places outside the North American Continent that were listed by the low and high ETS groups was about the same (16.56 and 17.10, respectively), the high ETS group listed a higher ratio of foreign-to-North America places than the low ETS group (41% versus 28%, $p < .01$).

Using Barker and Wright's (1955) measure of Behavioral Settings Entered, described by Wright (1967) as how "many different things" a person does in a day, Vincent and Tyler found that the subjects with the high ETS scores tended to enter into more behavioral settings than subjects having low ETS scores (F significant at .10 level). Thus, while these authors did not report the relationship between the ratio of foreign-to-North America places and Behavioral Settings Entered, such a relationship may exist. In the present study, the definition of PSE appears to overlap with those definitions used by Vincent and Tyler and, as such, may well be related to FTP.

Shively (1966), in his ambitious study of temporal horizon, also

investigated the relationship of life space to FTP. His technique for measuring FTP was that of asking his subjects to indicate how far they personally felt they could "see clearly into the future," using an 11 point scale ranging from 0 to 2 weeks to beyond 20 years. To study spatial orientation, Shively used a version of Back and Gorgen's (1963) technique of having the subject list his factual knowledge about the world as obtained from the following list of questions:

1. In what countries have you traveled?
2. In which of these countries have you lived for a period of six months or more?
3. In approximately how many states have you traveled?
4. In what states have you lived for a period of six months or more?

This questionnaire, called the Horizontal Mobility Rating Scale, is the instrument from which the single question measurement of past spatial experience used in the present study was taken. Using the scale described above, Shively (1966), in a study of 323 University of Oklahoma undergraduates enrolled in an introductory sociology course, found that subjects who scored low on the scale had a median time horizon of 2 years, 4 months, and 7 days, whereas those subjects having higher scale scores had the longer median time horizon of 3 years, 2 months, and 23 days. Thus, using a measure of life space and time horizon, Shively has found support for Lewin's contention that these two aspects are related.

In the present study, owing to the higher priorities required by the semiotic emphasis of the FTP measurements discussed previously and the resulting time limitation necessitated by the press of the subjects' regular academic commitments, it was necessary to use an abbreviated version of the Horizontal Mobility Rating Scale. In view of the findings of Vincent and Tyler (1965) discussed above, however, it seemed possible to shorten the life space scale to a single question, namely: "How many different states or cities have you lived in for six months or more?" This question is not only similar to those used by Shively but also allows for the entered behavioral settings and foreign countries aspects found to be important in the study by Vincent and Tyler.

The last TP measurement included in this study is past extension as measured by the TRI. While the TRI past extension measurement is necessarily obtained along with the other TRI measures for the purpose of maintaining comparability to the findings of Roos and Albers (1965a), it is also included for a more legitimate reason. That is, this measure, along with that of PSE discussed above, constitutes an important additional measure of past time perspective. Furthermore, as such, TRI past extension provides the basis of an exploratory effort into the nature of the relationship of past time perspective to FTP. It also affords the opportunity to study the relationship of past achievements (as measured by the STEP tests) to past time perspective.

In a study of 35 alcoholics and 27 normal adults of comparable age (mean age 48 years) and normal intelligence, Roos and Albers (1965a)

found the measure of TRI past extension to be related to age and intelligence. They found positive correlations with respect to age (for alcoholics .53, $p < .001$; for normals .18, $p < .17$) and negative correlations with intelligence (for alcoholics -.54, $p < .001$; for normals -.53, $p < .003$). Following the first phase of their data analysis, Roos and Albers found a negative correlation between age and intelligence (for alcoholics -.32, $p < .03$; for normals -.31, $p < .06$). They therefore computed partial correlations between TRI past extension and the variables of age and intelligence. The partial correlations "remained essentially unchanged" from the correlations between TRI past extension and the variables of age and intelligence reported above. Thus, while the present study may be viewed as a partial replication of the work of Roos and Albers, it also affords the opportunity for an extension of their work as discussed previously.

CHAPTER III

PROBLEM

The major purpose of this study is to investigate the relationships of the designative (density), appraisive (evaluative), and prescriptive (locus of control) analogues of FTP. That is, evidence has been sought in this study to answer the question of whether temporal signs (in the form of events) construed for the future can be studied from the semiotic approach. If such is the case, it is hypothesized that these three analogues are not correlated with each other.

In addition to the three measures of FTP mentioned above, two other measures of FTP have been included. They are future extension and coherence. These two measures are included, not only for their consistency with the personal sign approach of this study, but also because they have been shown to have clinical as well as theoretical significance.

While the measurements of PSE and past extension are not part of the multi-faceted construct of FTP, per se, they were included in this study. Their specific inclusion is based, not only on their consistency with the general approach taken to the measures of FTP contained here, but also because they both pertain to the past. As such, it is

worthwhile to explore the relationships of past experience, as well as past time perspective, to those of FTP.

The first three hypotheses are statements concerning the semi-otic approach to FTP. The next seven hypotheses concern the remaining possible relationships of the five FTP variables studied. The hypotheses concerning the interrelationships of the FTP variables are shown in Table 1. The additional issues considered in this study concern two dimensions related to past time perspective as well as the variables of age, sex, educational achievement, and intelligence.

Table 1
Diagram of the TP-Related Hypotheses
and the Measurement Techniques Used

Technique or Instrument	Variable	Variable				
		1.	2.	3.	4.	5.
No. of future events listed	1. Designative (Density)	+r	+r	+r	+r	
Time Reference Inventory	2. Appraisive (Evaluative)		+r	+r	+r	
I-E Scale	3. Prescriptive (locus of control)			+r	+r	
Second most remote event	4. Personal Futurity (future extension)					+r
Test-retest reliability (rho)	5. Future Coherence					

The first hypothesis concerns the question of whether there is a relationship between the designative (density) and appraisive (evaluative) analogues of FTP. The semiotic approach suggests that the dimensions are independent. Frank (1939) holds that these two dimensions are related, a positive appraisal (evaluation) of the future being related to one rich in expectations (density).

Hypothesis 1: There is a positive relationship between the designative (density) and appraisive (evaluative) dimensions of FTP. These dimensions are measured by the technique of listing anticipated future events and the TRI respectively. It should be noted that all of the hypotheses involving the appraisive (evaluative) dimension of FTP are in two parts: One for the positive and one for the negative valence toward the future.

The second hypothesis takes up the question of the existence of a relationship between the designative (density) and prescriptive (locus of control) dimensions of FTP. The semiotic approach suggests that these two dimensions are independent. However, it also seems logical to argue that a person who is internally controlled is one who invests considerable energy in actively considering his future so that he may continue to direct his own life.

Hypothesis 2: There is a positive relationship between the designative (density) and prescriptive (locus of control) dimensions of FTP. The prescriptive (locus of control) dimension is measured by the I-E scale.

The third hypothesis concerns the relationship between the appraisive (evaluative) and prescriptive (locus of control) dimensions of FTP. The semiotic approach suggests that these dimensions are independent. It also appears logical, however, that persons having a positive appraisal of their future will have a greater sense of being able to control their personal future events than those having a negative future evaluation.

Hypothesis 3: There is a positive relationship between future appraisal (evaluation) and the degree of prescription (internal locus of control) associated with future events.

