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COGNITIVE COMPLEXITY AS A FACTOR IN APPROPRIATE VOCATIONAL CHOICE

DISSERTATION

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Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

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* * * * * * *

The Ohio State University
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CHAPTER I

THE PROBLEM

There is an ever-increasing body of psychological research dealing with various characteristics of cognitive structures. One notable example of this research activity pertains to that characteristic of cognitive structures which has come to be known as cognitive complexity-simplicity. Interest in the dimension of complexity-simplicity was first initiated by Bieri (1955). It is basically an information processing variable. Cognitively complex individuals are assumed to have available a greater number of constructs or categories for processing of stimulus information input than do cognitively simple individuals.

Much of the research to date has dealt with the relationship between cognitive complexity and various forms of clinical and social judgments (cf. Bieri, et al., 1966). Until recently little interest has been shown in attempting to relate this cognitive variable to the problem of vocational choice. It is, therefore, the purpose of this investigation to examine the relationship between cognitive complexity and vocational choice. More specifically, this study

will be concerned with cognitive complexity as a possible factor in the making of an appropriate vocational choice.

Cognitive Structures

Cognitive structures may be defined as a hypothetical linkage mediating stimulus information input and response output. As Bieri, et al., (1966) note, "at present, aside from the area of intelligence as it is customarily assessed, we have little in the way of either method or theory to guide us empirically in studying the role of intuitive processes or creative thinking in judgments (p. 183)." This lack of clear, consistent theoretical or methodological guidelines makes research on cognitive structures sometimes difficult and confusing.

The concept of cognitive structures has been dealt with in differential fashion in a number of psychological theories, which include Bartlett's (1932) schemata, Tolman's (1948) cognitive maps, Osgood's (Osgood, Suci & Tannenbaum, 1957) mediation link, Bruner's (1957) categorical system, Harvey's (Harvey, Hunt & Schroeder, 1961) concept formation theory, and Lewin's (1951) life space theory.

The conceptualization utilized as a framework for the present investigation is the one proposed by Bieri (1955; Bieri, et al., 1966). The theoretical propositions of Bieri and his associates represent a modification of George Kelly's (1955) theory of personal constructs, which, incidently, incorporates the Lewinian notion of

differentiation. One of the central assumptions which is basic to the understanding of this theory is that, "each person has a system of dimensions (or constructs) which he uses in construing his social environment, and that the characteristics describing the relations among these dimensions refer to a person's cognitive structure (Bieri, et al., 1966, p. 185)."

Relatively little is known about the development of cognitive structures; it is often assumed that there is an increased differentiation of one's social environment concomitant with an increased variety of behavior as this development progresses (Bieri, 1964). The work of Witkin, et al., (1962) on psychological differentiation and the work of Harvey, et al., (1961) on the development of conceptual systems are recent and significant examples of interest in the developmental aspects of cognitive structures.

Cognitive Complexity

Cognitive complexity, according to Bieri, et al., (1966) is a characteristic of a person's structuring of his social world. Bieri (et al., 1966) considers cognitive complexity to be "an information processing variable which helps us predict how an individual transforms specified behavioral information into social or clinical judgments (p. 185)." A highly complex person is one who has available a more highly differentiated system of dimensions (or constructs) for use in perceiving the behavior of others than does a less complex

or cognitively simple person. Stated yet another way, a personal construct, according to Kelly (1955) is a dimension or category for construing the ways in which some things are alike and yet different from other things. A system of constructs which differentiates finely among persons or things is said to be cognitively complex, while a construct system which provides for only gross differentiations is said to be simple in structure (Bieri, 1955).

Measurement of Cognitive Complexity

It will soon become apparent that there is considerable method variance in the measurement of cognitive complexity. Bonarius (1965) outlines 10 different methods of measuring cognitive complexity. All told, there are a dozen or more assessment techniques. Only a few of the more widely used versions will be discussed. Wenz (1968) and Bonarius (1965) offer somewhat more comprehensive, in-depth surveys of existing measurement techniques. Certain specific, technical and methodological problems of assessing cognitive structures have been discussed in detail by Scott (1963) and by Bieri (1964) but will not be elaborated in this discussion.

There are two basic approaches to the assessment of the cognitive complexity-simplicity dimension, the grid method and the non-grid method. There is some real question as to how comparable these two different types of measures actually are, as will be

discussed below.

The initial grid-type measure is the Role Construct Repertory Test developed by George Kelly (1955). The Rep Test or Rep Grid, as it is sometimes called, involved the use of a grid containing spaces for persons to be judged (columns) and rows for the constructs. A list of role titles of persons assumed to be important to most people are presented to the subject, and he is asked to compare various triadic combinations of role titles, designated by the examiner. For each triad the subject is asked to decide how two of the three people are alike and at the same time different from the third; the characteristic involved is a construct. After the various combinations of three have been considered, the subject is asked if the constructs he has generated may also apply to any of the other persons (besides the three involved in the original generation of the construct). If the construct applies to any other people, the subject checks those to whom it applies. Scoring, and there are several variations (c.f. Bonarius, 1965), involved the number of constructs generated and the degree of overlap between constructs. Generally, the greater the number of independently used constructs, the greater the degree of complexity of the subject (Bieri, 1955).

Bieri and Blacker (1956) devised a simpler version of original Kelly (1955) and Bieri (1955) versions. Bieri and Blacker's modification consisted of using a simple count of the number of attributes (constructs) the subject used in responding to the

different role titles. Leventhal (1957) further modified the basic Kelly approach, but his revision involved a rather complicated scoring procedure.

The simplest and most recent version of the Rep Grid approach was developed by Bieri and his associates (1966). It is this version which is utilized in the present study. The major difference between this most recent modification and the older versions is that the constructs are provided for the subject. In addition to providing constructs, a Likert-type scale is utilized for rating all ten role titles on each of the constructs. Evidence obtained by Tripodi and Bieri (1963) indicates that for psychologically "normal" individuals, comparable complexity indices (rho=.50) are obtained from own (subject provided) and provided (by examiner) constructs. This finding was replicated by Jaspars (1964) (test-retest r.=.78) and Carr (1965).

Generally, the research on the temporal stability of the constructs generated by the above-mentioned grid approaches indicates considerable consistency in constructs over time (Bonarius, 1965). For example, Landfield,Stern, and Fjeld (1961) found a test-retest correlation of .79 for constructs over a 2 week period. Other studies report even higher reliability coefficients.

It is also worth noting that cognitive complexity as measured by the Bieri modification is not correlated with intelligence (Crockett, 1965), nor is it correlated with social desirability,

as measured by the Marlowe-Crowne scale (Irwin, Tripodi & Bieri, 1967).

Among the non-grid approaches, at least two are worthy of some discussion. In the method devised by Crockett (1965), subjects are asked to identify eight different individuals, each fitting a predetermined role description. S then writes as complete a description as possible of each individual within a three minute time limit. An independent judge evaluates the descriptions for the number of constructs used by S. Product-moment correlations between two sets of scores for the same Ss over a four month period was .95 ($p < .01$).

The second non-grid approach is that of Schroder, Driver, and Streuffert (1966) which utilizes a sentence completion format. With this method, the S is presented with the stems of sentences concerning interpersonal relations, situations of uncertainty, and the possibility of alternate responses. Ss' responses are scored in terms of the amount of differentiation, the number and complexity of alternate integrations of the information used by S. Interjudge reliability in scoring this instrument is reported to be in excess of .85, after a brief training period.

There are certain vexing methodological questions concerning the general problem of assessing cognitive complexity which require discussion. The primary question is whether or not the varied instruments presumed to measure cognitive complexity actually tap

the same dimension. There is some evidence that such is not the case. Vannoy (1965) factor analyzed 13 different measures of complexity. His analysis showed no single unitary factor or dimension that could account for a large proportion of the variance. He extracted several factors, but none accounted for more than a small amount of variance. These findings seem to point to the possibility that what has been called cognitive complexity may actually be a conglomorate of several rather distinct characteristics.

Allard and Carlson (1963) obtained somewhat more encouraging results. They devised three tests of complexity, all of which used a grid format. One test employed role titles which were personal friends of the S. The second test used role titles consisting of famous people, and the third test used geometric designs. Allard and Carlson found intercorrelations among the three tests ranging from .57 to .67. This finding suggests that the failure to identify a central factor in the Vannoy (1965) study may be due, at least partially, to extreme method variation among the instruments.

A second, but less critical question, is raised by a study by Stimson (1968). In this instance a battery of self-concept, divergent thinking, need, adjustment, intelligence, and complexity measures (both Bieri and Kelly versions) were factor analyzed. Stimson's analysis yielded four factors, one of which was called a structural differentiation (or cognitive complexity) factor. The problem is that the complexity measures did not load highly on this

factor (e.g. Bieri's measure loaded -.38 and Kelly's version had a loading of -.66); no other test in the battery had a loading above .24 on this factor. To confuse matters still more, neither complexity measure had a loading greater than .30 (most were near zero) on any of the other three factors. Incidently, the complexity measures had loadings of .04 and .05 on the verbal intelligence factor.

Obviously the above discussion raises more questions than it answers. The problem of method variance in the measurement of cognitive complexity deserves considerable scrutiny. The preceding discussion certainly stresses the need for caution when generalizing from one investigation to another. There are some serious methodological problems associated with the measurement of cognitive complexity. The major difficulty is the lack of relationship among these diverse measures. Apparently the lack of relationship among the measures is not as serious as long as the grid-type measures are used (and not compared with non-grid measures). It seems that the modified Rep Test (Bieri, et al., 1966) is the most widely used measure, and it has demonstrated reliability. Due to the more widespread usage of the modified Rep Test and the promising research generated with it, this measure was selected for use in the current investigation.

Generality of Cognitive Complexity

This section will be concerned with the question of the generality of the cognitive complexity variable from one type of stimulus situation to another. One must bear in mind the issues raised in the preceding discussion on the measurement of complexity. Since the majority of the research has dealt with cognitive complexity-simplicity in relation to social or interpersonal stimuli, the initial question might well be whether or not people who are cognitively complex in the interpersonal realm are also complex in their construing of nonhuman stimuli.

One of the earliest studies relevant to this question was that of Bieri and Blacker (1956). Using Kelly's Role Construcy Repertory test and the Rorschach, Bieri and Blacker found moderate but significant correlations between interpersonal complexity on the Rep Test and non-person (ink-blot) complexity as measured by the Rorschach. This finding has not been replicated in later research. For example, studies by Caracena and King (1962) and Scott (1963) found no evidence for the generality of complexity from one type of stimuli to another. More recently, Glixman (1965) found that the number of categories or constructs a person employs is dependent upon the type of stimuli he is required to respond to.

Cognitive complexity varies with differences in the type of stimuli (e.g. person vs. non-person), and it also varies under

certain conditions for the same type of stimulus (e.g. interpersonal). Due to certain characteristics of the stimulus objects to be judged, a given individual may be more complex when discriminating among one class of people than with another. Crockett (1965) has concluded that there is evidence suggesting considerable intra-individual consistency in categorizing behavior, but also that categorizing behavior is affected by the particular stimuli that is discriminated. Further, Crockett notes that there is some indication that individuals use more constructs to describe persons they know well than those they do not know well.

