The Relationship of Authoritarianism and Dogmatism to Cognitive Style Among American and Third World Foreign Students

Bernadette Ego Opara-Nadi
Loyola University Chicago

Follow this and additional works at: https://ecommons.luc.edu/luc_diss

Recommended Citation

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License.
Copyright © 1980 Bernadette Ego Opara-Nadi
THE RELATIONSHIP OF AUTHORITARIANISM AND DOGMATISM TO COGNITIVE STYLE AMONG AMERICAN AND THIRD WORLD FOREIGN STUDENTS

by

Bernadette Opara-Nadi

A Dissertation Submitted to the Faculty of the Graduate School of Education of Loyola University of Chicago in Partial Fulfillment of the Requirements for the Degree of Doctor of Education

January

1980
The specific goal of this study was to determine if the two cognitive styles (i.e. field dependence and field independence) exist among selected American and Third World foreign students attending various universities in the Chicago area, and if they do, to establish relationships between selected personality variables (i.e. authoritarianism and dogmatism) and the two cognitive styles. Three scales, namely, the Group Embedded Figures Test (GEFT), the Facism Scale (F Scale), and the Rokeach Dogmatism Scale (D Scale) assessing different variables (i.e. field dependence and field independence, authoritarianism, and dogmatism, respectively) were administered to the two sub-groups (i.e. the American and the Third World foreign students). In addition to these tests, the Budner (1962) Intolerance of Ambiguity Scale, and a modified Eysenck and Wilson Dogmatism Scale were utilized in cross-validating the F Scale and the D Scale, respectively. The effect on the performance of the GEFT, the F Scale, and the D Scale of the following cultural and environmental factors--age, sex, country, education, academic major, size of place of residence, child-rearing practices, and parental educational and occupational levels--were systematically examined.

The sample consisted of a total of one hundred (100) randomly selected graduate and senior level undergraduate college
students attending various universities in the Chicago area. Fifty (50) of the subjects were Third World foreign students who were then matched according to academic major with fifty (50) American students.

The data collected in this study was analyzed using multivariate analysis of variance (MANOVA). In addition, Pearson correlation coefficients were calculated to determine what relationships existed between the variables studied.

The results indicated the following: (1) that the American sub-group was more field independent than the Third World foreign sub group; (2) that there was no sex difference between the two sub-groups in patterns of cognitive style; (3) that science majors were more field independent than art majors; (4) that level of experience as measured by age, education, and size of place of residence was not related to dogmatism for the combined sample; however, that age was related to dogmatism for the American students only; (5) that among the Third World foreign sub-group, female art majors and male science majors were more dogmatic than male art majors and female science majors; the reverse pattern held true for the American sub-group; (6) that cognitive style, authoritarianism, and dogmatism were not significantly related for either the American or the Third World foreign sub-group; (7) that the Third World foreign students were more authoritarian and dogmatic than the American students; and (8) that field independent students had parents with higher occupational levels for both the American and the Third World foreign sub-samples.
THE RELATIONSHIP OF AUTHORITARIANISM AND DOGMATISM TO
COGNITIVE STYLE AMONG AMERICAN AND
THIRD WORLD FOREIGN STUDENTS

by
Bernadette Opara-Nadi

A Dissertation Submitted to the Faculty of the Graduate School
of Education of Loyola University of Chicago in Partial
Fulfillment of the Requirements for the Degree of
Doctor of Education
January
1980
ACKNOWLEDGEMENTS

I would like to express my deepest appreciation and thanks to several people for their extraordinary contributions to the writing of this dissertation.

My special thanks to Dr. Ronald Morgan, my advisor and chairman of my dissertation committee, who gave me valuable assistance, suggestions, and cooperation in the preparation of this dissertation. His concern, encouragements, and readiness to assist throughout the writing of this dissertation, as well as the years I spent at Loyola University, will always be remembered and appreciated.

Dr. Pedro Saavedra deserves special recognition for the help he offered regarding the statistical analyses used in this dissertation. Working with him has contributed greatly to my interest in the area of computer applications. I have deep appreciation and special thanks also for the other members of my dissertation committee: Dr. Steve Miller, and Dr. Jack Kavanagh, who read the dissertation at its various stages and made useful suggestions. It was a pleasant experience working with all of them.

I wish to thank Miss Sheryl Hansen, who undertook the arduous job of typing this manuscript.
I also wish to acknowledge with deepest appreciation and thanks the help of Dr. Betty Risley, Dr. Jeanne Foley, the Graduate School of Loyola University, and the members of my family whose financial assistance made possible the completion of this dissertation.

Finally, I would like to thank my son, Philip, for the sacrifices he had to make in putting up with me during those difficult days the research study was in progress. Without the generous assistance of all of the above, I would not have been able to complete this dissertation project.
VITA

The author, Bernadette Ego Opara-Nadi, is the daughter of Philip Ukaegbu Opara-Nadi and Martha Ugochi Opara-Nadi. She was born on June 15, 1940, in Emekuku, Owerri, Nigeria.

She completed her primary and secondary education at Holy Child Convent School, Calabar, Nigeria. She was trained as a teacher at the Holy Child Training College, Ifuho, Nigeria, from January 1959 to December 1963. In September 1970 she was admitted to Rust College, Holly Springs, Mississippi; in August 1973 she graduated magna cum laude with a Bachelor of Arts degree in Sociology and Social Welfare. Afterwhich, she studied for the Master of Education degree in Educational Psychology at the Graduate School of Education at Loyola University of Chicago. In September 1975 she enrolled in the doctoral program at Loyola University of Chicago in Educational Psychology.

Her work experiences include teaching in the primary schools in Nigeria from January 1964 to September 1969. She also worked as a part-time teacher with the Chicago Urban Skills Institute from June 1975 to September 1977. From September 1973 to July 1979 she worked as a Graduate Assistant in the Graduate School at Loyola University of Chicago.

Upon completion of the doctoral degree, the author will be employed as an educator by the Federal Government of Nigeria.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGEMENTS</td>
</tr>
<tr>
<td>VITA</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
</tr>
</tbody>
</table>

## Chapter

**I. INTRODUCTION**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**II. REVIEW OF RELATED LITERATURE**

<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
</tr>
</tbody>
</table>

- Introduction ............................................. 11
- Cognitive Style .......................................... 12
- The Relationship of Cognitive Style and Intellectual Ability ............................................. 16
- The Relationship of Cognitive Style and Ethnicity .................................................. 19
- Cognitive Style and Sex Differences ................................................................. 22
- The Relationship of Cognitive Style and Child-Rearing Practices ............................................. 24
- Cognitive Style and Culture .................................................. 28
- The Relationship of Cognitive Style and Authoritarianism ............................................. 31
- Child-rearing Practices and Their Relationship to the Development of Authoritarianism ............................................. 35
- The Relationship of Authoritarianism and Culture .................................................. 39
- The Relationship of Cognitive Style and Dogmatism ............................................. 40
<table>
<thead>
<tr>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Relationship of Child-Rearing Practices to the Development of Dogmatism</td>
</tr>
<tr>
<td>The Relationship Between Authoritarianism and Dogmatism</td>
</tr>
<tr>
<td>Recapitulation</td>
</tr>
</tbody>
</table>

### III. METHOD

| Hypotheses | 55 |
| Subjects | 56 |
| Description of the American Sub-Group | 57 |
| Description of the Third World Foreign Sub-Group | 59 |
| Procedure | 61 |
| Instrumentation | 62 |