The fourth hypothesis asks whether a relationship exists between the designative (density) and personal futurity dimensions of FTP. Personal futurity is the time span between the subject's present age and the age he will be when the ninth most remote construed event occurs. It is argued that a person who sees many events in his future will tend to construe them consecutively (rather than as happening simultaneously), thus extending his expectations farther into the future.

Hypothesis 4: There is a positive relationship between the designative (density) and personal futurity (extension) dimensions of FTP.

The fifth hypothesis concerns the possibility of a relationship between the personal futurity dimensions of FTP and the appraisive (evaluative). Frank (1939) holds that persons having a more positive appraisal of their future will have a longer FTP or future extension than those whose outlook is more pessimistic.

Hypothesis 5: There is a relationship between having appraisal of the future and the length of future extension (or futurity) that is construed.

The sixth hypothesis concerns the question of whether the futurity and prescriptive (locus of control) dimensions of FTP are related. It is argued that those persons who are internally controlled are likely to make more extensive constructions of their future than those who are more externally controlled. That is, people who do not have things "happen to" them but, instead, spend effort in trying to determine their destinies are more likely to put effort into making extended plans than are their externally controlled peers.

Hypothesis 6: There is a positive relationship between the prescriptive dimension (locus of control) and length of future extension.

The seventh hypothesis asks if a relationship exists between the designative (density) and future coherence dimensions of FTP. Future coherence is operationally defined as the correlation between the sequence of 10 events as ordered by the subject at the beginning and end of the experimental session where the FTP tests were administered. On the basis of Smart's finding that alcoholics had difficulty listing 10 events and that those who could do so still had lower coherence scores than the normal group, it is argued that the ability to construe an event-filled future is related to the ability to impose a consistent organization upon it.

Hypothesis 7: There is a positive relationship between the

designative (density) and coherence dimensions of FTP.

The eighth hypothesis concerns the relationship between the coherence and appraisive (evaluative) dimensions of FTP. It is argued that people who have a positive outlook on their future are less fearful and therefore better able to deal with and organize their futures than those who are more pessimistic and who thus tend to avoid considering and organizing their futures.

Hypothesis 8: There is a positive relationship between a positive evaluation of the future and the tendency to have a coherent future.

The ninth hypothesis concerns the question of whether there is a relationship between the coherence and prescriptive (locus of control) dimensions of FTP. It is argued that persons who believe that they can exercise control over their futures are more likely to spend effort in setting their plans in order than those who believe that they cannot exercise some determination of events that may occur in their lives.

Hypothesis 9: There is a positive relationship between degree of the coherence and prescriptive (locus of control) dimensions of FTP.

The tenth hypothesis asks if there is a relationship between the coherence and extension (or personal futurity) dimensions of FTP. The relationship between these two dimensions has already been shown by Graves (1961) in his study of high school children drawn from three different ethnic groups. He obtained a correlation of $+ .30$ ($p < .05$) using instruments that are similar to those used here. However, because the current study deals with an adult sample, it was deemed worthwhile to

determine whether Graves' finding could be replicated and extended.

Hypothesis 10: There is a relationship between the coherence and prescriptive (locus of control) dimensions of FTP.

Since the study of the relationships of PSE and past extension to the FTP dimensions is of a strictly exploratory nature, it is premature to propose specific hypotheses. These variables are measured by the single question technique of listing past residences and the TRI respectively. That is, while there is a logical and experimental basis for the first 10 hypotheses involving FTP dimensions exclusively, such is not the case for these two measures which pertain to the past. As such, it is more appropriate to ask, "What are the relationships of these two measures to FTP, besides the other variables considered in this study?"

In addition to the FTP and past experience measures discussed above, this investigation includes the study of the relationship of intelligence and academic achievement to the other variables included in this study. A few FTP measures have been reported as being unrelated to intelligence (e. g. , the TRI measure of future-extension studied by Roos and Albers, 1965a). There has not been, however, a study of FTP and intelligence which includes the particular dimensions studied here. Furthermore, there is no known study of FTP which has included measures of various areas of academic achievement. Moreover, while the inclusion of these variables is important for the broadening of our knowledge about FTP in general, it is of even greater importance to the development of the semiotic approach to FTP proposed in this study. That

is, while the range of intelligence of the subjects in this study is not extended below the average level, inclusion of measures of intelligence is seen as a necessary first step in the study of the generality of the semiotic approach to FTP.

The measures of intelligence used here are those contained in the School and College Ability Tests (SCAT). As such, the SCAT is purported to cover "Verbal" and "Quantitative" abilities, giving scores for each plus a "Total" score which is a composite of the other two. Green (1965), in his review of the SCAT published in the Sixth Mental Measurements Yearbook, points out that the SCAT total score correlates with the Wechsler Adult Intelligence Scale (WAIS) total "at about .84" and with the WAIS verbal scale "at about .88" in a study of eleventh and twelfth grade boys. He also cites correlations of .77 and .81, respectively for the verbal and total scores and the Otis Quick-Scoring Mental Abilities Tests in a study of junior college students. Thus, as Green concludes, the SCAT "is a good general I. Q. test."

The Sequential Tests of Educational Progress (STEP) are purported to measure educational achievement in the general sense of what the student understands and can utilize with respect to the areas the tests measure. As such, the STEP consists of a series of six tests which measure the student's knowledge of mathematics, science, social studies, reading, listening, and writing. Jackson (1959), in his review of the STEP published in the Fifth Mental Measurements Yearbook, sums up his opinion of the STEP tests as being "undoubtedly, one of the best

available." He is particularly complimentary in his discussion of the standardization and related sampling procedures used in developing the STEP tests. Jackson notes, however, that data regarding validity are far from complete. Although the STEP series is not as well validated as might be desired, the facts of their recognized merit in comparison to other tests of their kind and their particular suitability to the adult population studied formed the basis for their inclusion here.

The final variables included in this study are those of age and sex. While Kastenbaum (1963) has found an inverse relationship between age and personal futurity, the possible relationships between age and other measures of FTP have not been studied. The few studies which have included the variables of sex and FTP have generally failed to show a significant relationship. However, since the variables of age and sex are of interest and were readily available for study, they were included. Thus, the final question of this study is, "What are the relationships of age and sex to FTP?"

CHAPTER IV

METHOD

Subjects. The subjects were volunteers who were students enrolled in the Bachelor of Liberal Studies (BLS) program at the University of Oklahoma during the summer of 1967. These subjects represent at least 38 states of the Union. There were 61 subjects included in the study out of 80 who participated. Of the 19 who were excluded, 12 were excluded because they were unable to list 10 events on the coherence and future extension measures, 6 because they failed to follow instructions, and 1 because he refused to give his permission to use his SCAT and STEP test entrance examination scores in the study. Of the 61 subjects who were included, there were 45 males, ranging in age from 22 to 54 years (mean age = 39.34 years), and 16 females, ranging in age from 24 to 54 years (mean age = 38.27 years). The subjects were tested in four groups, ranging in size from 12 to 31 students. The four testing sessions were held over a period of seven weeks, this length of time being necessary in order to cover the three summer sessions from which the subjects were drawn.

Instruments. All of the test instruments used (except for the IBM tabulation cards with attached stubs, as well as the STEP and SCAT

tests) are contained in the text booklet (Appendix A).