Findings similar to those reported by Crockett (1965) were obtained by Tripodi and Bieri (1966). They observed that Ss were more complex in judging role types of known people than in judging role types of imaginary people. Miller and Bieri (1965) showed that there were differences in the degree of differentiation made among role types that were socially close as compared to socially distant role types. It was found that more differentiations were made when Ss were discriminating among socially distant (i.e. those people with which S had little interpersonal involvement and which might be assumed to evoke negative affect) role types than socially close role types. Irwin, Tripodi, and Bieri (1967) discovered that Ss were more complex when discriminating among stimulus persons who evoked negative affect than those with positive affect value. As a result of this and the preceding study, these investigators postulated

what they called a "vigilance" hypothesis---construing persons who evoke negative affect in a multidimensional way serves an adaptive (protective) function.

More recently, Turner and Tripodi (1968) examined the "vigilance" hypothesis in the psychotherapy relationship. Turner and Tripodi were able to show that clinicians-in-training were more complex when discriminating among significant others with negative affect value than when discriminating among significant others with a positive affect value. They also noted that these clinicians-in-training did not differ in the degree of complexity when discriminating among liked and disliked clients.

Finally, Wenz (1968) in her discussion of the generality of the complexity variable concluded that "it appears that (cognitive) differentiation should be identified by a measure relevant to the person or non-person area to be studied in order to derive accurate predictions for the variables under study (p. 25)."

Complexity-simplicity and Judgment Behavior

As noted earlier, one of the major research concerns in the area of cognitive structures has been the effect of variations in cognitive complexity upon judgment behavior, especially clinical and social judgments. The initial study of this type was done by Bieri (1955). Bieri's (1955) study demonstrated a moderate but significant

relationship between cognitive complexity and the accuracy of predicting the behavior of others in common social situations. It also suggested that complex persons were capable of greater response versatility. Detailed analysis of the results showed that complexity was related (r= .35) to accurate prediction of differences between self and others, but it was not related (r= .02) to accurate prediction of similarities between self and others. Cognitively simple judges showed a tendency to perceive unwarranted similarities (assimilative projection) between self and others.

The results of a study by Plotnick (1961) were generally consistent with those reported by Bieri (1955). Plotnick's investigation involved the accuracy of clinical judgments made by social work graduate students. These graduate students were required to predict the attitude toward authority of three outpatients in a mental health clinic. Using clinical and diagnostic evaluations (which the graduate students did not have access to), Plotnick established that cognitively complex judges generally predicted the mean authority scores of the three patients in the correct rank order, while cognitively simple judges could not discriminate between two of the three patients.

Somewhat different, less clear-cut results have been obtained by other investigators. For example, Leventhal (1957) discovered that with an increase in the amount of information available, cognitively simple judges improved their predictions of differences

at a greater rate than did complex judges. Leventhal reasoned that this result was due to the fact that the additional data contained self-descriptive information about the target person, and that this served to correct the tendency of simple judges to be unable to discriminate differences between self and others.

A wide range of judgment phenomena other than prediction accuracy have been examined. Lundy and Berkowitz (1957) predicted that complex judges would manifest greater attitude change in their judgments about a stimulus person than would simple judges, after the presentation of additional information about the stimulus person. They found that there was the least amount of change for the lowest complexity judges, but they also noted a "boomerang" effect in that the most complex judges increased (negative change) the level of their initial attitudes. Ss who were moderately complex were either more consistently susceptible to change or else they were more variable on the attitude scales.

Another study (Tripodi and Bieri, 1966) of clinical judgment showed that cognitively complex judges saw more psychological conflict in TAT-like stories than did cognitively simple judges. No data was available as to the psychological adjustment of the judges themselves; because of this, a partial replication was performed by Tripodi (1967). In this investigation Tripodi found that complex judges again perceived greater amounts of conflict present in the stimulus person. The clinical information, containing

both pathological and non-pathological data, given to the judges was the same, yet the complex judges reported seeing evidence of more conflict. In addition, Tripodi found that there was a small but significant negative relationship between complexity and neuroticism (on Eysenck's scale). Apparently the complex judges were "set" to see conflict and complexity, whatever the stimuli. This conclusion has been supported by other data (Bieri, et al., 1966).

Research (Higgins, 1961) on still another aspect of the relationship between complexity and judgment has shown that cognitively complex judges generally exhibit moderate probability preferences and lower confidence ratings of their judgments. Along these same lines, Tripodi and Bieri (1964) found that high complexity judges were less confident in their clinical judgments than were cognitively simple judges. This finding was, however, qualified in that complex judges were more certain of their judgments when the stimulus information was ambiguous or incongruent. When judgments must be based upon conflicting, incongruent information, the judges lowest in complexity were the most uncertain of their judgments.

One final example of research related to judgment behavior is Hornsby's (1964) study which deals with social concept attainment. In this experiment, Ss were given a criterion (e.g. a behavioral description of a person high on dependency and low on aggression) and then asked to compare the criterion with test items describing

behavioral characteristics of an individual. Ss were required to decide whether an item was an exemplar or non-exemplar of the criterion. In terms of overall accuracy, Hornsby's study showed no consistent difference between complex and simple judges; however, a more detailed analysis revealed that simple judges made fewer errors in identifying exemplars. Again, this finding may represent the previously discussed superiority of cognitively simple judges in recognizing similarities.

In conclusion, a comment by Bieri (1961) seems relevant; he stated that in spite of the variations in measurement procedures, a significant relationship between cognitive complexity and information processing in social and clinical judgment has been demonstrated by a number of studies.

More precisely, complex judges are more accurate in the prediction of differences between self and others than are simple judges. Complex judges appear "set" to perceive complexity and conflict in the stimulus information input used in decision making. Complex judges are more cautious and less confident of their decisions than are simple judges, except when the information input is ambiguous. Finally, cognitively simple judges exceed complex judges in their ability to identify similarities between self and others, and they improve the accuracy of their judgments at a greater rate than complex judges, as the dimensionality of the stimulus information increases.

Cognitive Complexity and Impression Formation

The second major thrust in cognitive complexity research has been concerned with impression formation. Much like judgment behavior, impression formation seems to be influenced by variations in the level of cognitive complexity.

Mayo and Crockett (1964) were concerned not only with the influence of complexity on impression formation but also with primacy-recency effects. This study revealed that initial impressions of a stimulus person did not differ with respect to level of complexity. Mayo and Crockett did find that second impressions (assessed following the presentation of incongruent information) showed a marked recency effect with the simple judges, while complex judges retained a more ambivalent impression. Because the additional information was in conflict with the initial information, cognitively simple judges apparently retained a consistent, univalent impression by changing in the direction of the more recent information.

Rosenkratz and Crockett (1965) also observed that cognitively complex Ss exhibited less univalence than cognitively simple judges on final impressions (assessed after presentation of disparate information about the stimulus person).

Leventhal and Singer (1964) found greater initial certainty and clarity of impressions among cognitively simple judges. The

simple judges were seen as exhibiting greater impression change following the presentation of inconsistent information about the stimulus person. Leventhal and Singer also noted that cognitively simple judges seemed to respond more to the outer, normative qualities of others' behavior, while the complex subjects sought information on the inner, psychological states of the stimulus person. This same internal (for complex Ss) vs. external orientation (for simple Ss) was found in an earlier study by Bieri, Bradburn, and Galinsky (1958).

Lastly, two studies by Sieber and Lansetta (1964; 1966) indicated that Ss with high degrees of complexity were less certain of and had less confidence in their decisions than did cognitively simple Ss.

In summary, it seems that cognitively complex judges' initial and final impressions of stimulus persons are less univalent than those of cognitively simple judges. Further, cognitively simple judges seem determined to maintain a consistent, univalent impression. Complex judges are more influenced in impression formation tasks by the inner, dynamic qualities of the stimulus person, while simple judges are more concerned with normative kinds of information. Finally, cognitively simple judges generally exhibit greater clarity and certainty in their impressions than do complex judges.

Correlates of Cognitive Complexity

Cognitive complexity has been correlated with a variety of other variables. One of the earlier studies of this type was by Bieri and Messerly (1957), which established a significant correlation between complexity and extroversion, as measured on the Rorschach. As a consequence of this finding, it has been suggested that cognitively complex judges are better able to predict the behavior of others because they are more oriented toward people instead of their inner thoughts and feelings.

Studies by Koenig and King (1962; 1964) point to a relationship between cognitive simplicity and stereotyped views of Negroes. In addition, they found that simplicity was associated with prejudice toward Negroes. A somewhat contrary finding, reported by Valcov (1964), was that complexity-simplicity was not correlated with dogmatism.

A final study by Ashcroft (1963) indicates that cognitive complexity is associated with a generalized belief in the complexity of human nature.

In general, it may be said that cognitive complexity-simplicity is associated with several, but not too many personality indices. Among these correlates is a negative relationship between complexity and neuroticism. Complex individuals are more extroverted than simple individuals, and they are less likely to adopt stereotyped,

prejudiced views of minority groups. Complex Ss espouse a generalized belief in the extreme complexity of human nature. Also, there appears to be no relationship between cognitive complexity and dogmatism or intelligence.

Cognitive Complexity and Vocational Choice

Until recently little interest has been shown in relating cognitive variables to the vocational choice process. A few researchers (e.g. Osipow, in press) have shown an interest in the possible relationship between cognitive variables, such as field-dependence, conceptual "band width", and associative flexibility, and vocational choice. At present there are only two studies which are directly interested in cognitive complexity and vocational choice.

The first of the two studies (Oppenheimer, 1966) found that interpersonal complexity (as assessed by a modified Rep Test) was not associated with the degree of relationship between self concept and occupational ratings. In this somewhat limited respect, Oppenheimer concluded that cognitive complexity was not related to Super's concept of vocational choice. Oppenheimer went on to suggest that perhaps cognitive complexity was related to the realism (appropriateness of intellectual ability to the level of choice) of vocational choice. This proposition will be investigated in the

current study.

The second experiment was by Healy (1968), and it was concerned with the relationship of occupational choice to the similarity between self and occupational ratings. While interpersonal complexity was not of direct concern in this study, Healy did use a modified (by Oppenheimer, 1966) version of Kelly's Role Construct Repertory test to obtain S ratings of self and the roles of physician, accountant, and engineer. Using the Rep test measures and ratings of occupationally relevant traits, Healy found some support for the hypothesis that students studying for a profession show greater agreement between self and occupational ratings for their chosen profession than for other professions.

Appropriate Vocational Choice

This section of the discussion deals with the question of what constitutes an "appropriate" or "realistic" vocational choice. The real question under consideration is not so much "what in reality constitutes a realistic vocational choice?", as it is "How to obtain a useful, objective estimate of choice realism?" Obviously these two questions are not totally unrelated.