- Group Embedded Figures Test (GEFT) | 62
- Facism (F) Scale | 65
- The Rokeach Dogmatism (D) Scale | 68
- Procedures used in cross-validating the F and the D Scales | 70

### IV. RESULTS

| Design and Statistical Analyses | 75 |
| Factorial Analyses of Variance | 78 |

- Results obtained for the three-way factorial analysis of variance for the Group Embedded Figures Test | 78
- Results obtained for the three-way factorial analyses of variance for Facism (F) Scale and Rokeach (D) Scale | 80

| Correlation and Regression Analyses | 86 |
| Results for the level of experience variables on the Rokeach Dogmatism (D) Scale | 86 |
| Results for dogmatism and authoritarianism on scores of GEFT | 90 |
| Results of Pearson correlation coefficients between the Rokeach Dogmatism (D) Scale and the Facism (F) Scale | 97 |
| Ancillary Analyses | 97 |
| Summary of Results | 102 |
| V. DISCUSSION | 107 |
| Implications of the Hypotheses | 111 |
| Limitations of the Study | 118 |
| Suggestions for Future Research | 121 |
| Educational Implications | 123 |
| VI. SUMMARY | 129 |
| REFERENCES | 133 |
| APPENDIX A | 154 |
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Factorial Analysis of Variance Using the Group Embedded Figures Test</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>as the Dependent Variable and Sex, Country, and Academic Major as the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independent Variables (Hypotheses One, Two, and Three)</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Comparison of the Mean Scores for Group Embedded Figures Test for</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Sex, Country, and Academic Major (Hypotheses One, Two, and Three)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Factorial Analysis of Variance Using the Facism (F) Scale as the</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Dependent Variable and Sex, Country, and Academic Major as the</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independent Variables (Hypothesis Seven)</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Comparison of the Mean Scores for the Facism (F) Scale as the</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Dependent Variable and Sex, Country, and Academic Major as</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Independent Variables (Hypothesis Seven)</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Factorial Analysis of Variance Using Rokeach Dogmatism (D) Scale</td>
<td>87</td>
</tr>
<tr>
<td></td>
<td>as the Dependent Variable and Sex, Country, and Academic Major as</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the Independent Variables (Hypothesis Seven)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Comparison of the Mean Scores for the Rokeach Dogmatism (D) Scale</td>
<td>88</td>
</tr>
<tr>
<td></td>
<td>as the Dependent Variable and Sex, Country, and Academic Major as</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the Independent Variables (Hypothesis Seven)</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Stepwise Multiple Regression Analysis Using Age, Education, and Size</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>of Place of Residence as the Independent Variables and Rokeach (D)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scale as a Dependent Variable (Hypothesis Four, Combined Sample)</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Stepwise Multiple Regression Analysis Using Age, Education, and Size</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>of Place of Residence as the Independent Variables and Rokeach (D)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scale as a Dependent Variable (Hypothesis Four, American Sub-Group)</td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Page</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td></td>
</tr>
<tr>
<td>9. Stepwise Multiple Regression Analysis Using Age, Education, and Size of Place of Residence as the Independent Variables and Rokeach (D) Scale as a Dependent Variable (Hypothesis Four, Third World Sub-Group)</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>10. Stepwise Multiple Regression Analysis Using the (F) Scale and the (D) Scale as the Independent Variables, and GEFT as the Independent Variable (Hypothesis Six, American Sub-Group)</td>
<td>94</td>
<td></td>
</tr>
<tr>
<td>11. Stepwise Multiple Regression Analysis Using the (F) Scale and the (D) Scale as the Independent Variables, and GEFT as the Independent Variable (Hypothesis Six, Third World Sub-Group)</td>
<td>95</td>
<td></td>
</tr>
<tr>
<td>12. Stepwise Multiple Regression Analysis Using the (F) Scale and the (D) Scale as the Independent Variables, and GEFT as the Independent Variable (Hypothesis Six, Combined Group)</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>13. Pearson Correlation Coefficients Using Authoritarianism, Dogmatism, and Field Dependence as the Dependent Variables, and Parental Education and Occupation (SES) as the Independent Variables (American and Third World Foreign Sub-Samples)</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interactions Table for Performance on the Rokeach Dogmatism (D) Scale Showing Sex by Country by Academic Major</td>
<td>89</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The intellectual development of a person consists of progressive changes in behavior produced by a "crystallization" of all the learning events in the individual's life. Rohwer et al. (1974) state that learning appears to be cumulative, since what is learned is interrelated hierarchically; what a person learns at one time transfers to other learning situations. Many individual differences have been found to exist in cognitive style due to the various ways in which individuals conceptually react to the various influences in their environments.

Cognitive styles leading to learning differences may be due not only to the differences in prior learning but also to physical functioning, different handicapping conditions, and environmental influences. According to Blosser (1972), the term "cognitive style" refers to the manner in which an individual derives meaning and acquires knowledge in the context of his symbolic orientation (i.e. the kinds of symbols and cultural determinants he tends to use most in acquiring meaning). Goldstein & Blackman (1978) state that cognitive style refers to the characteristic ways in which individuals conceptually organize the environment.
Quoting from Goldstein & Blackman, Messick (1976) defines cognitive style in terms of consistent patterns of "organizing and processing information" (page 3). Also the term "cognitive style" may be equated with behavior rather than mediating processes. For example, Coop & Sigel (1971) define cognitive style "to denote consistencies in individual modes of functioning in a variety of behavioral situations." Harvey (1963) states that cognitive style refers to the way an individual filters and processes stimuli so that the environment takes on psychological meaning. All these definitions have in common the organization and the processing of information.

The implications of the theory of psychological differentiation for interpersonal behavior have been receiving increasing research attention in recent years. As stated by Goldstein & Blackman (1978), investigators have utilized numerous approaches to the study of cognitive style. For example, Messick (1970) attempts to conceptualize this work in terms of nine categories (e.g. scanning, leveling-sharpening, constricted-flexible control, tolerance for incongruous or unrealistic experience, field dependence or field articulation, cognitive complexity, reflection-impulsivity, styles of categorization, and styles of conceptualization). The focus of the present investigation is on the fifth category, which was originated by Witkin et al. (1954) who used the
term "field dependence and field independence". The term "psychological differentiation" was later proposed by Witkin et al. (1962) in place of field dependence. As stated by Dubois & Cohen (1970), Witkin finally described the dimension as global versus articulated functioning, which he hypothesized as broadly cutting across many areas of psychological functioning and providing consistencies in personality. The individual who functions globally is perceptually field dependent, while the opposite is true of the person who functions articulatedly.

In reviewing later articles on psychological differentiation, Witkin & Goodenough (1977) state that one of the main features of psychological differentiation is segregation of "self" from the "non-self". "Self-nonself" segregation means that boundaries have been formed between inner and outer; particular attributes are identified as one's own and recognized as being distinct from those of others. In addition, the tendencies to rely on self or field as a primary referent are entitled as the field dependent and field independent cognitive styles.

Recent studies in cognitive styles have suggested the existence of close and meaningful relationships between cognitive style and authoritarian, and dogmatic personalities. However, there are other studies such as a series of
research studies reviewed by Goldstein & Blackman (1978), which concluded that there is a significant relationship between field dependence and authoritarianism, but not between field dependence and dogmatism. Moreover, Goldstein & Blackman maintained that field independent subjects are also less susceptible to stimulus competition than field dependent subjects. According to Goldstein & Blackman, Adorno et al. (1950) were interested in studying the relationship between personality, anti-democratic attitudes, and behavior. In the course of their work, they found evidence that high authoritarians were rigid and intolerant of ambiguity. Therefore, these two types of behavior (i.e. rigidity and intolerance of ambiguity) were utilized by Goldstein & Blackman in relating authoritarianism to cognitive style, and they maintained that the two types of behavior are manifestations of an underlying cognitive style.