The cover of the booklet contains the booklet number plus spaces for the subject's birth date, age, sex, occupation, education, and reason for being in the BLS program, plus a space to write in the number of different states or cities in which the subject has lived. The booklet numbers serve to keep track of the number of booklets passed out to the subjects. Subjects were asked to list their date of birth in order to provide a check on the accuracy of the ages they recorded. A subsequent inspection between these two sources of information revealed no discrepancies.

Subjects were asked to record their occupations in order to provide a basis for arriving at a rating of socioeconomic class. Unfortunately, their descriptions were too vague to rate, so this information was not used in this study. The subject's reason for being in the BLS program was included in the booklet in an effort to arrive at a rating pertaining to internal vs. external locus of control. Again, the statements were too vague to be useful and were also excluded from the analysis of the data.

On the blank marked "Education," subjects were asked to put in two figures. The first represents their level of achievement in the BLS program; i. e., first, second, third, or last year. The second figure represents the number of years of formal education they have had, excluding the BLS program.

The question "In how many different states or cities have you lived?" is the single question used to derive a measure of past spatial

experience (PSE). As was explained in the previous chapter, this technique is strictly exploratory, being a rational derivative of techniques used by others.

Test I is the technique used to obtain a measure of the designative (or density) dimension of FTP. As such, it consisted of the face sheet which contained instructions plus two additional sheets of lined paper upon which the subject could list anticipated events.

Test II is a technique that is used to measure personal future extension, also serving as the first of two phases required to measure future coherence. In addition to the instruction sheet, the subject received an envelope containing a booklet of 10 IBM cards, each of which had a stub on the left side. The stubs which were still attached to the cards were stapled along the left edge to form the booklet of cards. Subjects were instructed to write down 10 anticipated future events, one per card, placing their age at the time of each event on the stub of the card. Personal future extension was calculated by subtracting the subject's present age from the age he will be when the ninth most remote event occurs. After filling out the booklet of cards, subjects placed them in the envelope upon which their test booklet number was written and handed the envelope to the examiner. (See the discussion of the procedure for an explanation of the sequence of the test administration.)

Test III consists of the Time Reference Inventory (TRI) which is used to measure the appraisal (evaluative), future extension, and

past extension dimensions of time perspective. This test consists of 30 statements, of which 10 are positive or optimistic, 10 negative or pessimistic, and 10 neutral. The subject's task is to indicate whether the statement pertains to his past, present, or future by placing an "X" under the appropriate time zone, and to record his age at the time of the particular event. The measure of future appraisal actually consists of two measurements: One pertaining to the negative aspect, and the other to the positive. These two measurements consist of the number of negative and positive statements, respectively, that are designated by the subject as pertaining to the future. The neutral items were not used in the evaluation measurements of this study, but were administered so that the results could be compared with the findings of Roos and Albers (1965a, b). The age designations after each of the 30 statements were used to compute the TRI future and past extensions. The measure of TRI future extension is the average number of years projected into the future for all 30 items and is computed by averaging the differences between the estimated age and the subject's actual chronological age for all of the items he designates as referring to the future. The measure of TRI past extension is similarly computed for all items the subject designates as referring to his past.

Test IV is the I-E scale as revised by Rotter (1966) and is used to measure the prescriptive (locus of control) analogue of FTP. This test consists of 29 pairs of forced-choice statements, including 6 filler items. As the test is currently constructed, a low score (e. g. 4)

represents internal locus of control, whereas a high score (e. g. 12) represents a more external locus of control.

Since the BLS students who served as subjects for this study are all adults, the question arises as to whether they might be more influenced by social desirability factors than most of the populations sampled in the studies described by Rotter (1966). In order to find an answer to this question, a pilot study was conducted. An entire classroom of 60 BLS students, males and females who did not participate in the rest of the study, were accordingly administered the I-E scale. The test was administered anonymously in that subjects were told not to put their names on the test and were assured that the test results would have nothing to do with their course grades. After all of the subjects had completed the test, they were asked to write down what they thought the test measured without looking back over the test. Subjects were also asked to indicate whether they would volunteer an hour of testing which included the I-E scale and similar tests, again under anonymous conditions. Thirty-nine BLS students said they would volunteer for a one hour testing, and 19 did not (two failed to respond to this question). The volunteer group was more internally controlled than those who did not volunteer, their mean scores being 5.87 and 7.53 respectively ($t=1.78$, $p < .05$). However, of the 39 volunteers, there was little difference between the scores of the 21 subjects who guessed the purpose of the I-E scale and the 17 who did not (one subject did not respond to this question). The mean scores of the two subgroups were 5.71 and 6.11,

respectively. The difference between the two scores is not significant. Thus, although the purpose of the test was apparent to some of the subjects, it appears to have had only a marginal effect on their scores. This finding suggests that social desirability is probably not an important consideration for this study.

Test V is the technique used to measure future coherence. As such it is an extension of Test II where the booklet of 10 IBM cards was placed in an envelope and collected from each subject after he had written an anticipated future event on the body of the cards and his age for each event on the stub. After the envelopes (containing the card booklets and bearing the test booklet numbers on the face) were collected, they were handed to an assistant experimenter who carried the envelopes into an adjoining room out of sight of the subjects. There she detached the main body of the card from the stub, leaving the 10 stubs stapled together. The 10 cards were then shuffled, so as to randomize their order, and returned to the envelope along with the instruction sheet. After Test IV was completed, the envelopes containing the cards were returned to the subjects. For Test V the subject's task was to place the cards (each of which had had an event previously written on it by the subject) into the order in which the events were expected to occur. Thus, taking the order of the events as inferred from the ages written on the stubs and performing a rank order correlation with the order of the cards by the subject on Test V, the measure of coherence is computed. That is, the measure of future coherence is the rank order

correlation coefficient which results from the two rankings of events. Matching of the 10 cards to their respective stubs was achieved by means of invisible ink (a phenolphthalein solution) which was used to mark both the card and its stub. After testing, the invisible marking was made apparent by brushing over the card and stub with a concentrated solution of ammonia.

The SCAT and STEP test scores used in this study were obtained from the subjects as part of the counseling procedure prior to their entrance into the BLS program and are therefore held to be representative of their current intellectual functioning. Form 1A was used for both the SCAT and STEP tests to get the data used in this study. While the SCAT is a measure of intelligence, the scores from this test, as well as the scores from the STEP series, are not in terms of intelligence quotients, but in terms of percentile rankings.

Procedure. A test booklet, with an envelope bearing the test booklet number and containing the 10 IBM card booklet, was passed out to each student. After the test materials were distributed, subjects were told to fill in only the date of birth, age, sex, and occupation blanks and wait for further instructions. Upon completion of these blanks, subjects were told the following:

In the space marked "Education," I want you to write in two different numbers. The first number is to be the year you are currently completing in the BLS program. That is, I want you to write in the number of years you have been in the BLS program. For example, even though it may have taken you longer to do

so, (i. e. , a greater number of years) if you are completing your second year, you are to write a "2" as the first number.

Then, after you place a comma after the first number, you are to write in the number of years of formal education beyond high school that you have attained outside of the BLS program. For example, if you have attended a trade school for one and one-half years, you would write down "1 1/2." The criterion by which the term "formal education" is defined is that of whether the institution where you took your training would grant a transcript, diploma, or letter of recognition. That is, while I do not intend to have you send me a transcript, this requirement serves the purpose of defining the term "formal education." Are there any questions?