In discussing the notion of realistic choice, Super (1961) points out that the reasoning behind the concept is "that realistic goals are by definition attainable, whereas unrealistic or unwise

goals are by definition those which one is not likely to attain or with which one is not likely to be satisfied if one does attain them (p. 35)." In his study, Super (1961) describes four measures of wisdom or realism of vocational preference: (1) agreement between ability and preference level, (2) agreement between measured interests and preference, (3) agreement between occupational level of measured interests and level of preference, and (4) the socio-economic accessibility of the preference.

Super (1961) quite correctly notes that "although no one of these (above) measures can be viewed as a sufficient index of wisdom of choice, each of them involves a variable which is widely accepted and objectively justifiable as one measure or criterion of realism (p. 37)."

Hollender (1967) suggests that establishing an explicit criterion (such as ability) for realistic vocational choice is the most reliable method for operationally defining the concept. In his study, Hollender (1967) utilized a procedure for estimating the intellectual ability required for each of the various occupational levels, based on earlier work by Stewart (1947) and Wolfe (1954). Hollender's criterion of choice realism appeared to be quite workable. His criterion is employed in the current investigation and will be described more fully in the next chapter.

An additional criterion, not specifically mentioned by Super (1961) is the congruence or agreement between an individual's

personality style and the characteristics of the work environment of his chosen occupation (cf. Holland, 1966). The reason for considering congruence between personality style and vocational choice to be a measure of realism can be found in the research of Holland (1966). A summary of Holland's (1966) research findings regarding congruence of personality and work environment is as follows:

> Generally, congruent person-environment interactions (that is, interactions of people and environments belonging to the same type or model), in contrast to incongruent interactions are conducive to the following personal performance: (1) more stable vocational choice, (2) higher vocational achievement, (3) higher academic achievement, (4) better maintenance of personal stability, and (5) greater satisfactions. Presumably congruent interactions produce these outcomes because by definition they involve situations where the tasks and problems presented are well suited to the person's coping abilities. (p. 73)

Congruence between personality style (using Vocational Preference Inventory high point scores) and stated vocational choice will be used as a measure of appropriateness of choice, and will be discussed in greater detail in the next chapter.

One final word on realistic vocational choice concerns certain developmental aspects. It has been hypothesized (Beilin, 1955) and there is some supporting evidence (Ginzberg, et al., 1951; Hollender, 1967) that vocational choices tend to become more realistic with advancing age. A test of this hypothesis will be incorporated into the present investigation.

In conclusion, there are several ways of measuring the appropriateness or realism of vocational choice, no one of which is entirely sufficient. Each measure is assessing one generally accepted dimension of the overall criterion of realistic choice. The two measures utilized in this study are: (1) agreement between intellectual ability and level of stated vocational choice, and (2) agreement or congruence between personality and work environment of the stated choice.

Summary

This chapter dealt with two of the major variables under investigation in the present study, cognitive complexity and realistic vocational choice.

In discussing the nature of cognitive structures, it was evident that there exist a number of different theoretical interpretations of the construct. The theoretical position used as a framework of the present research is Bieri's (1955) elaboration of Kelly's (1955) psychology of personal constructs.

Cognitive complexity-simplicity was defined as a characteristic of an individual's cognitive structure. The complex individual presumably has available a greater number of personal constructs for discriminating among sensory input than cognitively simple persons do.

Cognitive complexity has been measured in a number of different

ways. The initial measure was devised by Kelly (1955). There are two major types of approaches to the measurement problem---grid and non-grid formats. There is little commonality among all the measures of complexity; however, the degree of relationship among grid-type approaches is significant and ranges from correlations of .30 to .80+. Evidence suggested that complexity measures should be devised explicitly for the nature of the stimuli to be judged. It was also noted that Bieri's modified Rep Test is the most widely used measure of complexity.

With regard to the generality of the complexity-simplicity variable, it was concluded that the degree of complexity varied with the nature of the stimulus being evaluated and was not consistent from one dimension to another.

Complexity-simplicity was shown to be related to social and clinical judgment behavior, as well as to impression formation. The effects of varying degrees of complexity upon judgment and impression formation behavior was discussed. It was also noted that there has been little effort made to relate cognitive complexity to the vocational choice process. Also, some of the correlates of complexity-simplicity were noted.

Finally, the question of how to operationally define realistic or appropriate vocational choice was discussed. Several useful measures were discussed in terms of their strengths and weaknesses.

General Propositions

The research literature on the subjects of cognitive complexity-simplicity and wisdom of vocational choice suggests several propositions worthy of investigation. This section will outline the general propositions to be evaluated in this study. It will also attempt to show how these propositions were generated from the existing research literature.

If, as theory suggests, cognitively complex persons are able to make finer discriminations among stimulus information input, and, as a result, have a more versatile response repertory, then it seems reasonable to expect that (1) cognitively complex individuals will make more appropriate or realistic educational and vocational choices.

Because it has been established that complexity varies with the type of stimuli to be discriminated, it seems necessary to develop a measure of <u>occupational complexity</u>. By using a grid-type measure consisting of occupational role titles and occupationally relevant construct dimensions, the resulting measure would then be more directly relevant to the variable under investigation---appropriate vocational choice. (2) It might be expected that there would be little relationship between the measure of vocational complexity and a measure of interpersonal complexity such as Bieri's modified Rep Test.

Further, it seems that appropriateness of vocational choice

should be assessed by at least two measures. (3) One measure of appropriate vocational choice will be the agreement between intellectual ability and the level of the occupational choice. The second measure will involve the congruence between personality style (VPI type) and the nature of the work environment (classified according to Holland's model) of the stated choice.

(4) Both measures of appropriate choice should be related to occupational complexity and to interpersonal complexity; however the relationship should be greater for males than for females, since men are generally thought to be more concerned about finding an appropriate occupation than are women.

(5) Cognitive complexity is more likely to be a significant factor in the making of an appropriate vocational choice when the population under investigation is older and further along in the educational process. This proposition stems from research which suggests that vocational choices become more realistic with advancing age.

(6) It might also be expected that the interest patterns (as on the Strong Vocational Interest Blank) for cognitively simple and cognitively complex persons will be different. Research has shown that cognitively simple individuals tend to develop and maintain univalent impressions; therefore, cognitively simple judges might tend to exhibit greater univalence (e.g. fewer "undecided" responses) in their impressions of educational-vocational activities.

(7) Finally, it might be expected that cognitively simple individuals will manifest a greater degree of certainty or confidence in their expressed vocational choice than would cognitively complex individuals. This proposition is based on the research dealing with complexity and impression formation.

The specific details of these propositions, as well as the manner in which they will be investigated will be described in Chapter Two.

CHAPTER II

METHOD

Sample

The sample for this study consisted of a total of 200 male and female students at the Ohio State University. The total sample was subdivided into four groups: (1) upper-class (2nd quarter juniors-1st quarter graduate) males (n=53), (2) under-class (1st quarter freshmen-3rd quarter sophomore) males (n=34), (3) upper-class (3rd quarter junior-1st year graduate) females (n=71), and (4) under-class (1st quarter freshmen-3rd quarter sophomore) females (n=42). The division of the total sample into upper-class and under-class groups was for the purpose of analyzing the effect of age upon choice realism. The male and female distinction was made in order to analyze the sex differences usually found in investigations of vocational choice.

All subjects were taken on a voluntary basis from both advanced and introductory psychology classes at the University during the summer quarter of 1968. The final sample consisted of subjects who properly completed all of the test instruments.

Procedure

Experimental Setting

The experimental settings for this investigation were the classrooms in which the various psychology courses normally met. Test administration sessions were held at the regularly scheduled class hours. The experimenter served as administrator and proctor for the testing sessions. Both of the testing sessions were approximately one hour long.

Testing Sessions

Prior to the actual testing, permission was obtained from the instructors of each of the psychology classes, to utilize their students as subjects. In each case, the experimenter was introduced to the class, by the instructor, as a doctoral candidate in counseling psychology working on a dissertation experiment. The experimenter than emphasized the fact that although class time would be used for the study, participation was entirely voluntary. Also, it was requested that if a student chose to participate that he take the experiment seriously.

It was further explained to all subjects that the study concerned certain (but unspecified) questions related to the problem of vocational choice, and that the data collected were for research purposes. Subjects were assured that there would be no permanent record of their performance on any of the instruments. However, it

was stated that scores would be given and interpreted, on an individual basis, to interested students. In general, student response to the above-mentioned requests was very cooperative.

In order to facilitate group administration of the test instruments, instructions were printed on each of the instruments. Although it was felt that the instructions were generally self-explanatory, the experimenter went over them orally. Any procedural questions were answered by the experimenter reading aloud the appropriate section of the printed instructions. Any non-procedural questions were answered by responses such as "I can't answer that question at this time." Administration procedures were identical in each class.

It was felt that the problem of experimenter bias was not serious in this study for at least two reasons: (1) the precise purpose of the investigation was unknown to the subjects, and (2) the nature of the test instruments gave no clues as to the type of responses which might be desired by the experimenter.

Presentation of Tests

During the first testing session the following instruments were administered: (1) a brief "Educational-Vocational Questionnaire" which consisted of questions on vocational choice, certainty of expressed choice, and educational status; (2) selected interest items taken from the Strong Vocational Interest Blank; and (3) the

Occupational Differentiation test, a measure of vocational complexity. During the second session, two weeks later, the following instruments were administered: (1) John Holland's Vocational Preference Inventory (Sixth Revision); (2) Bieri's modified Rep Test, a measure of interpersonal complexity (entitled "Interpersonal Differentiation Test"); and (3) the "Occupational Differentiation Test"---repeated in order to collect test-retest reliability data.

Debriefing

Following the completion of the testing, the experimenter returned to the classes for a brief explanation of the purpose of the study and the tests utilized. Since no deception was involved, debriefing was not considered to be critical, and therefore, was not extensive.

Independent Variables

There were two main independent variables, and both were measures of cognitive complexity. On certain hypotheses, these two variables interacted with age and sex of the subjects.

Vocational Complexity

Since the research literature suggested that measures of complexity should be designed to fit the specific stimuli to be discriminated, a grid-type measure of vocational complexity was

devised. In order to facilitate the administration, scoring, and comparability with the interpersonal complexity measure, an effort was made to develop a measure similar in format to Bieri's (et al., 1966) modified Rep Test.

In an attempt to devise such an instrument, the experimenter began pilot work with a grid instrument similar in construction to the original Kelly (1955) Role Construct Repertory test. The initial version of the vocational complexity measure consisted of 16 occupational role titles (two from each of Roe's /1956/ classification system). Following Kelly's (1955) suggestions for arranging the triadic combinations of role titles, Ss were instructed to decide in what important respect two of the three occupations were alike and at the same time different from the third. Using these instructions for 20 combinations, Ss generated their own constructs (e.g. high pay vs. low pay) which they wrote beside the grid. This consituted the first step in the development of the final vocational complexity measure.

The second step consisted of reducing the number of role titles from 16 to 12 in order to speed-up administration time requirements of the instrument. In order to retain a presumably representative sample of occupations, at least one from each of Roe's (1956) occupational groups was retained.