Authoritarianism was conceptualized by Wrightsman (1972) as a basic personality style, or syndrome of organized beliefs and symptoms. Adelson (1953) defines authoritarianism as referring to a characteristic ideological orientation and designating a complex personality attribute which appear to be related to commitment of such an ideology. A person who is intolerant of ambiguity is more likely to make infrequent use of limiting and qualifying languages than a person who is not. Throughout the present study, the term
"rigidity" is used to refer to thoughts and behavior that is exceptionally resistant to modification. Goldstein & Blackman (1978) define rigidity as a continuation of former behavior patterns when a change in the situation requires a change in behavior for more efficient functioning. Goldstein & Blackman give an example of a rigid personality as representing an authoritarian individual who refuses to relinquish ethnic stereotypes when faced with information contradicting the stereotype. Intolerance of ambiguity is defined as the unwanted imposition of structure when the situation is unstructured, and any reference to this concept will have the same meaning as given above. A study by Siegel (1954) shows that certain behavioral variables were hypothesized as determinants and correlates of authoritarianism such as: (a) manifest anxiety, (b) intolerance of cognitive ambiguity, (c) stereotyping, (d) "high status" orientation, and (e) identification-compulsion. The results of his investigation supported his hypotheses. Wrightsman (1972) states that one of the possible behavioral manifestations of authoritarianism is an excessive degree of obedience to an authority figure (i.e., an obedience that is followed even when it requires harming another person). Milgram's provocative series of studies on obedience was cited as an example. Milgram's (1963) studies required the subject to give increasingly powerful electric shocks to another person whenever the latter failed to correctly associate the
task given. Wrightsman's conclusion was that obedience to commands was a strong force in American society, since sixty-five per cent of Milgram's subjects obeyed the experimenter (the authority figure) even though they knew that they were hurting a powerless person.

Related to authoritarianism is the construct of dogmatism, which was advanced by Milton Rokeach. Rokeach (1954) defines dogmatism as: "(a) a relatively closed cognitive organization of beliefs and disbeliefs about reality, (b) organized around a central set of beliefs about absolute authority which, in turn, (c) provides a framework for patterns of intolerance toward others." Rokeach's interest was in developing a measure of cognitive style that would be independent of the content of thought. His observation that individuals were dogmatic, or closed, about various things gave rise to his research in 1951 (Rokeach, 1951a, 1960). As stated by Goldstein & Blackman (1978), Rokeach theorized that as a cognitive style, dogmatism mediates between external stimuli and the individual's responses to those stimuli. Throughout his work, Rokeach used the term "open-minded" and "closed-minded." The latter is used interchangeably with dogmatism. His definition of ideological dogmatism involves authoritarianism. Rokeach claimed that the dogmatic person glorifies authorities who support his belief system. It was hypothesized by Goldstein & Blackman (1978) that the dogmatic
person supports an elite class. In addition, Rokeach claimed that the dogmatic person gives polarity to his beliefs and rejects individuals whose beliefs are not in harmony with his. Goldstein & Blackman explain that "a central notion of Rokeach's conceptualization of dogmatism is that the individual's cognitive system is organized into belief and disbelief systems. The belief system is made up of the ideas an individual accepts as true. The disbelief system is comprised of a number of systems of ideas the individual rejects as false" (page 64). A pragmatic example of this point is given by Rokeach (1956) who wrote that an individual holding the belief system of Catholicism could be best understood if his attitudes toward Catholicism were studied along with his disbelief system of Lutheranism, Calvinism, and Judaism.

Generally stated, the purpose of the present investigation is to determine if the two cognitive styles (i.e. field dependence and field independence) exist among selected American and Third World foreign students attending various universities in the Chicago area, and if they do, to establish relationships between selected personality variables (i.e. authoritarianism, and dogmatism) and the cognitive style of field dependence and field independence as conceived of by Witkins et al. (1954). Though there has been a resurgence of interest in research studies done on cognitive
styles and related personality variables, none of these studies have explored the relationships of cognitive style, authoritarianism, and dogmatism between American and Third World foreign students attending various universities in the United States.

There appears to be value in exploring the validity of these findings among American and Third World foreign students to determine the possible effect culture has on the development of various cognitive styles. Culture in this respect may be defined as religious and social beliefs, laws, customs, morals, arts, and artifacts which are transmitted from generation to generation. It is hypothesized that there will be cognitive style differences across the two groups (i.e. the American and Third World foreign students) since one's cognitive style is to some degree determined by one's cultural and environmental backgrounds. This hypothesis is supported by Vester (1974), who administered a test battery comprising 14 tests selected as references for factors of deduction, induction, verbal meaning, and space to 88 English- and 72 African-speaking research scientists. The results of these tests indicated that the two groups utilized different problem-solving cognitive styles in responding to the tests.

It is important to bear in mind that the present investigation deals with different cultures and, therefore,
the cultural background and the "native intelligence" of each of the groups are crucially important factors to consider since they tend to exercise important influences on the development of cognitive abilities. For example, Reissman (1962) states that American culture is oriented toward quality, speed, and measurement. He maintained that in a classroom, a child who learned faster was believed to be better than one who learned slower. On the other hand, these qualities might not be regarded to be of crucial importance in Third World cultures.

The idea that the cultural background and the "native intelligence" of a particular group have a great influence on academic abilities is also supported by Fifer (in Anastasi, 1966). The results of his investigation showed that class and cultural influences differ not only in degree but in kind, with the consequence that different kinds of intellectual skills are fostered in various environments.

The second hypothesis is that, given similar socio-cultural backgrounds, females will be more field dependent across cultures than males. Witkin et al. (1954) found females to be more field dependent than males. It is also hypothesized that dogmatism will decrease with the level of experience (i.e. the level of educational attainment, age, and size of place of residence). Other hypotheses that will be investigated in the present study include the following:
one who is authoritarian will also be dogmatic; authoritarian and dogmatic individuals will be more field dependent than non-authoritarian and non-dogmatic individuals; and since culture and family orientation are related to the development of authoritarianism and dogmatism, the Third World foreign students will be more authoritarian and dogmatic than the American group. Also to be investigated in this study are the hypotheses that science majors will be more field independent than art majors and that there will be a significant relationship between dogmatism and level of experience as measured by education, age, and size of place of residence. Research studies which support these hypotheses will be cited in the review of the literature.
CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The research studies to be reviewed in this chapter are those that relate specifically to the present investigation. Such literature includes cognitive style in general, with a focus on field dependence and field independence. Special attention will be paid to the relationship of cognitive style and the following variables: intellectual ability, ethnicity, sex differences, child-rearing practices, culture, and authoritarianism. In addition, child-rearing practices and their relationship to the development of authoritarianism, as well as the relationship between authoritarianism and culture will be reviewed. Also to be reviewed in this chapter are studies dealing with the relationship of cognitive style and dogmatism, the relationship of child-rearing practices to the development of dogmatism, and the relationship between authoritarianism and dogmatism.

The reasons for the selection of the above reviews are: one, they do not only show the literature on the developmental aspects of cognitive style, authoritarianism and dogmatism, but are also concerned with the relationship between cognitive style and selected variables; two, they demonstrate the most...
content-laden approach to the study of cognitive style. Authoritarianism was considered in detail and is a good example of the content-laden approach. On the other hand, dogmatism was said to reflect efforts to develop a structurally-based measure of authoritarianism to replace the content-based measure developed by Adorno.