Upon answering the subject's questions and walking around the room to see that the blank was filled out properly, we then had the subjects fill out the blank concerning their reason for being in the BLS program.

Finally, in order to fill out the blank concerning the number of states or cities lived in, subjects were told the following:

In the space pertaining to the number of different states and cities you have lived in, you are to use as your criterion of whether you have "lived" in a given place as being that of having resided there for six months or more. Furthermore, you are to count any foreign countries you have lived in for six months or more. That is, use the criterion of six months of residence for any place in the world in which you may have resided. Are there any questions?

After completing the face sheet of the test booklet, subjects were instructed to turn to Test I (the measure of the designative (density) dimension of FTP). After reading aloud the instructions on the face sheet (see Appendix A), subjects were asked if they had any questions. Then, following the questions (if any), subjects were told to turn

to the next two pages (which consisted of lined paper) and begin filling in as many events as they could foresee which had a "reasonable probability of occurring." The definition of "reasonable probability" was left to the subject's judgment.

After all of the subjects had completed Test I, they were instructed to turn to Test II (which is used to measure future extension). After the instructions on Test II were read to the subjects, they were told to check to be sure that the number appearing on the envelope matched their test booklet number. Subjects were also permitted to write the 10 events required in any sequence they wished. That is, the events did not have to be written down in chronological order. Furthermore, subjects were told that the 10 events written for Test II could contain events listed for Test I, but that they were not to turn back to Test I. That is, subjects were free to list any event they remembered from Test I, but could not flip back through the pages. The basis of this prohibition is that it was deemed undesirable for the subjects to have an opportunity to memorize the same events for fear that they might also memorize the same sequence of events, thus spuriously inflating the future coherence score obtained from Test V. However, since it is both impossible as well as theoretically undesirable to prevent the subjects from remembering at least some of the events they had written down previously, this compromise was effected.

After the subjects had turned in their envelopes containing the card booklets, they were told to turn to Test III, the Time Reference

Inventory. As will be recalled from the discussion of the test instruments, Test III provides measures of future appraisal (evaluation) as well as those of future and past extension. The instructions were read aloud to the subjects after which they were asked if they had any questions about the test. After answering the questions, subjects were instructed to proceed.

Following the completion of Test III by all of the subjects, they were instructed to turn to Test IV, which is Rotter's (1966) I-E scale. Test IV is used to measure the prescriptive analogue of FTP. Again the instructions at the beginning of the test were read aloud to the subjects, after which they were asked if they had any questions. Following their questions, the subjects began the test.

After completion of Test IV, Test V the measure of future coherence was passed out. At this point the envelopes containing the 10 shuffled IBM cards were returned to the subjects along with an instruction sheet, caution being taken to be sure that the number on the envelope matched the subject's test booklet number. The subjects were then told to remove the cards from the envelope. The examiner inspected every subject's test materials to be sure that the subjects did not attempt to use the stub for a reference. Subjects were also informed that the cards had been shuffled so that they were not in their original order. After the instructions were read aloud, subjects were asked if they had any questions. Following the answers to their questions, the subjects were told to proceed with the task.

Following the completion of the test booklets, but before they were collected, a consent form was read aloud and then circulated among the subjects. The purpose of this form was to obtain the subject's consent to use his STEP and SCAT test scores as part of the data to be included in this study. In addition to the statement at the top of the consent form, the subjects were reassured that their names would not be reported in the write-up of the study, nor would their consent or refusal to give consent to use the STEP and SCAT grades have any bearing on their academic grades in the BLS program. Of the 80 BLS students who volunteered to participate in the experiment, only one person refused to give his consent. After the forms and test booklets were collected, the subjects were offered a brief explanation of the semiotic approach to FTP. All participants were requested not to discuss the study with their fellow students. Questioning of the later groups of subjects used in this study revealed no laxity in keeping the purpose of the study a secret.

The various items asking for age, sex, etc., as well as the one-question techniques, were placed on the cover of the test booklet as a matter of expediency. The rationale of placing the tests in the order found in the test booklet is based primarily on an effort to minimize inter-test contamination. That is, the measurement of the designative (density) dimension (Test I) was placed before that of future extension (Test II), since Test I is an open-ended task. If the reverse order had been used, the measure of density might have been spuriously inflated.

After Test II, it was necessary to put in the remaining two tests (Tests III and IV) so that the examiner's assistant would have time to shuffle the IBM cards in preparation for Test V (coherence).

Following the scoring of the test booklets, the data were processed on the IBM 360 computer. The IBM System/360 Scientific Subroutine Package, which included correlation and varimax factor analysis subroutines, was used to analyze the data.

CHAPTER V

RESULTS

The statistical procedures used in this study are those of the Pearson product-moment correlations (Table 12, Appendix B), followed by a factor analysis (Table 13, Appendix B) using the varimax method. Computations were performed on the IBM 360 computer using the System/360 Scientific Subroutine Package (1967). While 80 subjects participated in this study, the results of only 61 subjects are included because of failure to follow instructions. Thirteen subjects were dropped because of their inability to list 10 items in the future extension and coherence measures. This included one subject who also refused to grant permission to use his SCAT and STEP entrance exam scores. The remaining six subjects were dropped because they neglected to record their ages for the events contained in the TRI. Although a loss of 19 subjects out of 80 is somewhat high, such a discard rate is not surprising in view of the fact that 22 variables were measured in this study.

Before proceeding to the presentation of the factors derived from the factor analysis, it is appropriate to present the intercorrelations of the FTP measures, particularly those which have been proposed as being analogous to the semiotic approach, since these data are central to

the theoretical approach of this study. Table 2 shows these intercorrelations. It will be recalled that the appraisive aspect is measured by the TRI and, as such, contains two parts which are relevant to this study. That is, the negative and positive poles of future evaluation were measured by different test items. This separation (as opposed to combining the two scores into a single score) was maintained so that the results would be in the same terms as those of earlier studies using the TRI.

Table 2
Correlations Between the Semiotic
Analogues of FTP

Analogue		1	2a	2b	3
1.	Designative (Density)		-.18	-.19	.10
2a.	+Appraisive (Evaluation)			.16	-.05
2b.	-Appraisive (Evaluation)				.06
3.	Prescriptive (Locus of Control)				

As may be observed from Table 2, the correlation coefficients are quite low, failing to surpass the conservative conventional level of .40 for significance or .30 for a trend. These low correlations appear to be consistent with the semiotic approach advocated in this study.

Table 3 shows the intercorrelations of the time perspective measures only, including those pertaining to past as well as future time perspective. Of the 36 correlation coefficients in the table, only two are of sufficient size to be considered as being indicative of a possible trend. The first correlation, that between futurity and TRI futurity, is .34. The second correlation, that between TRI futurity and a negative appraisal of the future, is .36. Thus, reviewing hypotheses four through ten, it is observed that none of them are supported by the data, all of them being below the trend level, regardless of the signs of the correlation coefficients.

Table 4 shows the percent of variance accounted for by each of the seven rotated factors which were extracted from the data. The value used to limit the number of eigenvalues of the correlation coefficients from which the factors were extracted is 1.00. The overall percent of variance accounted for by these factors is 73.18 percent.