After reducing the number of role titles from 16 to 12, 12 bipolar, vocationally-relevant constructs (e.g. interesting work

vs. dull work) were then provided. In selecting constructs, an effort was made to choose a representative range from the pool of constructs generated by subjects during the pilot work with the first version of the test. In addition to the 12 bipolar constructs, a six-point, Likert-type scale was utilized for rating each occupation on all 12 construct dimensions. A Pearson product-moment correlation based on total complexity scores for the first and second versions, with an n=38, was .62 ($p < .01$). The correlation between own (first version) and provided construct (revised version) vocational complexity measures seemed to be consistent with data compiled on interpersonal complexity measures (cf. Bieri, et al., 1966.

The final phase in the development of the vocational complexity measure was to obtain reliability information. As noted above, the modified vocational complexity measure was administered and then readministered after a two week interval. The test-retest correlation was found to be .82 ($p < .001$) for a sample of 200 males and females. Once the reliability was established as adequate, the modified vocational complexity measure was deemed ready for use in the present study.

Scoring of the vocational complexity measure was identical to the scoring procedure utilized with Bieri's (et al., 1966) modified Rep Test. A single, total complexity score was obtained by comparing each rating in a row with the ratings below it (i.e., for

the same occupation) in the other rows of the matrix. In comparing any two construct rows, a score of +1 was given for every exact agreement of ratings for any one occupation. This comparison procedure was carried out for all possible comparisons, and the scores for each comparison were added to give the total score. Since there were 66 possible row comparisons in a 12x12 grid matrix, the highest possible score was 792 (i.e., 12 x 66). The higher the score, the more frequently the S was using the same rating on the bipolar construct for each of the occupational role titles. The lower the score, the fewer the number of identical ratings for each occupation. It should be noted that the higher the total score, the lower the degree of complexity. A copy of the final version of the vocational complexity measure is included in Appendix A.

In the present study, the independent variable of vocational complexity was divided into high and low complexity categories by means of a median-split. Subjects whose scores fell below the median were placed in the high complexity category and vice versa.

Interpersonal Complexity

The measure of cognitive complexity in the interpersonal realm employed in this investigation was the modified Rep Test developed by Bieri and his associates (1966). This instrument (entitled "Interpersonal Differentiation Test") consisted of a 10x10 grid, with 10 personal role titles across the top and 10

bipolar constructs along the right-hand side of the grid. A six-point, Likert-type scale was used to rate each role person on all of the 10 construct dimensions.

A total complexity score was obtained by the same procedure described for the vocational complexity measure. The only variation in the scoring involved the number of possible comparisons. There were 45 possible row comparisons, and hence a maximum score of 450. As with the vocational complexity instrument, the higher the total score, the lower the degree of cognitive complexity. A copy of the instrument is included in Appendix A. Table 23 in Appendix B reports the means and standard deviations obtained with the vocational and interpersonal complexity measures. Also included in Table 23 are t-tests for any significant differences in mean scores for any of the four subject subgroups.

The variable of interpersonal complexity was differentiated into high and low complexity categories on the basis of a median-split. Subjects scoring below the median were classified as high complexity, those above as low complexity.

Dependent Variables

There were four dependent variables under study in this experiment. They were as follows: (1) appropriate vocational choice, (2) appropriate educational choice, (3) inventoried interest responses, and (4) certainty of stated vocational choice.

Appropriate Vocational Choice

There were two measures of appropriate vocational choice. One measure, called realistic choice, involved agreement between intellectual ability and the level of occupational choice. This measure was identical to that outlined by Hollender (1967).

In order to determine whether or not a choice was realistic, American College Testing Program (ACT) college entrance scores were obtained for each subject, and their stated vocational choices were translated into one of Roe's (1956) six occupational levels, which range from level 6, the lowest, unskilled occupations, to level one, the highest professional occupations. Once the occupational choice was classified, the individual's ACT percentile score was compared to the "appropriate" ACT percentile scores for the level of his stated occupational choice. Hollender (1967) determined two ACT percentile scores for each of the six levels. The higher score represented the ability level above which a person was presumed to have too much ability to be satisfied with an occupation of that level. The lower percentile score represented the minimum ability requirement for adequate functioning at that particular occupational level. The vocational choice was deemed realistic if the individual's ACT score fell within the upper and lower scores for the level of his stated vocational choice. Scores above or below the critical scores were presumed to represent unrealistic choices. Table 24 in Appendix B shows the ACT scores

for each of the six levels of occupational choice. Table 25 in Appendix B presents a breakdown of the frequencies of subjects making realistic or unrealistic vocational choices at each occupational level.

The second indicator of appropriate vocational choice was called congruent vocational choice, and involved agreement between personality style (i.e., VPI high point code) and the work environment type of the stated choice. In order to determine the congruence of a given individual's vocational choice, the expressed choice was classified according to Holland's (1966) model. Then, the VPI type was compared with the work environment type of the expressed vocational choice. If the VPI high point code corresponded to the work environment classification (e.g. Conventional personality type with a Conventional vocational choice) the choice was considered to be congruent. In the event no one VPI scale was clearly the highest (e.g. ties), the subject was not used. Table 27 in Appendix B shows the frequencies of congruent and incongruent vocational choices for each of the four subject subgroups.

Appropriate Educational Choice

An appropriate educational (major field) choice was operationally defined as the congruence or agreement between an individual's personality type (VPI high point) and the stated major field choice, classified according to Holland's (1966) model. If

an individual's personality type (VPI) was congruent with the major field's classification, the choice was deemed to be appropriate.

Inventoried Interest Responses

Inventoried vocational interest item responses were defined in terms of the mean frequency of "Like", "Dislike", and "Indifferent" responses made by subjects to 133 interest items taken from the Strong Vocational Interest Blank. These items were taken from sections II-School Subjects, III-Amusements, and IV-Activities, of the revised SVIB. These items were chosen from this widely-used vocational interest inventory to see whether cognitively complex subjects differed from simple subjects with respect to the univalence of their impressions of the types of activities typically assessed in an interest inventory. It was felt that complexity-simplicity may correspond functionally to a type of response set (e.g. "Yea-sayers" vs. "Nay-sayers").

Items from sections I and IV of the SVIB were not used because they included occupational role titles and types of persons, and it was felt that including such items might have had a confounding influence upon Ss's responses to the complexity measures, which also utilized occupational and personal role titles.

Those items which were used, along with appropriate directions were mimeographed and entitled "Interest Inventory". Scores were obtained by simply counting the number of "like", "Dislike", and

"Indifferent" responses. A copy of the "Interest Inventory" is included in Appendix A.

Certainty of Vocational Choice

The certainty of a vocational choice was an estimate of how confident or certain the subject was about his stated vocational choice. This estimate of choice certainty was obtained in the "Educational-Vocational Questionnaire" mentioned previously. The initial item in the questionnaire asked S to state his planned vocational choice. If S was undecided, he was instructed to indicate his most probable choice.

Once the choice was indicated, the second item requested Ss to rate the degree of certainty of their stated choice. A seven-point rating scale, with 1="very uncertain" and 7="very certain", was used for assessing the degree of choice certainty. A copy of the scale is included in the "Educational-Vocational Questionnaire" in Appendix A.

Hypotheses

The hypotheses were as follows:

1.1 There is a significant positive relationship between vocational complexity and realistic vocational choice;

1.2 There is a significant positive relationship between interpersonal complexity and realistic vocational choice;

2.1 There is a significant positive relationship between vocational complexity and congruent vocational choice;

2.2 There is a significant positive relationship between interpersonal complexity and congruent vocational choice;

3.1 There is a significant positive relationship between vocational complexity and appropriate educational choice;

3.2 There is a significant positive relationship between interpersonal complexity and appropriate educational choice;

4.1 There is an inverse relationship between vocational complexity and the certainty of vocational choice;

4.2 There is an inverse relationship between interpersonal complexity and the certainty of vocational choice;

5.1 There is no significant relationship between interpersonal complexity and vocational complexity;

6.1 The relationship between vocational complexity and realistic vocational choice is greater for upperclass subjects than for underclass subjects;

6.2 The relationship between interpersonal complexity and realistic vocational choice is greater for upperclass subjects than for underclass subjects.

7.1 The relationship between vocational complexity and congruent vocational choice is greater for upperclass subjects than for underclass subjects;

7.2 The relationship between interpersonal complexity and congruent vocational choice is greater for upperclass subjects than for underclass subjects;

8.1 The relationship between vocational complexity and realistic vocational choice is greater for males than for females;

8.2 The relationship between interpersonal complexity and realistic vocational choice is greater for males than for females;

9.1 The relationship between vocational complexity and congruent vocational choice is greater for males than for females;

9.2 The relationship between interpersonal complexity and congruent vocational choice is greater for males than for females.

10.1 There is a significant difference in the number of "Like", "Dislike", or "Indifferent" vocational interest item responses made by vocationally complex and simple subjects;

10.2 There is a significant difference in the number of "Like", "Dislike", or "Indifferent" vocational interest item responses made by interpersonally complex and simple subjects.

Analysis of Data

Hypotheses 1.1 through 3.2 will be analyzed for the degree of relationship by means of a Phi (ϕ) correlation coefficient. The statistical significance of the relationship will be evaluated by application of a Chi (X^2) test.

Hypotheses 4.1 through 5.1 will be tested for the degree of relationship by computing a Pearson product-moment correlation coefficient. Student's t-test (two tailed) will be used to evaluate the statistical significance of the relationships, one t-test for each hypothesis.

For hypotheses 6.1 through 9.2, Fisher's z_r transformation test will be applied, one z_r transformation test per hypothesis. Hypotheses 10.1 and 10.2 will be evaluated for significant mean score differences by a t ratio test for independent samples. In those instances where an F test indicates that sample variances are unequal, Cochran and Cox's t test (Ferguson, 1959) will be used.

All hypotheses will be analyzed separately for each of the four

subject subgroups. Results of the analyses will be reported in Chapter Three.

CHAPTER III

RESULTS AND DISCUSSION

RESULTS

Hypothesis 1.1 predicted a positive relationship between vocational complexity and the realism of vocational choice. Table 1 reports the Phi correlation coefficients between these two variables.

Table 1

PHI CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & REALISTIC VOCATIONAL CHOICE

Subgroup	Phi Coeff.	X^2	Signif.
Upperclass Males (n=51)	.00	.01	$p < .90$
Underclass Males (n=34)	.17	.97	$p < .50$
Upperclass Females (n=71)	.15	1.40	$p < .30$
Underclass Females (n=42)	.01	.06	$p < .80$

As Table 1 indicates, the Phi coefficients were not significant

for the four subgroups. Hence, Hypothesis 1.1 was not supported. Apparently, the relationship between vocational complexity and the agreement of ability with vocational choice level is very slight.

Hypothesis 1.2 predicted a positive relationship between interpersonal complexity and realistic vocational choice. The Phi coefficients shown in Table 2 were not significant. The results presented in Table 2 seem to indicate that interpersonal complexity, like vocational complexity, is not associated with the agreement of intellectual ability and the level of vocational choice. In this sense, neither complexity-simplicity variable is a factor in the making of an appropriate vocational choice.