**Cognitive Styles**

A number of studies have been conducted, and still many others are currently in progress, investigating cognitive styles with respect to field dependence and its relationship to authoritarian and dogmatic personalities. However, none of these reported studies have explored the differences in cognitive styles across selected groups (e.g. the Americans and Third World foreigners) as a function of group affiliation, nor have the studies explored the relationships or differences in cognitive styles with respect to field dependence and field independence, authoritarianism, and dogmatism among the American and Third World foreign students. The pioneer studies in cognitive style were done by Witkin, who reported the existence of two cognitive styles, the global and the analytic. Witkin et al. (1962) identify certain psychological differentiation and cognitive abilities. They found that field dependent people made greater use of external social referents, but only when the situation was
ambiguous and these referents provided information that helped to remove the ambiguity; field independent people functioned with greater autonomy under such conditions. Furthermore, field dependent people had an interpersonal orientation: they showed strong interest in others, preferred to be physically close to people, were emotionally open, and gravitated toward social situations. They maintained that the opposite was true of field independent people in matters of interpersonal orientation. Field dependent people were more likely to get along with others than field independent people. On the other hand, field independent people had greater skill in cognitive and structuring activities. In their study, Weisz et al. (1975) indicate that Witkin's view that field dependent people were relatively poor at imposing structure upon experience was supported in part by the finding that ability to structure Rorschach responses correlated significantly with field independence. It was argued, for example, by Zigler (1963) that many such correlations between field dependence and other measures might result from a common relationship between the measures employed and level of Cognitive Ability (CA) or Mental Age (MA). Weisz et al. (1975) further examined the validity of Zigler's hypothesis by separating the effects of CA and MA and employing them as orthogonal factors. The results of this study were consistent with that of Witkin's; there were highly significant correlations between the
Children's Embedded Figures Test (CEFT) performance and Rorschach responses.

Goldstein & Blackman (1978) report in their study ways in which individuals may vary in their differentiating ability. Two of these ways were termed "System 1" (i.e. dependence) and "System 3" (i.e. independence), which relate to the notion of Witkin's field dependence and field independence. According to these authors, the "System 1" individual has poor differentiating and integrating abilities. He attempts to avoid ambiguity and, as a consequence, minimizes conflict. At the "System 3" level of functioning, differentiation and integration become more complex. Decisions become more difficult and are marked by weighting and compromise among the elements. The individual at this stage demonstrates an empirical orientation toward the environment, and many of his concepts develop from independent, exploratory behavior.

Many investigators have showed great interest in the development of psychological differentiation. For example, Witkin et al. (1967) performed a longitudinal study on the development of differentiation, as reflected in cognitive style in two groups, one group from 8-13 years old, the other group from 10-24 years old. A battery of tests of field dependence was used to evaluate the extent of differentiation in perceptual functioning. Comparable
cross-sectional data were obtained from groups in the same age range. The results show: (1) a trend toward increasing field independence during development in the studies up to age 17 with no further change from 17-24; (2) a tendency for males to be more field independent than females; (3) despite a marked general increase in differentiation in perceptual functioning with age, each individual tended to maintain his relative position among his peers in the distribution from age to age.

Dyk & Witkin (1965) indicate that perceptual organization was likely to depend primarily on structural arrangements within the stimulus field: with fields that are structured, perception of a part of the field is apt to be strongly dominated by the overall organization of the field; fields that lack inherent structure are likely to be perceived as relatively unorganized. The term "structure" is used here to refer to the ability to systematize, organize processes into coherent systems, and to adapt to the environment. In addition, Dyk and Witkin state that, as the child interacts with his environment, he develops the ability to perceive a figure as discrete from its background, and that this provides the basis for organization of the field in addition to that indicated by structural properties.

In essence, what these investigators are saying is that differentiation is not an inborn characteristic but something
that develops throughout the lifespan. The kind of differentiation a person acquires depends on the kind of structure which is available. One whose environment is structured develops perceptual organization; while an unstructured environment results in disorganization. According to Dyk and Witkin (1965), perception was considered to be articulated as contrasted to global. This notion of articulated experience as being indicative of developed differentiation was also supported by subsequent researchers in this area. For example, Arner (1973) states that the individual with an analytic style is characterized by perceptual field independence. The ability to perceive a figure as discrete from its background, the possession of a separate sense of identity, an articulated body concept and the tendency to achieve higher performance scores, as compared to verbal scores, on the WISC or WAIS, are all associated with field independent cognitive style. The individual with a global cognitive style is perceptually field dependent. He cannot perceive an object as separate from its surroundings, he possesses a poor body concept, he is dependent upon others for guidance and support, and tends to obtain higher verbal scores, as compared to performance scores, on the WISC and WAIS.

The Relationship of Cognitive Style and Intellectual Ability

Dubois & Cohen (1970) investigated the nature of the
relationship between measures of psychological differentiation and intellectual ability. Significant correlations were obtained between field independence measures and various measures of intellectual achievement, many of which have little or no relationship to embedding contexts, spatial-perceptual skills, or non-verbal organization. Witkin's notion that significant relationships between measures of field independence and intelligence could be explained on the basis of a common requirement for overcoming embedded context was questioned.

Goldstein & Blackman (1978) reviewed twenty studies on the relationship between Embedded Figures Test (EFT) performance and intelligence. They found generally consistent indications that various measures of field independence were related to various measures of both verbal and performance intelligence.

A study on performance tasks was conducted by Wachtel (1971). On the basis of this study, Wachtel concluded that field independent subjects had better recall of the identifying label when presented with fragments of a complex design.

Dickstein (1968) compared the performance of high-and-low field dependent subjects on a concept attainment task. The results of his study showed that the field independent
subjects performed better on several of the indices of concept attainment.

The data from Fine's (1973) study on the relationship between field dependence and the ability to discriminate colors and weights indicated superior discriminating ability for field independent subjects with regard to colors; there was little evidence of similar superiority with respect to weight discrimination.

Ehri & Muzio (1974) demonstrated from their study that field-independence was significantly related to the ability to solve problems.

Cross (1966) examined the relationship between cognitive differentiation and the level of abstraction of constructs employed to construe social issues. The hypothesis that individuals demonstrating extensive differentiation in their grids would generate more abstract concepts for construing social issues than those demonstrating less differentiation was confirmed.

Though these selected studies and many others which are not reviewed here show that there is a relationship between cognitive style and mental abilities, one should bear in mind that some intellectual and perceptual tests have common prerequisites. This statement was supported by Goodenough's & Karp's (1961) study, which was designed to
test the hypotheses that some intellectual and perceptual tests have a common requirement for overcoming embedding context, and that relationships obtained between measures of field dependence and standard tests of intelligence are based on this common factor. Their hypotheses were supported by the results of their study.