Factor I shows substantial loadings on all of the SCAT and STEP measures as well as at least a moderate loading on the measure of the number of years in the BLS program and the TRI measure of future extension. This factor is tentatively designated as "academic intelligence" since the highest loadings occur with the measurements which tap various aspects of the ability to achieve in school. Table 5 shows those variables which load at or above .30 on Factor I. Table 6 shows the intercorrelations of the variables listed in Table 5 for Factor I. With the exceptions of the intercorrelations of the measure of years in the BLS

Table 3

Intercorrelations of Time Perspective-Related Measures

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Density		-.21	-.02	-.18	-.19	.08	.10	.04	.04
2. Futurity			.34	.16	.02	.19	-.05	.16	-.03
3. TRI Futurity				-.08	.36	.00	-.02	.18	-.02
4. + Future					.16	-.08	-.05	.20	-.20
5. - Future						-.07	.06	.06	-.02
6. Coherence							.19	.03	-.10
7. Locus of Control								-.05	-.05
8. Past Spatial Experience									.11
9. TRI Past Extension									

Table 4

Percent of Variance Accounted for by Each of
the Factors Extracted from the Data

Factor	Percent Variance
I	30.38
II	9.83
III	8.37
IV	6.57
V	6.46
VI	5.96
VII	5.61

Table 5

Significant Loadings by Variable for
Factor I, "Academic Intelligence"

Variable	Factor Loading
Yrs. Ed., BLS	.34
TRI Fut. Ext.	.33
Mathematics	.82
Science	.80
Social Studies	.89
Reading	.84
Listening	.84
Writing	.73
Verbal Intel.	.82
Quant. Intel.	.80
Total Intel.	.95

Table 6

Intercorrelations of Variables Loading on
Factor I, "Academic Intelligence"

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Yrs. Ed., BLS		.09	.18	.21	.31	.25	.30	.14	.39	.20	.37
2. TRI Fut. Ext.			.34	.32	.33	.28	.30	.22	.18	.39	.32
3. Mathematics				.74	.68	.52	.59	.50	.47	.83	.79
4. Science					.62	.61	.64	.41	.56	.64	.71
5. Social Studies						.81	.75	.63	.77	.64	.83
6. Reading							.75	.72	.81	.53	.77
7. Listening								.71	.70	.54	.73
8. Writing									.72	.44	.64
9. Verbal Intel.										.43	.82
10. Quant. Intel.											.83
11. Total Intel.											

program and the TRI future extension measure, all of the intercorrelations are greater than .40.

Factor II shows significant loadings on the measures of sex, future density, and LOC, with trends appearing for coherence, mathematics, writing, verbal intelligence, and quantitative intelligence.

Table 7 shows those variables which load at or above .30 on Factor II.

Table 7

Significant Loadings by Variable for
Factor II, "Sexual Role Identity"

Variable	Factor Loading
1. Sex ^a	-.81
2. Density	-.46
3. LOC ^b	-.56
4. Coherence	-.31
5. Mathematics	.32
6. Writing	-.35
7. Verbal Int.	-.33
8. Quantitative Int.	.36

a. A point-biserial correlation coefficient was used for intercorrelations with respect to sex, males being assigned a "1," and females a "2."

b. Recall that a highly internal LOC is a low numerical score, whereas a more external LOC is represented by a high numerical score.

This factor is tentatively designated as "Sexual Role Identity" since the direction of the loadings is consistent with the differing sex-related roles

common to our culture. For example, males are expected to be more proficient with mathematics than females. Conversely, females are expected to have a greater verbal proficiency than males. Table 8 shows the intercorrelations of the variables listed in Table 7 for Factor II. As is the case for Factor I, it is again observed that for Factor II the SCAT and STEP measures show by far the highest intercorrelations.

Table 8
Intercorrelations of Variables Loading on
Factor II, "Sexual Role Identity"

Variable	1.	2.	3.	4.	5.	6.	7.	8.
1. Sex		.28	.23	.18	-.25	.29	.25	-.26
2. Density			.10	.08	.06	.17	.12	.00
3. LOC				.19	-.10	.12	.15	-.10
4. Coherence					.03	-.03	.01	-.04
5. Mathematics						.50	.47	.83
6. Writing							.72	.44
7. Verbal Int.								.43
8. Quant. Int.								

Factor III shows significant loadings on the measures of age, + future, and TRI past extension. Table 9 shows the factor loadings on these measures. Factor III is tentatively designated as "age" since all of the loadings are in the directions which are consistent with the logical expectation that increasing age may decrease a person's optimism toward the future and increase his tendency to focus his orientation toward the past. Table 10 shows the intercorrelations of the variables

Table 9

Significant Loadings by Variable
for Factor III, "Age"

Variable	Factor Loading
1. Age	.84
2. + Future	-.60
3. TRI Past Extension	.78

Table 10

Intercorrelations of Variables Loading
on Factor III, "Age"

Variable	1.	2.	3.
1. Age		-.41	.47
2. + Future			-.20
3. TRI Past Extension			

listed in Table 9 for Factor III. While the correlation between + Future and TRI Past Extension is only -.20, the negative relationship between these two measures is consistent with the notion that age is probably the underlying factor.

As may be observed from Table 4, which shows the percent of variance attributed to each factor, the first three factors account for 48.58 percent, or roughly two-thirds of the 73.18 percent of the variance extracted. The remaining four factors account for only 24.60

percent of the variance, or about six percent per factor. Moreover, their related intercorrelations fail to reach significance (with only two intercorrelations being indicative of a trend). Therefore, in view of the low percentage of variance attributed to each of these four factors as well as the low related intercorrelations, it is assumed that these factors do not warrant interpretation.

CHAPTER VI

DISCUSSION

The major goal of this study was to obtain support for the semiotic approach to FTP which has been proposed in this study. Specifically, are the designative (density), appraisive (evaluative), and prescriptive (locus of control) FTP analogues mutually independent, as would be expected if the semiotic approach to future temporal signs (construed events) is appropriate? The results show very low intercorrelations. However, since Morris tends to be cautious in his statements concerning mutual independence, it was necessary for statistical purposes to be more rigorous on this point and assume that these three analogues are indeed independent. Nevertheless, since Morris seems to hold that these aspects of an interpretant are predominantly independent, allowing for the possibility of a minimal degree of interrelationship, it may be said that the results are not inconsistent with his model.