TABLE 2

PHI CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & REALISTIC VOCATIONAL CHOICE

Subgroup	Phi Coeff.	X^2	Signif.
Upperclass Males (n=51)	.00	.01	$p < .90$
Underclass Males (n=34)	.17	.97	$p < .50$
Upperclass Females (n=71)	.00	.03	$p < .90$
Underclass Females (n=42)	.09	.34	$p < .70$

A significant positive relationship between vocational complexity

and congruent vocational choice was hypothesized in Hypothesis 2.1. Table 3 reports the degree of the relationship found to exist between vocational complexity and congruent vocational choice.

TABLE 3

PHI CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & CONGRUENT VOCATIONAL CHOICE

Subgroup	Phi Coeff.	X^2	Signif.
Upperclass Males (n=53)	.36	6.94	$p < .01$
Underclass Males (n=34	.28	2.91	$p < .10$
Upperclass Females (n=71)	.10	.73	$p < .50$
Underclass Females (n=42)	.00	.01	$p < .90$

The correlation (ϕ=.36) between vocational complexity and congruent vocational choice was significant ($p < .01$) for upperclass male students. The correlation of .28 obtained for these two variables with underclass male students approached, but did not reach, an acceptable level of significance. At least where upperclass males are concerned, the data supported the prediction that vocational complexity was associated with the congruence between personality style and the work environment of the vocational choice. In this respect, vocational complexity is a factor in the making of an appropriate vocational choice.

Table 4 shows the results of testing the predicted relationship between interpersonal complexity and congruent vocational choice (Hypothesis 2.2).

TABLE 4

PHI CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & CONGRUENT VOCATIONAL CHOICE

Subgroup	Phi Coeff.	X^2	Signif.
Upperclass Males (n=53)	.21	2.34	$p < .11$
Underclass Males (n=34)	.24	2.04	$p < .14$
Upperclass Females (n=71)	.00	.03	$p < .90$
Underclass Females (n=42)	.14	.83	$p < .50$

Although the degree of relationship between interpersonal complexity and congruent vocational choice did not reach an acceptable level of significance, it did approach significance for both male subgroups. The results in Table 4 did not support Hypothesis 2.2. Apparently, interpersonal complexity is not highly associated with this dimension of appropriate vocational choice.

Hypothesis 3.1 predicted a positive relationship between vocational complexity and the appropriateness of educational (major field) choice. None of the Phi coefficients presented in Table 5

were significant. Hypothesis 3.1 was not supported by the data. Thus, it seems that the congruence between personaltiy style and educational field environment type is not associated with vocational complexity.

TABLE 5

PHI CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & APPROPRIATE EDUCATIONAL CHOICE

Subgroup	Phi Coeff.	X^2	Signif.
Upperclass Males (n=53)	.16	1.26	$p < .30$
Underclass Males (n=34)	.20	1.36	$p < .30$
Upperclass Females (n=68)	.11	.82	$p < .50$
Underclass Females (n=42)	.07	.19	$p < .70$

A significant positive relationship between interpersonal complexity and the appropriateness of the educational choice was predicted by Hypothesis 3.2. As the findings presented in Table 6 indicate, there was little support for the hypothesized relationship. None of the Phi coefficients were significant.

TABLE 6

PHI CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & APPROPRIATE EDUCATIONAL CHOICE

Subgroup	Phi Coeff.	X^2	Signif.
Upperclass Males (n=52)	.08	.32	$p < .70$
Underclass Males (n=34)	.27	2.82	$p < .10$
Upperclass Females (n=69)	.11	.86	$p < .50$
Underclass Females (n=42)	.07	.26	$p < .70$

Table 7 presents the results of testing Hypothesis 4.1. As can be observed, the hypothesized inverse relationship between vocational complexity and the certainty of vocational choice was not found. While the obtained correlation coefficients in Table 7 were not significant, it is interesting to note that they were all in the opposite direction from what was predicted.

TABLE 7

PRODUCT-MOMENT CORRELATION COEFFICIENTS FOR
VOCATIONAL COMPLEXITY & CERTAINTY OF VOCATIONAL CHOICE

Subgroup	r	t*	Signif. level
Upperclass Males (n=53)	.18	1.33	$p < .20$
Underclass Males (n=34)	.16	.88	$p < .20$
Upperclass Females (n=71)	.12	1.01	$p < .20$
Underclass Females (n=42)	.08	.49	$p < .20$

* two-tailed test

The inverse relationship between interpersonal complexity and the certainty of vocational choice, which was predicted by Hypothesis 4.2, was not observed. The correlation coefficients shown in Table 8 were not significant. They were also in the opposite direction from what was predicted. As a consequence of these findings, Hypothesis 4.2 was not supported. Cognitive complexity apparently was not associated with the degree of choice certainty.

TABLE 8

PRODUCT-MOMENT CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & CERTAINTY OF VOCATIONAL CHOICE

Subgroup	r	t*	Signif. level
Upperclass Males (n=53)	.17	1.30	$p < .20$
Underclass Males (n=34)	.13	.76	$p > .20$
Upperclass Females (n=71)	.20	1.57	$p < .20$
Underclass Females (n=42)	.06	.42	$p > .20$

*two-tailed t test

Although no differences were predicted, it is interesting to note (Table 9) that the difference among the four subgroups, with respect to the degree of vocational choice certainty was not large. The most distinct tendency was for underclass males to be the least certain of their vocational choice.

TABLE 9

MEANS & STANDARD DEVIATIONS OF VOCATIONAL CHOICE CERTAINTY SCALE

Subgroup	Mean	Std. dev.
Upperclass Males (n=53)	5.60	1.34
Underclass Males (n=34)	4.45	2.12
Upperclass Females (n=71)	5.79	1.01
Underclass Females (n=42)	5.88	1.03

It was hypothesized (Hypothesis 5.1) that vocational complexity and interpersonal complexity were relatively independent of each other. The results shown in Table 10 indicate that there was moderate but significant relationship between these two variables. The results did not support Hypothesis 5.1, but they were consistent with certain previous research findings (e.g. Bieri & Blacker, 1956).

TABLE 10

PRODUCT-MOMENT CORRELATION COEFFICIENTS
FOR VOCATIONAL & INTERPERSONAL COMPLEXITY

Group	r	t	Signif. level
Total (n=200)	.43	6.59	$p < .001$
Upperclass Males (n=53)	.38	2.91	$p < .01$
Underclass Males (n=34)	.42	2.71	$p < .01$
Upperclass Females (n=71)	.44	3.94	$p < .001$
Underclass Females (n=42)	.45	2.94	$p < .01$

The influence of increasing age and education upon the relationship between vocational complexity and realistic vocational choice was the concern of Hypothesis 6.1. It was hypothesized that the relationship would be greater among advanced, upperclass students than among beginning students. Tests for significant differences between correlation coefficients, using Fisher's z_r transformation (Ferguson, 1959), are shown in Table 11. The Z values reported in Table 11 are actually unit-normal-curve deviates, and therefore, these Z values must be greater than 1.96 in order to be indicative of significant ($p < .05$) differences between the correlation coefficients.

TABLE 11

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & REALISTIC VOCATIONAL CHOICE

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.00) --Underclass males (ϕ=.17)	.75	$p > .05$
Upperclass females (ϕ=.15) --Underclass females (ϕ=.01)	.78	$p > .05$

[a]Fisher's z_r transformation test

The difference between the correlation coefficients for upperclass students versus underclass students were not significant. Age does not seem to influence the relationship between vocational complexity and realistic vocational choice.

Hypothesis 6.2 predicted that the relationship between interpersonal complexity and realistic vocational choice would be greater among upperclass students than among underclass students. Table 12 presents the results of the application of Fisher's z_r transformation test to the differences between the correlation coefficients obtained with upperclass and underclass students.

TABLE 12

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & REALISTIC VOCATIONAL CHOICE

Comparison groups	Z Value	Signif.
Upperclass males (O=.00) --Underclass males (O=.17)	.75	$p > .05$
Upperclass females (O=.00) --Underclass females (O=.09)	.50	$p > .05$

[a]Fisher's z_r transformation test

The differences between the correlation coefficients of interpersonal complexity with realistic vocational choice for upperclass versus underclass students were not significant. Hypothesis 6.2 was, therefore, not supported. Age does not appear to be associated with changes in the degree of relationship between complexity and realistic choice.

It was predicted, by Hypothesis 7.1, that the degree of relationship between vocational complexity and congruent vocational choice would be greater for upperclass students than for underclass students. A comparison of the correlation coefficients obtained with upperclass and underclass students is reported in Table 13. As the results (Table 13) indicate, the apparent difference between the correlation coefficients was not significant, and Hypothesis 7.1 was not supported.

TABLE 13

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & CONGRUENT VOCATIONAL CHOICE

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.36) --Underclass males (ϕ=.28)	.49	$p > .05$
Upperclass females (ϕ=.10) --Underclass females (ϕ=.00)	.51	$p > .05$

[a]Fisher's z_r transformation test

Hypothesis 7.2 pertained to the difference in the degree of relationship between interpersonal complexity and congruent vocational choice for upperclass versus underclass students. The predicted increase in relationship between these variables was observed; however, the difference proved to be nonsignificant. The results in Table 14 do not support the hypothesis.

TABLE 14

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & CONGRUENT VOCATIONAL CHOICE

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.21) --Underclass males (ϕ=.24)	.16	$p > .05$
Upperclass females (ϕ=.00) --Underclass females (ϕ=.14)	.78	$p > .05$

[a]Fisher's z_r transformation test

The influence of vocational complexity upon the realism of vocational choice was predicted to be greater for males than for females (Hypothesis 8.1). The results presented in Table 15 gave no support to this hypothesis. Vocational complexity was apparently not associated with choice realism, regardless of interacting factors such as age or sex.

TABLE 15

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & REALISTIC VOCATIONAL CHOICE: MALES VERSUS FEMALES

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.00) --Upperclass females (ϕ=.15)	.83	$p > .05$
Underclass males (ϕ=.17) --Underclass females (ϕ=.01)	.67	$p > .05$

[a]Fisher's z_r transformation test

The relationship between interpersonal complexity and the realism of vocational choice was hypothesized to be greater for male students than for female students (Hypothesis 8.2). The expected differences were not found. Data presented in Talbe 16 show that there were no significant differences between the correlation coefficients obtained for males and females. These findings indicate that Hypothesis 8.2 was not supported.

TABLE 16

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & REALISTIC VOCATIONAL CHOICE: MALES VERSUS FEMALES

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.00) --Upperclass females (ϕ=.00)	.00	p $>$.05
Underclass males (ϕ=.17) --Underclass females (ϕ=.09)	.36	p $>$.05

[a]Fisher's z_r transformation test

Hypothesis 9.1 predicted that the relationship between vocational complexity and congruent vocational choice would be greater for male students than for female students. However, application of Fisher's z_r transformation test (in Table 17) indicated that the differences were not significant, although they were in the predicted direction. The difference between the

correlation coefficients obtained with upperclass males as opposed to upperclass females approached significance ($p < .11$). The data did not support the hypothesis.