The Relationship of Cognitive Style and Ethnicity

For over a decade, many studies have shown a keen interest in a variety of mental abilities comparing ethnic groups, social class, and sex. Hennessy & Marrifield (1978) compared patterns and levels of performance by sex and ethnic group membership for 2,985 college-bound, urban high school seniors using three aptitude factor scores for each of the subjects. The results showed that while women performed at higher levels than men on the reasoning factor within all ethnic groups studied, and were higher on the verbal factor in all these ethnic groups except for the Black group, men had higher means within all ethnic groups on the technology factor. Technology in this sense refers to all the means employed to provide objects necessary for human sustenance and comfort. Since significant differences were found between the Black group and the two Caucasian groups, Hennessy & Merrifield suggested that the two "minority" groups in the study might not have mastered, to the same level as the
Caucasian groups, the skills necessary for high levels of functioning that were needed. According to Hennessy and Merrifield, this statement was made on the basis of Cattell's concept of crystallized intelligence, which he stated "arises from the investment of fluid intelligence, over the years, whatever level cultural skills the individual is exposed to" (1971:13). Hennessy and Merrifield further noted that the large ethnic differences, and a significant interaction between ethnicity and sex, are not consistent with the results of Lesser et al. (1965). However, it was concluded that the findings were consistent with Jensen (1973), who suggested that the differences between Black and Caucasian groups were greatest on a factor labeled "fluid intelligence."

The earlier Hennessy & Merrifield (1976) study compared structures of mental abilities of groups of Black, Spanish, Jewish, and Caucasian-Gentile community college students. The results showed that the four groups studied had very similar factor structures; differences arose more from magnitude of loadings of tests on factors than from the organization of mental abilities.

The results of the study conducted by Frehner (1972) gave rise to the following conclusions: (1) Black students were more field independent than White students; (2) White students were more Descriptive and Descriptive-Whole than Black students; (3) Black students were more Categorical-
Inferential than White students.

Similar findings were obtained by Miller (1973), who tested the hypotheses that there were no differences in patterns of mental ability among different ethnic groups and that there were no differences in patterns of relationships between ability and achievement for Mexican-American, White, and Black ethnic groups. The White group was characterized by predominant use of fluid ability for educational achievement, the Black group was characterized by its use of crystallized ability, and the Mexican-American group was characterized by a combination of fluid and crystallized ability for educational achievement. It is important to note that the idea of fluid and crystallized abilities are closely related to Witkin's notion of analytic and global cognitive styles, respectively.

Backman (1972) conducted an interesting study which was designed to investigate the relationships of ethnicity, socio-economic status (SES), and sex to patterns of mental abilities of adolescents. The results revealed that for a given ethnic group, males and females tended to exhibit patterns of mental abilities characteristic of their sex; these patterns were only slightly modified by ethnic background. The relationship of SES to the patterns of mental abilities was considered too weak to be important, though it was statistically significant.
The results of these studies have led to many discrepancies among the investigators as to the patterns of scores and kinds of measures employed. Wachtel (1972) indicates that basic understanding of the nature of individual differences observed has been hampered by insufficient efforts to distinguish between personality differences stemming from differences in adaptive choices and strategies. Wachtel points out that future research should focus more sharply on the distinction of those consistencies which express limitations of the individual's adaptive capacity and those which reflect choices and strategies.

**Cognitive Style and Sex Differences**

Manaster and Havighurst (1972) indicate that the existence of two sexes led to sex roles which were to some extent common among all human societies, although considerable differences exist among cultural groups, especially among primitive societies. Studies have reported that females are more field dependent than males. Witkin et al. (1954) have reported that females are more field dependent than men, the difference being largest among adults. Witkin et al. (1962) suggest that because of females' socialization, they are less differentiated psychologically than males and are therefore more socially dependent.
Waber's (1977) study firmly establishes the following relationships concerning sex differences in field dependence: (1) males were consistently more perceptually field independent than were females, from adolescence on among caucasoid mating groups; and (2) the sex difference did not appear uniformly across cultures.

Schratz (1978) designed a study which aimed at examining possible sex difference in spatial (visual-analytic) and mathematical performance in preadolescent and adolescent children, of three ethnic groups, Black, Hispanic, and White. These hypotheses were investigated: (1) Maccoby's (1973) hypothesis that adolescence is the developmental period during which sex differences emerged strongly; and (2) to determine if sex differences in performance previously noted in White samples were also evidenced in the performance of Black and Hispanic subjects. Significant interaction effects were demonstrated between ethnic group membership and sex for both mathematical and spatial skills. Schratz also reported that in Hispanic adolescent groups, significant sex differences were found in scores on both skills in favor of the female. That a similar but not significant trend was seen in the scores of Black adolescent groups. In contrast, White adolescent males scored higher than females, but not significantly so.
Writing on the same issue, Maccoby and Jackline (1974) conclude that the evidence for a sex difference in field dependence was itself so weak and inconsistent that it was unlikely to account for the sex differences in field dependence that were so consistently found.

Though Constantinople (1974) found females significantly more field independent than males, there are a number of studies in which there are no statistically significant differences in field dependence between males and females (Naditch, 1976; Bowd, 1976a).

The Relationship of Cognitive Style and Child-Rearing Practices

Goldstein & Blackman (1978), following the results of a series of studies on cognitive style and child-rearing practices, conclude that parental encouragement of autonomy led to greater field independence in the child. This conclusion was supported by Goodenough and Witkin (1977) as well. However, Goldstein & Blackman state that autonomous functioning in the child is not always related to the child's level of field independence.

Cross (1966) investigated the relation of parental training conditions to conceptual level in adolescent boys. He found that families whose sons were extremely concrete were more unilateral in their approach to child-rearing than
families whose sons were extremely abstract.

Corah (1965a) was interested in finding the relationship between the field dependence of parents and their children. On the basis of the results of the Children Embedded Figures Test (CEFT) and a modified Embedded Figures Test (EFT) administered to the children and their parents, respectively, there were no significant correlations between the children's scores and their parents' scores. However, when the scores derived from EFT and Draw-a-Person (DAP) scores were combined, a significant relationship was found between this measure of field dependence in boys and their mothers, and girls and their fathers. For this reason, the study is often cited as indicating that there is a relationship between the field dependent children and their parents. As noted by Goldstein & Blackman (1978), since the DAP was not central to the measurement of field dependence in the work of Witkin et al., this citation may be questionable.

Dyk and Witkin (1965) explored the relation in children between experiences in the family and the extent of differentiation in several areas of psychological functioning. In the first study, mothers were interviewed in the home. The overall ratings of mother-child interactions as fostering or interfering with the development of differentiation was found to relate significantly to children's measures of differentiation. This relation was supported in a second home-
interview study in which ratings were anchored more closely to specific indicators, and in two independent studies using questionnaire methods of assessment of mother-child relations. One of the subsequent studies, "Mother as a person," which assessed mothers by some of the same techniques used to assess differentiation in their children, indicated a tendency for less differentiated children to have less differentiated mothers. It was also found that studies in which mother-child relations were explored from the child's standpoint, through his view of parental role in TAT stories, gave results consistent with those from the home-interview studies and further defined the parent-child relation.

Roodin et al. (1974) failed to uncover any relationship between birth order and family size on field dependence or inter-external locus of control. This result was consistent with Schooler's finding that birth order and personality effect reported in earlier studies do not seem to generalize to present-day populations.

Bieri (1960) studied the relationship between EFT performance and parental identification. The results of this investigation showed that there were no significant differences in EFT scores for subjects who identified with their mothers versus their fathers. Constantinople (1974) found a slight difference which showed that field independent
subjects were more closely identified with their fathers than were field dependent subjects.

Barclay's and Cusumano's (1967) hypothesis was supported by the results of their findings which gave evidence that the development of independence is an aspect of masculine identity and that adolescent boys whose fathers were absent from home would evidence greater field dependence than boys from intact homes.