The intercorrelations of all of the measures of FTP were generally quite low. As such, hypotheses four through ten, concerning the possible interrelationships of density, futurity, + future and - future (appraisal), coherence, and locus of control were not supported by the

data. This suggests at least three possibilities: (1) either the conceptualizations of Lewin and Frank are called into question; (2) the instruments used are inappropriate to their theories; (3) or, finally, the subjects used in this study are so similar in nature as to limit the range of behavior studied so that they constitute an inappropriately narrow sample. Before considering the first two possibilities, it is necessary to deal with the third possibility concerning the breadth of the sample of subjects studied. Table 11 (Appendix B) shows the standard deviations as well as the means of each of the measures used. Inspection of these two statistics, which concern the measures related to all ten hypotheses, show that the standard deviations are reasonably large as compared to their means. Furthermore, a comparison of the statistics found for the measurements obtained in this study to those found in other studies does not reveal any meaningful differences. For example, in his study of schizophrenics and normals, Wallace (1956) found almost the same median for the coherence measure in his normal group as was found in this study (.93 vs. .96, respectively). In the studies of locus of control reported by Rotter (1966), college students were found to have mean scores ranging from 7.73 to 9.22, both of which are proximate to the mean of 8.56 found for the subjects in this study. Moreover, while the reported standard deviations vary from 3.82 to 3.88, respectively, where that for this study is 4.69, this increase argues against the notion of an unduly limited range of data. Finally, inspections of the means and standard deviations for the SCAT and STEP tests indicates

that the percentile scores range from about 46 percent to almost 100 percent, or a range of about 55 percent. Thus, to summarize this argument, a wide range of adult college students has been sampled in this study and their test scores appear to be not meaningfully different from other reasonably comparable groups. Therefore, it does not seem probable that the argument that the range of the data is too narrow is valid. Thus it seems suitable to consider one or the other of the two remaining arguments. That is, if the more traditional and logical-seeming theories deal with highly meaningful variables, it seems reasonable to ask why the various FTP correlations related to hypotheses four through ten (which are derivatives of Lewin's and Frank's theories) are not at least somewhat higher.

In consideration of the second possibility, that of the measurements not being related to the dimensions which Lewin and Frank seem to imply, it can only be said that in other studies (such as those cited in the introduction as well as throughout this paper) the measurements used here have been shown generally to turn out as field-related theories would seem to imply. Thus, at least for the population sampled in this study, it is probably necessary to modify and more sharply define the conceptions of these two theories.

While most of the intercorrelations of the FTP measures were unexpectedly low, there were two which are considered indicative of a trend. One of these occurs between the measures of futurity on the TRI and that of a negative evaluation of the future ($\underline{r} = .36$). As such, this

finding does not seem to be consistent with the theories proposed by Lewin or Frank, since their approach would predict an inverse relationship with a pessimistic outlook being related to a shorter future extension. However, consideration of the other correlation which is indicative of a trend, that between TRI futurity and futurity, as well as the relationship of these two measures to age, casts some doubt as to whether the above-mentioned approaches are seriously challenged. Specifically, while the two measures of futurity have a correlation of .34, this correlation is not as high as might be expected since they both relate to personal events in the subject's life. Furthermore, the finding that age correlates more highly with futurity ($r = -.25$) than with TRI futurity ($r = -.05$) also offers a basis for questioning the comparability of these measures of futurity. While the correlations of age with futurity are not as high as might be desired, this appears to be more consistent with experimental findings (e.g., Kastenbaum, 1963) as well as the clinical impression that older persons tend to look less far into their personal futures than younger persons. Thus, it is suggested that further study be made of these two variables and that they be compared with caution.

While there were seven factors extracted by the factor analysis, only the first three were considered appropriate for interpretation. The first factor extracted accounted for 30.38 percent of the variance. It includes all of the SCAT and STEP tests as well as years in the BLS program and TRI futurity, and is tentatively labeled as academic

intelligence. As might be expected from this label if it is accurate, the number of years that the subject has been in the BLS program has several correlations at the trend level with the tests on the SCAT and STEP series. This suggests that there is a relationship between academic intelligence and the ability to persevere in the BLS program.

An important finding concerning Factor I is the observation that, with the exception of the TRI measure of futurity, none of the TP-related variables show a significant relationship to intelligence. Thus, at least for the kind of population sampled in this study and most measures of TP in this study, intelligence does not appear to be an important factor in the activities involved in construing one's past or future.

Another important finding is that the measure of TRI futurity also shows several correlations at the trend level with tests on the SCAT and STEP series. Roos and Albers (1965a) claim that the TRI measure of future extension (TRI futurity) is not correlated significantly with intelligence. Thus, at least within the limits of the population that was sampled, there appears to be a contradiction of the Roos and Albers findings concerning the TRI measure of extension.

Factor II, which accounts for 9.83 percent of the variance, is tentatively labeled as sexual role identity. While the variable of sex does not correlate significantly with any of the other variables which load significantly on this factor, the directions of their correlations do seem to be provocative. That is, men tend to see fewer events in their future (density), are more internally controlled (LOC), have a somewhat

better organized future (coherence), attain higher scores on mathematics tests than women. On the other hand, women tend to attain higher scores on tests requiring verbal abilities. Thus, while all of these relationships are too low to accept as being significant, the direction of their relationships does suggest further avenues for research.

Factor III, which accounts for 8.37 percent of the variance, is tentatively labeled as age. The variable of age itself shows high correlations with + future ($-.41$) and TRI past extension ($.47$). The inverse correlation between age and + future has been discussed previously and needs no further comment. The correlation between age and the TRI measure of past extension is similar to the findings of Roos and Albers (1965a) and is also consistent with clinical impressions.

The remaining four factors were deemed to be almost meaningless, due both to the small percentages of variance attributed to them and the fact that the correlation coefficients upon which the factors are based are not significant.

While there are many possibilities for further research into the study of FTP, only a few will be mentioned here. First, age appears to play an important role in TP. Moreover, it is likely that, as the person matures from childhood through to old age, different measures of TP may come into play at different stages. Secondly, while Factor II (sexual role identity) is based upon comparatively low intercorrelations, it does suggest the importance of cultural determinants and their role in the formation of personality. If such is indeed the case, future

research in different cultures might tend to support this interpretation of Factor II. Finally, there appears to be a need for further work in validating the TRI measures of attitudes toward the various zones of TP. Specifically, since + future and - future do not appear to be inversely related (really showing no substantial relationship at all), is it appropriate to consider pessimism as the polar opposite of optimism? The results suggests that these attitudes may not be the opposite poles of the same dimension.

CHAPTER VII

SUMMARY AND CONCLUSIONS

A semiotic approach to FTP was proposed following the proposals of C. W. Morris. Three aspects of an interpretant were studied following his proposals which imply that temporal signs in the future in the form of construed events may be studied from the semiotic approach. The three interpretant aspects studied along with the proposed FTP-related analogues are designation (density), appraisal (evaluation), and prescription (locus of control). On the basis of the findings it appears that these analogues are not inconsistent with the semiotic approach in the sense that all showed only a very small degree of interrelationship.

In addition to the semiotic approach mentioned above, the interrelationships of density, futurity, TRI futurity, plus and minus evaluations of the future, future coherence, past spatial experience, TRI past extension, and locus of control were also studied, based on hypotheses that are consistent with the theories of Lewin and Frank. In general, the hypotheses were not supported by the data. There were, however, two exceptions. First, the two measures of futurity were found to have a moderate degree of relationship although they do not relate similarly to the other measures included in this study. Second, while the TRI

measure of futurity is inversely related to a pessimistic future outlook, neither measure of futurity used here was significantly related to an optimistic outlook. This finding raises the question of whether it is appropriate to consider positive and negative evaluations of the future as being opposite poles of the same dimension, an assumption implicit in the theories of Lewin and Frank.

Another finding, involving the SCAT and STEP series of tests, indicated that, with the exception of the TRI measure of futurity, none of the TP measures included here are related to intelligence.

Finally, three interpretable factors were derived from a factor analysis of the test intercorrelations. Academic intelligence was the tentative name given to Factor I. This factor showed substantial loadings on all of the SCAT and STEP tests as well as the number of years of education in the BLS program and the TRI measure of futurity. Factor II was given the tentative name of sexual role identity. This interpretation is based on the finding that two FTP-related measures (coherence and locus of control), as well as some of the SCAT and STEP tests, were related to the sex of the subject. That is, the direction of the loadings and their related correlations are consistent with the differing roles assigned to men and women in our culture.