TABLE 17

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR VOCATIONAL COMPLEXITY & CONGRUENT VOCATIONAL CHOICE: MALES VERSUS FEMALES

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.36) --Upperclass females (ϕ=.10)	1.60	$p > .05$
Underclass males (ϕ=.28) --Underclass females (ϕ=.00)	1.20	$p > .05$

[a]Fisher's z_r transformation test

It was expected that the relationship between interpersonal complexity and congruent vocational choice would be greater for males than for females (Hypothesis 9.2). While the results shown in Table 18 were in the predicted direction, they were not significant and did not support the hypothesis.

TABLE 18

TEST[a] OF SIGNIFICANT DIFFERENCES BETWEEN CORRELATION COEFFICIENTS FOR INTERPERSONAL COMPLEXITY & CONGRUENT VOCATIONAL CHOICE: MALES VERSUS FEMALES

Comparison groups	Z Value	Signif.
Upperclass males (ϕ=.21) --Upperclass females (ϕ=.00)	1.18	$p > .05$
Underclass males (ϕ=.24) --Underclass females (ϕ=.14)	.61	$p > .05$

[a]Fisher's z_r transformation test

Hypothesis 10.1 and 10.2 were concerned with differences in responses to vocational interest inventory items made by cognitively complex and cognitively simple subjects. Hypothesis 10.1 predicted that there would be differences in the mean number of times a response category (i.e., "Like", "Dislike", & "Indifferent") was used by vocationally complex and simple subjects. Table 19 gives the results of the application of t tests for significant differences in the mean frequency for each response category. Two types of t tests were used. If the sample variances were not significantly different as determined by the F test, a t ratio to test the significance of the difference between two means of independent samples were used. If the F test proved to be significant, the Cochran and Cox t ratio for testing the significance of the difference between means where

the sample variances are unequal was used (Ferguson, 1959).

TABLE 19

COMPARISON OF INTEREST ITEM RESPONSE CATEGORY MEANS FOR VOCATIONALLY COMPLEX & SIMPLE Ss

Response Category	Complex (n=25) Mean	Std. dev.	Simple (n=26) Mean	Std. dev.	F	t
Upperclass Males						
Like	56.44	22.22	69.14	14.28	2.46*	2.40*#
Indiff.	45.00	18.12	41.71	20.06	1.23	.59
Dislike	31.44	17.32	19.85	16.88	1.01	2.46*
Underclass Males						
Like	60.51	20.10	69.60	17.34	1.38	1.36
Indiff.	40.03	19.45	42.09	18.76	1.10	.30
Dislike	32.04	18.71	20.31	19.10	1.00	1.75
Upperclass Females						
Like	63.23	21.63	64.10	18.14	1.48	.19
Indiff.	33.15	17.47	33.90	21.70	1.67	.55
Dislike	35.77	19.80	32.94	22.01	1.20	.56
Underclass Females						
Like	62.95	23.16	65.00	19.72	1.32	.30
Indiff.	34.11	16.43	31.25	20.01	1.58	.49
Dislike	36.02	18.66	33.93	17.33	1.26	.36

*p .05

#Cochran & Cox t test

The data presented in Table 19 indicated some support for Hypothesis 10.1. The t tests showed that among upperclass males, vocationally complex subjects used significantly fewer "Like" responses to the interest items. They also used significantly more "Dislike" responses. Apparently vocationally complex subjects were more negative in their response to the 133 vocational interest items. No other differences were significant. The above-mentioned results are taken as partial support for Hypothesis 10.1.

Hypothesis 10.2 predicted significant differences in the mean number of "Like", "Indifferent", or "Dislike" responses made by interpersonally complex and simple subjects. As the data in Table 20 indicate, there were no significant differences in the number of responses per category made by cognitively complex and simple subjects. Hypothesis 10.2 was, therefore, not supported.

TABLE 20

COMPARISON OF INTEREST ITEM RESPONSE CATEGORY MEANS FOR INTERPERSONALLY COMPLEX & SIMPLE Ss

	Complex (n=26)		Simple (n=25)			
Response Category	Mean	Std. dev.	Mean	Std. dev.	F	t
Upperclass Males						
Like	60.21	18.61	66.93	19.47	1.02	1.52
Indiff.	40.65	21.01	40.87	18.61	1.22	.04
Dislike	32.01	15.65	25.22	17.33	1.12	1.43
	Complex (n=16)		**Simple (n=18)**			
Response Category	Mean	Std. dev.	Mean	Std. dev.	F	t
Underclass Males						
Like	62.48	14.88	58.31	17.86	1.44	.76
Indiff.	39.31	19.01	42.16	16.44	1.41	.46
Dislike	28.61	16.74	30.76	17.27	1.00	.35
	Complex (n=37)		**Simple (n=34)**			
Response Category	Mean	Std. dev.	Mean	Std. dev.	F	t
Upperclass Females						
Like	65.11	21.06	62.13	17.74	1.35	.63
Indiff.	33.02	19.45	34.81	16.67	1.26	.43
Dislike	34.80	15.83	33.06	15.98	1.00	.45
	Complex (n=21)		**Simple (n=21)**			
Response Category	Mean	Std. dev.	Mean	Std. dev.	F	t
Underclass Females						
Like	62.30	17.41	65.04	17.95	1.15	.49
Indiff.	33.81	19.37	32.96	19.48	1.01	.14
Dislike	37.17	16.64	34.80	18.86	1.25	.41

One final aspect of the results should be mentioned. Although

no predictions were made about the interaction effects of the two cognitive complexity variables upon the dependent variables, they were analyzed. In order to evaluate these interaction effects, a 2x4 contingency table (instead of a 2x2) was used. The four groups were: (1) high vocational-high interpersonal complexity, (2) high vocational-low interpersonal complexity, (3) low vocational-high interpersonal complexity, and (4) low vocational-low interpersonal complexity.

The relationship of the combined complexity variables with congruent vocational choice yielded a Coefficient of Contingency correlation of .36, with a significant X^2 ($p < .05$) of 7.86 (df=3). In other words, the relationship between the combined complexity variables and vocational choice congruence was of approximately the same magnitude as the relationship involving only vocational complexity and choice congruence. The other relationships between combined complexity measures and the dependent measures were not significant.

It was also found that when upperclass males who were complex on both complexity measures were compared with upperclass males who were simple on both measures, in relation to vocational choice congruence, the results were noteworthy. Table 21 shows the 2x2 contingency table comparing these combined, extreme complexity-simplicity groups, in relation to the congruence of vocational choice. As may be observed, the differences were very marked. This

finding has important implications which will be discussed in Chapter Four.

TABLE 21

COMPARISON OF Ss HIGH ON BOTH COMPLEXITY MEASURES WITH Ss LOW ON BOTH MEASURES IN RELATION TO CONGRUENCE OF VOCATIONAL CHOICE

	Incongruent Choice	Congruent Choice
High Vocational High Interpersonal	n=3	n=11
Low Vocational Low Interpersonal	n=11	n=4

The results of the hypothesis testing in this experiment are summarized in Table 22. Results are presented in terms of whether or not the hypothesis was supported.

TABLE 22

SUMMARY TABLE FOR RESULTS OF HYPOTHESIS TESTING

Hypothesis:	Results:
1.1) Vocational complexity is related to realistic vocational choice	not supported
1.2) Interpersonal complexity is related to realistic vocational choice	not supported

TABLE 22 (Continued)

Hypothesis:	Results:
2.1) Vocational complexity is related to congruent vocational choice	supported
2.2) Interpersonal complexity is related to congruent vocational choice	not supported
3.1) Vocational complexity is related to appropriate educational choice	not supported
3.2) Interpersonal complexity is related to appropriate educational choice	not supported
4.1) Vocational complexity is inversely related to choice certainty	not supported
4.2) Interpersonal complexity is inversely related to choice certainty	not supported
5.1) No relationship between vocational & interpersonal complexity	not supported
6.1) Relation between vocational complexity & realistic choice greater for upperclass Ss than underclass Ss	not supported
6.2) Relation between interpersonal complexity & realistic choice greater for upperclass than underclass Ss	not supported
7.1) Relation between vocational complexity & congruent choice greater for upperclass than underclass Ss	not supported
7.2) Relation between interpersonal complexity & congruent choice greater for upperclass than underclass Ss	not supported
8.1) Relation between vocational complexity & realistic choice greater for males than females	not supported

TABLE 22 (Continued)

Hypothesis:	Results:
8.2) Relation between interpersonal complexity & realistic choice greater for males than females	not supported
9.1) Relation between vocational complexity & congruent choice greater for males than females	not supported
9.2) Relation between interpersonal complexity & congruent choice greater for males than females	not supported
10.1) Differences in interest inventory responses of vocationally complex and simple Ss	supported
10.2) Differences in interest inventory responses of interpersonally complex & simple Ss	not supported

DISCUSSION

The major concern of this study was to evaluate the hypothesis that cognitive complexity is a factor in the process of making an approproate vocational choice. The study was also concerned with cognitive complexity in relation to the appropriateness of one of the major steps in this process---the choice of a major field of study. In general, the results were mixed, but predominantly negative. The following discussion will treat the results of the various hypotheses investigated in this experiment.

No evidence was found to support the hypothesis that both interpersonal and vocational complexity were related to the realism of vocational choice, when realistic choice was defined as the agreement between intellectual ability and vocational choice level. This finding suggests several theoretical interpretations.

One feasible interpretation is that for some persons the affect value of the chosen occupation may "out weigh" the influence of whatever cognitive variables are associated with the decision.

A second alternative explanation is that cognitive complexity may be associated with the making of a realistic vocational choice, provided that the dimension of complexity under investigation is more directly relevant to the criterion than are interpersonal or vocational complexity.

In terms of a methodological explanation, it does not seem likely that the negative results were due to a one-sided distribution of realistic and unrealistic choices. As the data in Table 25 (Appendix B) indicate, there was a tendency for more subjects (59%) to make a realistic choice than an unrealistic choice (41%), but this tendency was not great enough to be a significant factor. Also, it does not appear that range restriction was a problem. As Table 25 in Appendix B shows, vocational choice levels ranged from level one to three, with realistic and unrealistic choices being

made at each level.

Lack of variability on the two independent measures apparently was not a factor in the negative results. Table 23 in Appendix B shows that there was considerable variation on both complexity measures. Therefore, lack of variability and range restriction on the independent and dependent measures can be eliminated as factors contributing to the negative results.

Cognitive Complexity and Congruent Vocational Choice

Realistic choice was one index of the overall appropriateness of vocational choice. The other index was the congruence, or agreement between personality and work environment, of the choice. Some evidence was found which suggests that cognitive complexity is associated with vocational choice congruence.

The degree of the relationship between vocational complexity and congruent vocational choice (Hypothesis 2.1) was moderate ($C=.36$), but significant ($p < .01$) for upperclass males only (i.e., one of four subgroups). There was a tendency for interpersonal complexity and choice congruence to be related for both male subgroups (two of the four subgroups).