Okonji (1969) investigated the consequences of the differences in techniques of child-rearing usually observed among parents in rural and urban environments on the development of cognitive styles among their children. One community in Nigeria with an urban-rural setting was considered a good example of two different sub-cultural settings with quite different child-rearing ideologies and techniques. Ibusa, an Ibo town on the Western bank of the River Niger, was selected. Okonji stated that the pattern of child-rearing in the rural areas, which is relatively indulgent and prolonged and usually accompanied by close bodily contact between the child and the mother (as well as other members of the kin group), was likely to promote the development of field dependent characteristics. It was pointed out by Witkin (1966, 1967) that markedly limiting the child's activities because of fears and anxieties was conducive to the development of field dependent characteristics.
According to Okonji, child-rearing in the urban areas seemed to differ from those in the rural areas. It was noted that child-rearing in the urban areas was an imitation of western methods and ideologies. There are fewer anxieties, a less indulgent and a less prolonged nursing period. Okonji's hypotheses were as follows: (1) individuals of the same sex brought up in urban areas in literate homes will be more field independent than those brought up in rural areas in illiterate homes; (2) males will be more field independent than females given a similar background and upbringing; (3) individuals of the same sex brought up in urban areas in literate homes will be more similar to American subjects than those brought up in rural areas in illiterate homes. His hypotheses were confirmed with the exception that the hypothesis concerning sex differences was not supported by the Rod and Frame Test (RFT) data among the Ibusa sample; and the hypothesis concerning urban-rural differences was only partially confirmed.

Cognitive Style and Culture

Manaster and Havighurst (1972) note that except for language differences, the differences between modern societies in mental development are relatively small. Generally, the experiences of growing up in a family, social class, living in an urban-industrialized society, tend to produce
even greater behavioral similarities among some groups of 20th century human beings. On the other hand, certain factors (i.e. religious beliefs and practices) peculiar to an individual organism and within the individual's social group tend to make all members of a given group different from one another in some ways of behaving and believing. Other such customary beliefs and practices include many social customs, laws, and taboos. In addition, Manaster and Havighurst stated that cultural groups were likely to differ as groups as the results of: (1) experience with the stimulus—the content of test or instrument; (2) motivation with respect to test; (3) experience with language; (4) cultural differences in developmental experience.

Stenhouse (1967) states that both creative and critical thinking grew from the culture, and that between the two there was a continuous dialectic. In addition, he indicated that individuals develop because their creative thought is disciplined by critical standards; and in education both the creative impulse and the critical reflex are important, for education is but the drama of culture set upon a small stage.

Studies in cognitive styles have been conducted in countries other than the United States. For example, Dawson (1963, 1967) conducted his studies in Sierra-Leone, a country in West Africa. The studies were designed to test the hypotheses that certain aspects of Sierra-Leone tribal culture
and related child-rearing practices were likely to be conducive to the development of more field dependence; that feminization occurring in males as a result of kwashiorkor (i.e. a nutritional disease of infants and children occurring chiefly in Africa) would also be likely to lead to the development of more feminine field dependent perceptual style; that there would be a certain amount of interaction between cultural and physiological variables; that educational achievement, intelligence, experience of a structured environment, and cultural differences would be relevant variables that influence field dependence. These hypotheses were largely supported.

Berry (1965, 1966a, 1966b) investigated the cultural and ecological factors that influence the development of people's perceptual skills. He hypothesized that differences in visual perceptual skills would exist between societies with differing ecological and cultural characteristics. His subjects were drawn from the Temne of Sierra-Leone, the Eskimos of Baffin Island, and the Scots of Britain. Among the interesting results, it was found that the Eskimos had cultural and ecological characteristics which promoted field independence, and therefore outperformed the other groups.

Dershowitz (1971) compared the field dependence of fifty Orthodox Jewish boys, fifty-six non-observant Jewish boys from the original sample of 10-year-old boys studied
by Witkin et al. (1962), and thirty White Anglo-Saxon Protestant boys. For the three measures of cognitive styles administered, the Orthodox Jewish boys were most field dependent, the Protestant subjects least field dependent, and the non-observant Jewish subjects were in the middle.

Wober (1966a, 1966b, 1967) argued that Nigerian subjects would react differently to most visually anchored tests of cognitive style from Witkin's American subjects. This statement was made on the basis that Africans had been reported to perform relatively inefficiently in visually specialized tasks and that African cultures place "considerable emphasis on sensory phenomena apart from the visual world." It was found that the RFT did not correlate significantly with the other tests while the EFT did, and that the Nigerian subjects did better than the American subjects on the RFT.

Goldstein & Blackman (1978) warned that most of the cross-cultural studies on cognitive style have developmental implications, and one should therefore be cautious because of the difficulties involved in generalizing the results of these studies to Western society.

The Relationship of Cognitive Style and Authoritarianism

As was mentioned in the introductory section of this
study, research literature which relates cognitive style to authoritarianism, specifically rigidity and intolerance of ambiguity, was the primary focus of the present investigation. Witkin (1964) hypothesized that field dependent subjects, because of their inability to overcome embeddedness, would have difficulty breaking the set induced by the initial problems in the performance on the Einstellung water jar task, a test of field independence. Witkin's hypothesis was supported by two earlier studies. One of these studies was made by Fenchel (1958), and the other by Goodman (1960).

Rudin and Stagner (1958) conducted a study on social perception. A 30-item F scale (authoritarian scale), the RFT, and a version of Gottschaldt's Embedded Figures Test were administered to thirty-four male college undergraduates. The results gave evidence that high authoritarian subjects were more field dependent than low authoritarian subjects.

Breskin and Gorman (1969) studied the performance of subjects varying in level of field dependence on a nonverbal test of rigidity developed by Breskin (1968). Their subjects were forty-seven undergraduates who were administered the Jackson (1956) group form of the EFT. There was no significant difference in rigidity for both males and females. However, it was found that field dependent subjects were more rigid than field independent subjects.
Interesting results were reported by Hiritzuk and Taylor (1973) on the relationship between field dependence and authoritarianism. Their data indicated that, in two of the cases, field independent subjects who were given a similar task to the Einstellung problem broke the set more easily, and in one case field dependent subjects broke the set more easily. Thus, the findings maintain that field independent individuals are less rigid than field dependent subjects.

Goldstein & Blackman (1978) indicate that earlier studies supported that there was a relationship between cognitive style and authoritarianism, but that data from recent studies failed to support this relationship. The examples cited are Witkin et al. (1962) in which a study by Gump (1955) was replicated, and in which the latter had reported to have found that field independent subjects were more accurate in recognition of the blurry pictures. Witkin et al. found no relationship between field dependence and picture recognition.

There was another study conducted by Campbell et al. (1967) on picture recognition and field dependence. There was no significant relationship found between these two variables.

Lefever and Ehri (1976) hypothesized that field independent subjects would perform significantly better than
field dependent subjects in identifying correctly the meanings of two ambiguous sentences. The results of the findings supported the hypothesis.

Nebelkopf and Dreyer (1970) were interested in finding the relationship between field independence and the perception of ambiguous stimuli. Their thirty-seven kindergarten and first grade subjects of average intelligence were administered the Tent series of the CEFT and Elkind's (1964) standardized version of the Ambiguous Picture Test (APT). The task on the APT appeared to be similar to the EFT (i.e. the ability to perceive a figure as distinct from its context) and to the Einstellung task (i.e. to overcome the initial perception and shift to another). Nebelkopf and Dreyer concluded that the number of ambiguous figures perceived by the children suggested that it was the similarity to the EFT that accounted for the high correlation.