Factor III was attributed to the age of the subject, in that age was found to be related to the TRI measure of past extension and inversely to the TRI measure of a positive evaluation of the future.

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APPENDICES

APPENDIX A

SAMPLE PAGES USED IN THE STUDY

Booklet Number _____

Date of Birth: _____ Age: _____ Sex: _____

Occupation: _____ Education _____

Reason for being in the BLS program _____

How many different states or cities have you lived in? _____

(Count only those locations where you have lived for six months or more.

Please do not list the cities, merely place the number of locations on the above line.)

TEST I

We all think about our future at times, wondering what life has in store for us. We often make guesses or predictions about what might happen in our lives. You are to make some guesses now. What do you expect to happen in your future? Write down as many of these as you can. You don't have to be absolutely certain that what you guess will actually happen, a good guess is sufficient.

The next two pages of this booklet contain lined paper upon which you may write your guesses and predictions about your future. A single sentence will be sufficient for each event. Be sure to place a number in front of each event. That is, place a 1 in front of the first event, a 2 in front of the second event, etc.

Now go on to the blank pages.
(Please do not turn beyond the blanks.)

The two pages of lined paper which follow are omitted here.

TEST II

Enclosed in this envelope is a booklet of ten IBM cards that are stapled together. Do NOT detach these cards from their stubs.

You are to write ten events that refer to things that may happen to you during the rest of your life. You may write out these events in any sequence that you wish. Write one event on the right side of each card. On the stub (left side) you are to write your age (not the date) for when you expect the event to happen. Do not put down an age range.

Be sure to write the event on the right side, and your age at the time of the event on the left side. Be sure to write only one event and age per card. An example is shown below.

Example

Write your

<u>age</u>	Write your future event
here ↓ 18	here ↓ I expect to attend college.

Do NOT detach the card from its stub. Fold the card over carefully as you write each of the ten events.

TEST III

TIME REFERENCE INVENTORY (FORM B)
(Philip Roos, Ph. D.)

This is a brief inventory designed to estimate people's reactions in terms of past, present, and future. Please indicate for each statement below whether it most nearly refers to the past, present, or future, by placing an X in the appropriate column. Be sure to place only one X for each statement. In the "Age" column, indicate your best guess of your age at the time to which the statement refers. In cases where a statement applies to a time in the future less than a year from now, list under the "Age" column your present age.

Two samples follow:

Sample 1: I am taking the Time Reference Inventory in the

Past	Present	Future	Age
	X		Your current age

Sample 2: My death is in the

Past	Present	Future	Age
		X	85

In Sample 1, since the subject is currently taking the Time Reference Inventory, he places the X under the "Present" column, and under the "Age" column he lists his current age.

In Sample 2, the subject expects to die in the future, and hence he places the X under the "Future" column. His guess is that he will die at the age of 85, and, therefore, he writes "85" under the "Age" column.

Please complete every statement below, even though you may have to "wild guesses." Be sure to list an age for every item, and be sure that ages listed for "Future" items are greater than your present age (unless less than a year from now) and ages listed for "Past" items are less than your present age. List a single age for each item, not an age range.

- - - - -

1. The most important time of my life is probably to be found in the

Past	Present	Future	Age

Go on to the next page

2. I believe the happiest time of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

3. The period of my life during which I have gotten the most done is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

4. The most peaceful time of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

5. I usually like best to talk about the

Past	Present	Future	Age
------	---------	--------	-----

6. The most important period of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

7. The most satisfying time of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

8. My period of greatest success is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

9. The most untroubled period of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

10. I get the most pleasure out of thinking about the

Past	Present	Future	Age
------	---------	--------	-----

11. The most unhappy time of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

12. I believe the most difficult time of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

Go on to the next page

13. The most frightening time of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

14. The time of greatest worrying is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

15. The time in my life during which things most often go wrong is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

16. The saddest time of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

17. I feel the most trying period of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

18. The most anxious time of my life is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

19. The most troubled period of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

20. The period of my life during which I am most likely to feel like giving up trying is to be found in the

Past	Present	Future	Age
------	---------	--------	-----

21. The busiest time of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

22. The most religious time of my life is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

23. Most of my daydreams are about the

Past	Present	Future	Age
------	---------	--------	-----

Go on to the next page

24. My important decisions are usually based mostly on the

Past	Present	Future	Age
------	---------	--------	-----

25. I most often dream about the

Past	Present	Future	Age
------	---------	--------	-----

26. My most active period is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

27. Most of my thinking about religion is probably to be found in the

Past	Present	Future	Age
------	---------	--------	-----

28. Most of my fantasies are about the

Past	Present	Future	Age
------	---------	--------	-----

29. In making plans I usually think mostly about the

Past	Present	Future	Age
------	---------	--------	-----

30. Most of my dreams are usually about the

Past	Present	Future	Age
------	---------	--------	-----

STOP!

TEST IV

Instructions

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you are concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers.

Please answer these items carefully but do not spend too much time on any one item. Be sure to find an answer for every choice. In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you're concerned. Also try to respond to each item independently when making your choice; do not be influenced by your previous choices.

Circle the letter (A or B) of the statement to which you agree.

1. A. Children get into trouble because their parents punish them too much.
B. The trouble with most children nowadays is that their parents are too easy with them.
2. A. Many of the unhappy things in people's lives are partly due to bad luck.
B. People's misfortunes result from the mistakes they make.
3. A. One of the major reasons why we have wars is because people don't take enough interest in politics.
B. There will always be wars, no matter how hard people try to prevent them.
4. A. In the long run, people get the respect they deserve in this world.
B. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.

Go on to the next page

5. A. The idea that teachers are unfair to students is nonsense.
B. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. A. Without the right breaks one cannot be an effective leader.
B. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. A. No matter how hard you try some people just don't like you.
B. People who can't get others to like them don't understand how to get along with others.
8. A. Heredity plays the major role in determining one's personality.
B. It is one's experiences in life which determine what they're like.
9. A. I have often found that what is going to happen will happen.
B. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. A. In the case of the well prepared student, there is rarely if ever such a thing as an unfair test.
B. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11. A. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
B. Getting a good job depends mainly on being in the right place at the right time.
12. A. The average citizen can have an influence on government decisions.
B. This world is run by the few people in power, and there is not much the little guy can do about it.
13. A. When I make plans, I am almost certain that I can make them work.

Go on to the next page

- B. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. A. There are certain people who are just no good.
- B. There is some good in everybody.
15. A. In my case getting what I want has little or nothing to do with luck.
- B. Many times we might just as well decide what to do by flipping a coin.
16. A. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
- B. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17. A. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
- B. By taking an active part in political and social affairs, the people can control world events.
18. A. Most people don't realize the extent to which their lives are controlled by accidental happenings.
- B. There really is no such thing as "luck."
19. A. One should always be willing to admit mistakes.
- B. It is usually best to cover up one's mistakes.
20. A. It is hard to know whether or not a person really likes you.
- B. How many friends you have depends upon how nice a person you are.
21. A. In the long run, the bad things that happen to us are balanced by the good ones.
- B. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.