The reason for the greater relationship found among upperclass males is not immediately apparent. It was hypothesized (but not supported statistically) that increasing age would be a factor which

would increase the magnitude of the relationship between complexity and congruence. The assumption was that increasing age would tend to diminish the influence of affective factors and consequently increase the potency of cognitive factors in the choice process. The present finding seems to be consistent with, if not providing support for, this assumption.

Finally, the question remains as to why vocational complexity was found to be more strongly associated with vocational choice congruence than was interpersonal complexity. The most reasonable explanation is that the role titles (i.e., occupations) and the construct dimensions utilized in the vocational complexity measure were more directly relevant to the criterion than were the personal role titles and constructs of the interpersonal complexity measure.

Cognitive Complexity and Appropriate Educational Choice

The process of selecting a college major field was assumed to be an important step (at least for students in a college environment) in the making of a vocational choice. In light of this assumption, the current investigation was concerned with the potential role of cognitive complexity in the making of appropriate educational choices. It will be recalled from Chapter Two that appropriate educational choice was defined as the congruence between personality style and major field environment type.

The results did not indicate much of a relationship (ϕ coefficients ranged from .07 to .27) between complexity and the appropriateness of the educational choice. However, a trend in the hypothesized direction (ϕ=.27) was found for interpersonal complexity with underclass males (one of the four subgroups). Perhaps the degree of the relationship between complexity and educational choice would have been greater if college major subjects were used as role titles, along with relevant construct dimensions, in a complexity measurement instrument.

The negative results cannot, it seems, be attributed to a one-sided distribution of appropriate or inappropriate educational choices. Table 26 in Appendix B shows that 60% of the total sample made appropriate choices, while 40% made inappropriate choices. This tendency for appropriate choices to be more common than inappropriate does not appear to be large enough to significantly influence the results.

Since the appropriateness of the educational choice was defined in terms of congruence between VPI type and major field classification (via Holland's model), it is possible that error inherent in Holland's system was a factor in the negative results. However, this does not appear to be a major problem because approximately the same degree of error exists in Holland's model for personality and vocational choice classification, and a significant relationship was found between complexity and vocational choice congruence.

It was predicted that increasing degrees of cognitive complexity would be accompanied by increasing uncertainty about the expressed vocational choice. Simply stated, it was assumed that cognitively complex individuals were more sensitive to any dissonance aroused by their vocational decisions.

The results failed to support the hypothesized negative relationship between choice certainty and cognitive complexity. Two possible reasons for this finding seem plausible. One reason might be that other factors (e.g. cognitive dissonance) may be more influential than complexity-simplicity. The second possible explanation is that the seven-point scale used to assess choice certainty was insensitive to differences which may actually have been present among the subjects. This possibility is supported somewhat by the fact that there was not a great deal of variability on the choice certainty rating scale (see Table 9). Another puzzling finding associated with this index of choice certainty was that females were more certain of their choices than were the males. This finding is contrary to research evidence obtained by Ginzberg (et al., 1951), and also suggests that the single seven-point scale used to assess vocational choice certainty was inadequate. Perhaps, it would have been better to breakdown the gross criterion of "certainty" into smaller aspects such as certainty of liking for

the occupation; confidence in one's ability to complete the necessary training; certainty that situational factors will not interfere with execution of the choice; etc. By having subjects rate each of these discrete aspects of choice certainty, a more sensitive measure of vocational choice certainty would be obtained.

The Relationship Between Cognitive Complexity Variables

Previous research, reviewed in Chapter One, indicated that complexity is not consistent across different stimulus dimensions. This study predicted (in null form) a lack of relationship between cognitive complexity in the interpersonal and vocational dimensions. It was found that a moderate ($r=.43$), but significant ($p < .001$) positive relationship did exist between these two variables. This finding is somewhat at variance with the bulk of the research on the generality of the cognitive complexity variable. However, it is consistent with the findings reported by Bieri and Blacker (1956).

As mentioned previously, there exists considerable method variation among cognitive complexity measurement techniques. This study utilized grid-type measures with identical scoring procedures, which probably helps account for the greater degree of relationship found to exist in this experiment, as compared with studies using diverse complexity measures.

The Interaction of Cognitive Complexity with Age & Sex

Generally, the interaction effects of age and sex with cognitive complexity did not significantly influence its relationship with the dependent variables. No significant differences between the sexes were found on either complexity measure. There was, however, a distinct tendency for males to be more complex on the vocational complexity measure. (See Table 23 in Appendix B). Although it never reached an acceptable level of significance for any of the hypotheses, there was a rather pronounced trend for cognitive complexity to be a more important factor for males than for females.

Cognitive Complexity and Vocational Interest Item Responses

It was predicted that variations in cognitive complexity would be associated with differences in the way subjects respond to vocational interest inventory items. The assumption was that vocational interests as assessed by instruments such as the Strong Vocational Interest Blank (SVIB) are related, at least indirectly, to the question of appropriate vocational choice (cf. Super, 1961). In view of this assumption, the potential influence of cognitive complexity upon interest item responses was evaluated.

Vocational interest inventories, such as the SVIB, frequently limit subject responses to three basic categories: like, indifferent,

and dislike. A comparison of the mean frequency with which these response categories were used by cognitively complex and simple subjects revealed that vocationally complex, upperclass males used significantly more "Dislike" responses than vocationally simple upperclassmen. They also used significantly fewer "Like" responses. Apparently, complex upperclassmen are more restrictive in terms of "liked" activities (of the kind assessed in an interest inventory) than are their less complex classmates.

In terms of a theoretical explanation, the above-mentioned finding is difficult to account for. While the observed difference generally supports the hypothesis, it is not known whether this finding represents a high degree of interest selectivity or merely a global negativism. In one respect this finding is the opposite of what has been found in studies relating interpersonal complexity to impression formation using human stimuli. In most impression formation tasks, it has been found that cognitively simple subjects attempt to maintain a univalent impression of the stimulus person, while complex subjects are more ambivalent. The finding of this study suggests that vocationally complex subjects are more univalent (in a negative direction) in their impression of the kinds of activities and subjects assessed by the SVIB, than are vocationally simple subjects. Certain implications of this result will be discussed in Chapter Four.

Discussion Summary

Briefly, it may be concluded that cognitive complexity in the vocational realm is associated with at least one aspect of appropriate vocational choice. It is also associated with differences in subject responses to vocational interest inventory items. It may be concluded that the measure of vocational complexity employed in this study has demonstrated some evidence of construct validity.

Complexity was not associated with any other aspect of the vocational selection process under investigation. The results of this study raise some interesting questions about the exact nature of the relationship between cognitive complexity and vocational choice. The implications and limitations of this study will be discussed in Chapter Four.

CHAPTER IV

SUMMARY, CONCLUSIONS AND IMPLICATIONS

SUMMARY

This experiment was designed to investigate the relationship between cognitive complexity and certain characteristics of the vocational choice process. Previous research had shown that cognitive complexity, basically an information processing variable, was related to performance on certain types of clinical and social judgment, as well as impression-formation tasks. Theoretical statements concerning the nature and influence of the cognitive complexity-simplicity variable, seemed to suggest that this variable might conceivably be a factor in vocational decisions and judgments.

In order to investigate the potential relationship between cognitive complexity and vocational choice, particularly the appropriateness of the choice, a total of 200 male and female students at the Ohio State University were used as subjects. All subjects were administered cognitive complexity and several criteria measures, related to vocational choice. The two independent

measures were: (1) interpersonal complexity, assessed by Bieri's modified Rep Test, and (2) vocational complexity, assessed by a grid-type measure of complexity in the vocational realm.

There were four dependent measures, all of which pertained to some aspect of vocational choice. The dependent measures were as follows: (1) two indices of the appropriateness of vocational choice, (2) a measure of the appropriateness of educational choice, (3) responses to vocational interest inventory (SVIB) items, and (4) the certainty of the stated vocational choice. The two indices of appropriate vocational choice were: (1) choice realism---agreement between intellectual ability and the ability requirements for the level of the stated vocational choice; and (2) choice congruence---agreement between personality style and the work environment type of the stated vocational choice.

CONCLUSION

Within the framework of the limitations of this study (described in a following section) some conclusions seem warranted. The results failed to support a relationship between cognitive complexity and realistic vocational choice. However, a significant relationship between vocational complexity and congruent vocational choice was found among upperclass male students, lending support to the hypothesized relationship between complexity and choice congruence.

No significant relationship was found between cognitive complexity and the appropriateness of educational choice. Also, no relationship was found between the certainty of vocational choice and cognitive complexity.

A moderate, but significant relationship was found between the two measures of cognitive complexity, contrary to prediction. It was also found that upperclass males who were vocationally complex expressed significantly fewer "Like" responses and significantly more "Dislike" responses to vocational interest items than did cognitively simple upperclassmen.

Finally, there was a distinct tendency for cognitive complexity to be a more influential factor related to vocational choice among upperclass male students than with the other four subgroups in the experiment.

In general, the results of this study indicate that cognitive complexity, particularly in the vocational realm, is somewhat related to certain aspects of the vocational selection process. More specifically, it may be concluded that male subjects, particularly upperclass college males, who are cognitively complex in the vocational realm are more likely to choose an occupation whose work environment is compatible with their personality-coping style than are cognitively simple males.

It may also be concluded that vocationally complex upperclass

college males are likely to be more restrictive in terms of their expressions of liking for the kinds of activities and subjects assessed by vocational interest inventories (i.e., the SVIB). This finding may indicate that vocational complexity is functionally equivalent to a negative response set.

Finally, this investigation supports the conclusion that cognitive complexity, while varying from one stimulus situation to another, shows some degree of intraindividual consistency across stimulus dimensions.

LIMITATIONS

There are some rather obvious limitations of the present experiment, chief among them is that it is correlational in nature. As a result, no inferences about causality can be derived.

The nature of the sample limits generalization from this study to non-college populations. Generalizations to other college populations may also be somewhat restricted by the fact that all of the subjects in this study had at least one psychology course, which may or may not be a confounding variable.

Obviously, the findings of this investigation need to be replicated with other college populations, as well as with non-college populations in order to truly assess their meaningfulness. Further research should involve the systematic control and manipulation of

some of the important variables identified in this study.

One final limitation requires discussion. It involves the use of approximate criteria for the appropriateness of vocational choice. Since a given individual's choice can be appropriate or inappropriate in a number of different ways, generalizations from this study to "real life" questions of choice appropriateness should be tempered by these limitations.

IMPLICATIONS

Perhaps the most significant implication of this study for vocational development research is that it indicates the relevance of the cognitive complexity variable to the vocational choice process. It suggests a whole new avenue for research on the vocational selection phenomena.

Future studies concerning the relationship of cognitive complexity and vocational choice might profitably investigate the marked differences between the extreme complexity-simplicity groups (i.e., subjects high on both complexity measures as opposed to subjects low on both measures)found in this experiment. Attention might be given to differences in the manner in which complex and simple subjects deal with or respond to consistent and inconsistent information about their vocational choice.