Ramirez and Prince-Williams (1974) studied Mexican-American children, Black children, and Anglo-American children in relationship to field dependence and authoritarianism. Their findings indicated that children from families emphasizing respect for family and authority tended to be field dependent.
Child-Rearing Practices and Their Relationship to the Development of Authoritarianism

Studies have indicated that the parents of authoritarian children are concerned with achieving conventional goals. To achieve these goals, these anxious parents resort to harsh, threatening, and rigid child-rearing practices. The children submit fearfully to the parental demands and are required to suppress "unacceptable" impulses, especially those connected with sex and aggression. According to the psychoanalytic theory interpretation, resentments are expressed in two ways: (1) a "rigid glorification and idealization of the parents"; and (2) a "displacement of the repressed hostility onto minority group members, who were perceived as weaker than the parents."

Sanford (1954) notes that authoritarian personality structure has its beginning in the family life and that, in turn, goes forward under the influence of social processes. He further explained this to mean that the attitudes and practices of parents with respect to their children might be in considerable part responses to stimuli of the moment. Structure is used in this sense to mean the makeup or the manner of construction.

Cross (1966) demonstrated that the parents of "concrete" boys tended to be more authoritarian than the parents of "non-concrete" boys.
Byrne (1965) investigated the family orientation believed conducive to the development of authoritarianism. His measure of child-rearing attitudes was a 35-item Traditional Family Ideology (TFI) scale. He found a significant correlation between the authoritarianism of sons and the authoritarian family ideology of fathers.

Mosher and Mosher (1965) were interested in finding the relationship between daughters' authoritarianism and mothers' authoritarian child-rearing attitudes. They found a non-significant relationship. In the same study, Mosher and Mosher found a significant correlation of .58 between measures of mothers' authoritarianism and their authoritarian child-rearing attitudes.

Mosher and Scodel (1960) obtained a significant correlation between ethnocentrism of parents of 161 sixth and seventh graders and a questionnaire designed to measure parental authoritarian child-rearing attitudes.

A research study was conducted by Bieri and Lobeck (1959) which related acceptance of authority to parental identification. The overall results suggested that even with relatively homogeneous samples, it was possible to find characteristic patterns of identification with parents among individuals who differ in their attitudes toward acceptance of authority.
It was hypothesized by Zuckerman and Oltean (1959) that: (1) authoritarian social attitudes as measured by the F scale should correlate significantly and positively with the Parental Attitude Research Inventory (PARI); (2) the PARI factor would relate to personality traits characteristic of "Authoritarian Personality"; (3) significant relationships existed between the scales of PARI and Edwards Personal Preference Schedule (EPPS) and therefore would add to their construct validity; (4) the results from the Sears, Maccoby, and Levin study led to the expectation that self-acceptance would correlate negatively with the Hostility-Rejection factor; and (5) both parental attitude factors would correlate positively with severity of disturbance as measured by the clinical MMPI scales. The results were interpreted as indicating some relationship between personality variables and attitudes toward child-rearing, and offering some evidence for the construct validity of the parental attitude factors.

Lyle and Levitt (1955) administered an Incomplete Sentences Test to two groups of fifth graders to provide a measure of the child's perception of parental punitiveness. The results indicated that authoritarianism in children was associated with perceptions of parental punitiveness.

Block's (1955) study in which he administered a 20-item inventory was designed to measure the restrictive-
permissive dimension of child-rearing attitudes. The twenty highest scoring and the twenty lowest scoring fathers were contrasted on the F and E scales. The restrictive group scored significantly higher on both measures.

Williams and Williams (1963) reported to have found a significant correlation between daughters and their fathers with respect to authoritarianism.

There are other studies which are not related to child-rearing practices, but which lead to the development of authoritarianism in children. For example, Levitt (1955) notes that children's authoritarianism could be influenced by teachers. Stewart and Hoult (1959) reviewed a number of research studies which gave evidence that high authoritarianism was found among the less educated, old people, rural residents, the disadvantaged, members of more dogmatic groups, and social isolates, as well as people reared in authoritarian homes or families.

Thus, the development of authoritarianism is not to be associated only with child-rearing practices. The above studies cited and others which were not reviewed here showed that child-rearing practices and environmental influences are important factors which contribute to the development of the authoritarian personality.
The Relationship of Authoritarianism and Culture

Culture is one of those environmental factors which plays an important role in the development of authoritarianism. Adelson (1953) reports the results of his hypotheses as to the nature of Jewish authoritarian ideology. It was found that authoritarianism was a critical dimension underlying attitudes toward Jewishness.

Melikian (1956) investigated the role which culture played in determining the relationship of authority in two cultural groups, the Middle East and Americans. The results of the findings confirmed some previous findings on authoritarianism which showed that the more authoritarian the formal characteristics of the culture, the greater the intensity of authoritarian attitudes in individuals.

Cohn and Carsch (1954) administered the F scale to a German group with the assumption that differences in the mean score would reflect differences from cultural influences. This assumption was supported and it was also reported that the F scores negatively correlated with educational level. This relationship was also true when the American subjects were used.

Christie and Garcia (1951) investigated the relationship between authoritarianism and ethnocentrism in two sub-cultural groups in the United States. The population studied
was composed of students enrolled in introductory psychology courses. One of the sub-cultural groups was at the University of California, and the other in a state where segregation of Negroes was legally sanctioned. Among the interesting results found was that those individuals who accepted authoritarianism were also the ones who tended to be most ethnocentric. It was concluded that a relatively authoritarian subculture led to significantly greater acceptance of authoritarian ideology.

Prothro and Melikian (1953) conducted a study which aimed at finding out whether residence in an authoritarian culture led to greater acceptance of the "authoritarian" items of the California scale and to test the validity of that scale. The results confirmed the validity of the F scale but failed to show a positive correlation between authoritarianism and politico-economic conservatism.

The Relationship of Cognitive Style and Dogmatism

A number of investigators have shown interest in the relationship between mental abilities (i.e. measure of cognitive style) and dogmatism. White et al. (1965) in their study on one aspect of concept formation hypothesized that high-dogmatic subjects would utilize fewer categories when sorting items on a dimension relevant to them than would low-dogmatic subjects; furthermore, that the two groups
would perform similarly when sorting items that were neutral. As was hypothesized, high-dogmatic subjects used fewer categories for the relevant dimension, but they did not differ from low-dogmatic subjects in the number of categories used to sort the items dealing with occupation.

Torcivia and Laughlin (1968) found that high-dogmatic-school students were more likely than low-dogmatic students to use conservative strategies in solving concept formation tasks and were less able to use new strategies in the integration of their already existing belief system.

Ohnmachet (1966) studied the relationship among field independence, dogmatism, and concept formation. The data from this study indicated a statistically significant difference in performance between high- and low-dogmatic subjects, but no significant difference in performance was found between high- and low-field dependent subjects. Also, there was no significant difference in interaction between field dependence and dogmatism.

There was another investigation undertaken by Grippin and Ohnmachet (1972) on the relationship of field dependence and dogmatism to performance on concept attainment tasks. Their subjects were twenty-three undergraduates who were administered the Dogmatism Scale (D), Hidden Figures Test (HFT), and a modification of the Heidbreder conceptual
learning task. Multiple regression analyses were performed, using HFT, dogmatism, and HFT-by-dogmatism interaction scores to predict performance on each of the three concept attainment tasks. The three multiple correlations did not attain statistical significance.