Go on to the next page

22. A. With enough effort, we can wipe out political corruption.
- B. It is difficult for people to have much control over the things politicians do in office.
23. A. Sometimes I can't understand how teachers arrive at the grades they give.
- B. There is a direct connection between how hard I study and the grades I get.
24. A. A good leader expects people to decide for themselves what they should do.
- B. A good leader makes it clear to everybody what their jobs are.
25. A. Many times I feel that I have little influence over the things that happen to me.
- B. It is impossible for me to believe that chance or luck plays an important role in my life.
26. A. People are lonely because they don't try to be friendly.
- B. There is not much use in trying too hard to please people, if they like you, they like you.
27. A. There is too much emphasis on athletics in high school.
- B. Team sports are an excellent way to build character.
28. A. What happens to me is my own doing.
- B. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. A. Most of the time I can't understand why politicians behave the way they do.
- B. In the long run, the people are responsible for bad government on a national as well as on a local level.

STOP!

TEST V

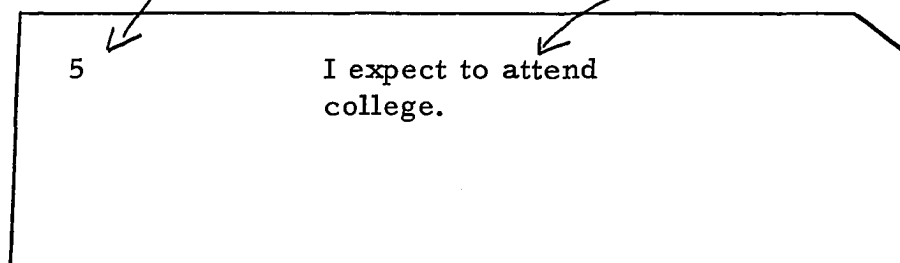
These are the cards that you filled out a few minutes ago. Your task now, is to arrange these cards in the order in which they might occur. After you have placed the cards in order, place the order number of the card in the upper left-hand corner of the card. Do this for each of the 10 cards. An example is shown below.

Example

Suppose the card shown below is the fifth card of the 10 card deck. You would then write a "5" in the upper left-hand corner.

Place the card order
number here

(The future event that you
wrote on the card during
Test II.)



Be sure that you have a different number for every card, and that every card has a number.

APPENDIX B

Table 11

Means and Standard Deviations

Measure	Mean	SD
1. Age	39.34	8.83
2. Sex	1.26	0.44
3. Years BLS Ed.	2.20	1.05
4. Years Other Ed.	.92	1.04
5. Past Spatial Experience	7.02	4.14
6. Density	9.46	5.71
7. Futurity	14.28	9.84
8. TRI Futurity	9.73	5.68
9. + Future	4.52	2.77
10. - Future	2.11	2.60
11. TRI Past Extension	14.33	7.68
12. Locus of Control	8.56	4.69
13. Coherence	.94	.14
14. Mathematics	67.10	26.73
15. Science	70.80	27.73
16. Social Studies	74.02	27.53
17. Reading	67.20	29.18
18. Listening	69.93	28.19
19. Writing	60.53	30.32
20. Verbal Intel.	78.51	21.98
21. Quantitative Intel.	61.29	28.01
22. Total Intel.	73.83	24.57

Table 12
Intercorrelation Matrix^a

Variable	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	21	20	07	08	14	-25	-05	-41	-10	47	17	12	-08
2. Sex		14	10	-20	28	-19	-06	-18	-04	-08	23	18	-25
3. Yrs. BLS Education			-03	01	03	-05	09	-21	13	-06	18	06	18
4. Yrs. Other Education				-04	16	-06	14	-10	-23	-17	-16	-22	-08
5. Past Spatial Experience					04	16	18	20	06	11	-05	03	17
6. Density						-21	-02	-18	-19	04	10	08	06
7. Futurity							34	16	02	-03	-05	19	12
8. TRI Futurity								-08	36	-02	-02	00	35
9. + Future									16	-20	-05	-08	-11
10. - Future										-02	06	04	-07
11. TRI Past Extension											-05	-10	-03
12. Locus of Control												19	-10
13. Coherence													03
14. Mathematics													
15. Science													
16. Social Studies													
17. Reading													
18. Listening													
19. Writing													
20. Verbal Intel.													
21. Quantitative Intel.													
22. Total Intel.													

^aDecimal points omitted.

Table 12 (Continued)
Intercorrelation Matrix^a

Variable	15	16	17	18	19	20	21	22
1. Age	-12	06	-08	05	02	12	-18	-03
2. Sex	-21	-01	18	17	29	25	-26	-02
3. Yrs. BLS Education	21	31	25	30	14	39	20	37
4. Yrs. Other Education	-04	-06	-09	-10	09	11	-14	-03
5. Past Spatial Experience	18	23	20	22	11	14	18	22
6. Density	00	08	16	30	17	12	00	12
7. Futurity	08	23	19	01	13	10	16	10
8. TRI Futurity	32	33	28	30	22	18	39	32
9. + Future	-22	-30	-15	-36	-23	-35	-06	-21
10. - Future	-04	-10	-05	-05	-11	-10	-01	-08
11. TRI Past Extension	-06	05	-10	03	-18	-13	-02	-11
12. Locus of Control	02	04	19	13	12	15	-10	-02
13. Coherence	-03	05	05	07	-03	01	-04	02
14. Mathematics	74	68	52	59	50	47	83	79
15. Science		62	61	64	41	56	64	71
16. Social Studies			81	75	63	77	64	83
17. Reading				75	72	81	53	77
18. Listening					71	70	54	73
19. Writing						72	44	64
20. Verbal Intel.							43	82
21. Quantitative Intel.								83
22. Total Intel.								

^aDecimal points omitted.

Table 13

Rotated Factor Loadings^a

Measure	I	II	III	IV	V	VI	VII
1. Age	-05	-24	84	01	01	-06	01
2. Sex	-02	-81	05	03	13	01	14
3. Years BLS Ed.	34	-22	18	-40	-12	-15	31
4. Years Other Ed.	-05	-09	-01	08	87	05	05
5. Past Spatial Experience	20	06	10	-10	-02	09	-80
6. Density	14	-46	15	28	16	-26	-32
7. Futurity	12	18	-15	-07	07	84	-13
8. TRI Futurity	33	11	05	-63	35	32	-16
9. + Future	-29	15	-60	-08	-18	00	-47
10. - Future	-12	-01	-10	-86	-17	-03	-08
11. TRI Past Extension	-09	22	78	03	-14	-04	-23
12. Locus of Control	04	-56	02	-15	-39	01	03
13. Coherence	-01	-31	09	08	-41	58	07
14. Mathematics	82	32	-02	00	-06	00	-04
15. Science	80	22	-02	-07	-04	-05	03
16. Social Studies	89	-02	14	-01	00	17	-04
17. Reading	84	-28	-09	-02	-03	11	-11
18. Listening	84	-25	13	-02	-03	-04	-11
19. Writing	73	-35	-09	07	19	08	-04
20. Verbal Intel.	82	-33	05	-01	13	05	10
21. Quantitative Intel.	80	36	-08	-08	-10	00	-06
22. Total Intel.	95	03	-02	-03	00	00	-01

^aDecimal points omitted.