Other potential research problems generated by this study are

the possible functional equivalence of vocational complexity and negative response set in vocational interest assessment. Finally, in a broad sense, this study points to the importance of developing complexity measures which are relevant to the stimulus object (whatever it may be) to be discriminated by subjects.

APPENDIX A

Vocational Complexity Measure
Interpersonal Complexity Measure
Educational-Vocational Questionnaire
Interest Inventory

Occupational Differentiation Test

This instrument is designed to assess the ways in which people look at or evaluate different occupations. There are no "right" or "wrong" responses. When rating the occupations, it is probably best to give your first reactions or impressions.

On the second page you will find a 12x12 grid with occupational titles on one side and a rating scale on the other. Turn the grid so that when you are facing it, the occupational titles will be across the top of the grid.

To the right of the grid you will find a rating scale ranging from +3 to -3 and the attributes or characteristics which each scale describes. For each set of adjectives or characteristics, work from left to right (on the grid) and rate each occupation according to the rating that best fits it.

For example, you are to rate each occupation from left to right on whether or not it requires much education. A +3 rating indicates that the occupation requires much education; a +2 rating means it requires somewhat less education than a +3; and a +1 rating indicates that it requires even less education (but still more than a -1 rating would indicate). A -3 rating indicates the least or lowest amount of education. After you have rated each occupation on the degree of education required, rate them all on amount of income, and so on.

Be sure to put your name on the page with the grid.

****

Name: _____

Farmer (1)	Machine Operator (2)	Architect (3)	Physicist (4)	Physician (5)	Social Worker (6)	Public School Teacher (7)	Accountant (8)	Office Worker (9)	Lawyer (10)	Life Insurance Salesman (11)	Artist (12)	+3 +2 +1	-1 -2 -3
												Much education	Little education
												High income	Low income
												High prestige	Low prestige
												Influences people	Doesn't influence
												Creative	Not creative
												Helps people	Doesn't help
												"White collar"	"Blue collar"
												Interesting work	Dull work
												Works with thoughts	Works with hands
												Offers much security	Offers little security
												Involves independent action	Involves closely supervised action
												Much in demand	Seldom in demand

Interpersonal Differentiation Test

This instrument is a measure of the ways in which an individual looks at or evaluates other people. There are no "right" or "wrong" answers and there is no way for us to determine the specific persons you are asked to describe.

1. Across the top of the grid you will find the type of person you are to describe. Please list the name or initials of the one person you know who best fits the type of person described. Please use 10 <u>different</u> individuals so that no person is used more than once.

2. To the right of the grid you will find a rating scale ranging from plus 3 to minus 3 and the attributes each scale describes. For each set of adjectives, work from left to right (on the grid) and rate each person according to the rating that best fits him or her.

For example, you would rate all the persons from left to right on the degree of outgoingness, from plus 3 to plus 1, or shyness, from minus 1 to minus 3. Then rate all the persons from left to right according to how adjusted they are, and so on.

****

Name:____________________

1. Yourself	2. Person you dislike	3. Mother	4. Person you'd like to help	5. Father	6. Friend of same sex	7. Friend of opposite sex	8. Person with whom you feel most comfortable	9. Person for whom you have worked	10. Person difficult to understand	+3 +2 +1	-1 -2 -3
										outgoing	shy
										adjusted	maladjusted
										decisive	indecisive
										calm	excitable
										interested in others	self absorbed
										cheerful	ill humored
										responsible	irresponsible
										considerate	inconsiderate
										independent	dependent
										interesting	dull

Educational-Vocational
Questionnaire

1. Please state what occupation you are planning to enter. If you are uncertain, indicate the most likely occupational choice.

2. Please indicate how ce tain you are of your occupational choice which you stated above. On the seven-point scale below, indicate (by circling the appropriate number) the degree of certainty of you occupational choice.

1	2	3	4	5	6	7
(very uncertain)						(very certain)

3. In what college of the university are you presently enrolled?

4. When was your first quarter at O.S.U.?

5. What is your planned (or probable) major field?

INTEREST INVENTORY

This inventory has three parts. For each part the directions are the same. Respond to each item in terms of whether you like it, dislike it, or are indifferent to it. If you like the item in question, fill in the space under L (like) on the answer sheet. If you are indifferent (don't care one way or the other) fill in the space under I (indifferent) on the answer sheet. If you dislike the item, fill in the space under D (dislike) on the answer sheet.

It is usually better to give your first reaction to an item than it is to think about it a great deal. Work as fast as you can without being careless. Please do not mark on the inventory.

PART I. SCHOOL SUBJECTS

1. algebra
2. agriculture
3. arithmetic
4. art
5. bookkeeping
6. botany
7. calculus
8. chemistry
9. civics (government)
10. dramatics
11. economics
12. English composition
13. geography
14. geology
15. geometry
16. history
17. languages, ancient
18. languages, modern
19. literature
20. mathematics
21. industrial arts
22. mechanical drawing
23. military drill
24. Bible history
25. nature study
26. philosophy
27. physical education
28. physics
29. psychology
30. physiology
31. public speaking
32. shop work
33. sociology
34. spelling
35. typewriting
36. zoology

PART II. AMUSEMENTS

37. golf
38. fishing
39. hunting
40. tennis
41. sketching pictures
42. hiking
43. boxing
44. chess
45. poker
46. bridge

PART II. AMUSEMENTS (CONT'D)

47. bird watching
48. solving mechanical puzzles
49. religious music
50. camping out
51. drilling in a military company
52. playing the piano
53. amusement parks
54. picnics
55. sight-seeing trips
56. stag stories
57. jazz concerts
58. conventions
59. formal dress affairs
60. electioneering for office
61. going to church
62. horseback riding
63. art galleries
64. leading a Boy Scout troop
65. writing a one-act play
66. science fiction magazines
67. symphony concerts
68. night clubs
69. church young people's group
70. biographies
71. sports page in newspaper
72. poetry
73. detective stories
74. skiing
75. planning a party
76. telling jokes
77. business methods magazines
78. travel magazines
79. weekly news magazines
80. popular mechanics magazine
81. Bible reading
82. educational movies or TV
83. art & music magazines
84. social problem movies
85. making a radio or high-fi set.

PART III. ACTIVITIES

86. repairing a clock
87. adjusting a carbutetor
88. repairing electrical wiring
89. cabinetmaking
90. operating machinery
91. handling horses
92. giving first-aid assistance
93. raising flowers & vegetables
94. decorating a room with flowers
95. arguments
96. interviewing men for a job
97. interviewing prospects in selling
98. interviewing clients
99. making a speech
100. starting a conversation with a stranger
101. directing a play
102. teaching children
103. teaching adults
104. calling friends by nickname
105. being called by a nickname
106. meeting and directing people
107. taking responsibility
108. making statistical charts
109. adjusting difficulties of others
110. drilling soldiers

PART III. ACTIVITIES (CONT'D)

111. helping a sick friend
112. doing research work
113. acting as a cheer-leader
114. being a forest ranger
115. writing reports
116. looking around at a hardware store
117. bargaining ("swapping")
118. looking around at a clothing store
119. buying merchandise for a store
120. displaying merchandise in a store
121. expressing opinions openly, regardless of what others say
122. competitive activities
123. methodical work
124. regular hours for work
125. continually changing activities
126. developing business systems
127. saving money
128. contributing to charity
129. raising money for charity
130. living in the city
131. climbing along the edge of a precipice
132. discussing the purpose of life
133. looking at a collection of antique furniture

APPENDIX B

Tables

TABLE 23

COMPARISONS OF MEANS & STANDARD DEVIATIONS FOR VOCATIONAL & INTERPERSONAL COMPLEXITY MEASURES

Male		Female		F	t
Vocational Complexity					
Total (n=87)		Total (n=113)			
Mean	Std. dev.	Mean	Std. dev.		
279.90	67.41	293.06	54.99	1.48	1.52
Upperclass (n=53)		Upperclass (n=71)			
Mean	Std. dev.	Mean	Std. dev.		
280.37	65.32	292.39	56.01	1.35	1.54
Underclass (n=34)		Underclass (n=42)			
Mean	Std. dev.	Mean	Std. dev.		
278.50	70.10	296.84	51.91	1.80	1.26
Interpersonal Complexity					
Total (n=87)		Total (n=113)			
Mean	Std. dev.	Mean	Std. dev.		
144.71	39.79	148.45	43.19	1.15	.64
Upperclass (n=53)		Upperclass (n=71)			
Mean	Std. dev.	Mean	Std. dev.		
142.84	38.60	149.56	41.21	1.10	.92
Underclass (n=34)		Underclass (n=42)			
Mean	Std. dev.	Mean	Std. dev.		
150.22	35.32	142.23	40.41	1.30	.91

TABLE 24

PERCENTILE RANK RANGES FOR DEFINING THE REALISM OF THE LEVEL OF VOCATIONAL CHOICE[a]

Level of Choice	ACT College Freshmen Percentile Ranks
1[b]	
Professional & Managerial 1:	99
Independent Responsibility	77
2	
Professional & Managerial 2	95
	41
3	
Semi-Professional & Small	77
Business	14
4	
Skilled Labor	47
	04
5	
Semi-Skilled Labor	29
	00
6	
Unskilled Labor	08
	00

[a]After Hollender, 1967, p. 315

[b]Occupations at level 1 require a doctorate, when high-level education is relevant---occupations at level 2 require at least a bachelor's degree but less than a doctorate.

TABLE 25

FREQUENCIES OF REALISTIC AND UNREALISTIC VOCATIONAL CHOICES FOR EACH LEVEL OF CHOICE

Choice Level	Realistic	Unrealistic
	Upperclass Males	
1	10	11 (too low)
2	19	7 (6-too low) (1-too high)
3	3	1 (too high)
4	0	0
5	0	0
6	0	0
	Underclass Males	
1	4	9 (too low)
2	4	10 (too low)
3	6	1 (too low)
4	0	0
5	0	0
6	0	0

TABLE 25 (CONT'D)

Choice Level	Realistic	Unrealistic
	Upperclass Females	
1	9	17 (too low)
2	28	7 (too low)
3	8	2 (1-too low) (1-too high)
4	0	0
5	0	0
6	0	0
	Underclass Females	
1	3	4 (too low)
2	16	7 (too low)
3	7	5 (4-too low) (1-too high)
4	0	0
5	0	0
6	0	0

TABLE 26

FREQUENCIES OF APPROPRIATE AND INAPPROPRIATE EDUCATIONAL CHOICES FOR EACH SUBJECT SUBGROUP

	Appropriate	Inappropriate
Upperclass males	27	25
Underclass males	26	8
Upperclass females	47	22
Underclass females	23	19

TABLE 27

FREQUENCIES OF CONGRUENT AND INCONGRUENT VOCATIONAL CHOICES FOR EACH SUBJECT SUBGROUP

	Congruent	Incongruent
Upperclass males	27	25
Underclass males	22	12
Upperclass females	22	47
Underclass females	20	22

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