Uhes and Shaver (1970) found significant correlations between dogmatism and originality, flexibility, and a composite measure of divergent thinking. They also demonstrated that open-minded subjects obtained higher composite convergent thinking scores than the dogmatic subjects. Another interesting result reported was that high-dogmatic subjects performed at a higher level on convergent compared to divergent tasks, whereas low-dogmatics performed equally well on the two types of tasks.

Levy and Rokeach (1960) administered the D scale to four-hundred undergraduates. From these subjects the seventeen highest and the seventeen lowest scores were selected and matched for intelligence. The subjects were then administered the Jackson Short Form of the EFT. There were no significant differences between the two groups in time of solution for any of the twelve EFT items.

Kessler and Kronenberger (1967) compared the synthesizing ability of subjects differing in field dependence. It was found from the results of the study that the field
independent subjects evidenced significantly greater synthesizing ability than the field dependent subjects. There was no significant difference in the synthesizing ability of high- versus low-dogmatic subjects.

A different study performed by Mouw (1969) compared the analyzing and synthesizing abilities of subjects varying in level of dogmatism. It was not clarified by the results of the study whether Mouw's findings provided an appropriate test of Rokeach's contention that subjects varying in rigidity would differ in analyzing ability, and those varying in dogmatism would differ in synthesizing ability.

There was no significant difference found by Hellkamp and Marr (1965) on the relationship between field dependence and dogmatism among thirty-eight undergraduate Catholic males.

Larsen (1971) demonstrated that dogmatic subjects, faced with an issue, take extreme viewpoints, favorable or unfavorable. In contrast to Larsen findings, Stimpson and D'Alo (1974) found no statistically significant correlations between dogmatism and the intensity of extremity of attitudes in studies.

Jacoby (1967) failed to find a significant correlation between Mednick's (1962) test of creativity and scores on D scale.
Interest has also been shown in the relationship between dogmatism and information processing. Brightman and Urban (1974) explored the hypothesis that high-dogmatic subjects processed information differently from low-dogmatic subjects. The results of their study gave partial support to the hypothesis.

Crano and Sigal (1968) showed that high-dogmatic subjects, when confronted with material discrepant from their attitudes, tended to accept or reject the source and message in a consistent manner.

Therefore, due to the many discrepancies in the above studies, the relationship between cognitive style and dogmatism is not specifically clarified at this time.

The Relationship of Child-Rearing Practices to the Development of Dogmatism

It is the contention of some of the investigators in this area that education plays a part in the development of a dogmatic personality. In a study conducted by Anderson (1962), it was demonstrated that the eleventh graders were significantly less dogmatic than the eighth graders. Pannes' (1963) study supports this finding. A significant correlation of -.13 was obtained in her study on dogmatic scale and grade level.
Many studies have indicated that advanced students in college are less dogmatic than college freshmen. For instance, Lehmann (1963) tested 1051 freshmen in Michigan State University and again in their senior year and found that dogmatism decreased in the students' senior year. Truck (1969) found a significant decrease in dogmatism for a group of 396 education majors tested as freshmen and again as seniors. Similar findings were reported by Ayres and Truck (1976), Fould et al. (1974), Berdie (1974), and McLeish and Park (1973). In addition, Goldstein and Blackman (1978) point out that studies also indicate a decrease in dogmatism with increasing age, but the two authors did not come to any conclusion on whether education led to decreasing dogmatism.

On the other hand, there are studies that have challenged these interpretations. Significant decreases in dogmatism were reported by Plant (1965a, 1965b), Plant and Telford (1966) for subjects who had attended college (i.e. beginners and advanced students), as well as for the subjects who had not attended college. However, it was reported that some methodological problems complicated the interpretation of the results. For example, the extensive missing data which raised the question of selectivity. Another problem was that the first administration of the testing instruments was part of a pre-enrollment testing situation,
whereas follow-up testing was by mail.

The relationship of dogmatism and child-rearing practices was investigated by Goldstein & Blackman (1978). They indicate that highly dogmatic individuals seemed to be ambivalent toward their controlling parents.

Rebhun (1967) gives direct evidence on the relationship of dogmatism to child-rearing practices. He found significant correlations between dogmatism and PARI scales. This result indicated that high-dogmatic subjects were expressing controlling child-rearing attitudes.

Statistically significant correlations between the dogmatism scores of children and their parents, and between husbands and their wives were reported by Lesser and Steininger (1975). It was also found that parents tended to be more dogmatic than their children.

Goldstein & Blackman (1978) point out that available research on developmental issues indicated family relationships similar to those found in the more extensive work on the development of authoritarianism.

The Relationship Between Authoritarianism and Dogmatism

According to Wrightsman (1972), Rokeach advanced the concept of dogmatism as an indicator of a general kind of
authoritarianism that would encompass both the extreme left and right ends of a political belief distribution. Investigators have related dogmatism to many of the same variables that had been linked with authoritarianism. For example, Vidulich and Kaiman (1961) demonstrated that when compared with their less dogmatic counterparts, highly dogmatic subjects were more dependent on authority figures in a conformity-inducing task.

McCarthy and Johnson (1962) report that highly dogmatic persons were more likely to accept official police explanation of the causes of a riot than were less dogmatic subjects.

Harvey and Hays (1972) investigated whether high- and low-dogmatic subjects were differentially influenced by expert opinion. Harvey and Hays found that high-dogmatic subjects were more influenced by the high-authority position than the low-dogmatic individuals.

Rosenmam (1967) hypothesized that low-dogmatic individuals would more positively evaluate the movie "Dr. Strangelove" on the basis of the movie being an authority figure in the U.S. It was reported that the extremely high-dogmatic subjects rated the movie less favorably than extremely low-dogmatic subjects.

Kerlinger and Rokeach (1966) report a significant relationship between the F scale and the D scale.
Zagona and Zurcher (1964, 1965) demonstrated that in an unstructured classroom situation, highly dogmatic students were more concerned with rules and procedures regarding leadership selection and group structure.

In the way of perception, Kemp (1963) shows that less dogmatic subjects perceived authority figures in a more realistic way than more dogmatic subjects.

Barker (1963) reports the results of a study he conducted in which evidence was provided that the high-dogmatic subjects were significantly more intolerant of ambiguity than the low-dogmatic subjects.

It was also noted by MacDonald (1970) that a statistically significant correlation was found between dogmatism and intolerance of ambiguity for his sample of 698 male and female undergraduates.

Jones (1955) indicates in the report of his study that authoritarianism was found related to intolerance of ambiguity as measured by perceptions of Necker Cube reversals.

Other investigators have demonstrated that a relationship exists between dogmatism and rigidity, another measure of authoritarianism. For instance, Rokeach (1960) notes correlations ranging from .37 to .55 between the Dogmatism
scale and the Gough and Sanford (1952) Rigidity scale for various samples. Schroder and Streufert (1962) also report similar findings.

MacDonald (1970) found a significant correlation of .36 between the Dogmatism scale and the Gough and Sanford Rigidity scale for 787 undergraduates. White and Alter had, therefore, concluded that there was generally an indication that high dogmatic subjects were rigid, after reviewing the research studies supporting this relationship.

These findings yield evidence of support that high dogmatic subjects are less tolerant of ambiguity than low-dogmatic subjects, and that high-dogmatic subjects are generally psychologically rigid. Moreover, that high-dogmatic subjects are more influenced by authority figures than low-dogmatic individuals.

Recapitulation

The concept of cognitive styles has been of great interest to research workers in the field of education and psychology in recent years. This concept of field dependence and field independence was originated by Witkin and his associates. The early approaches utilized perceptual abilities as measures of cognitive styles. Individuals found to be passive and to have poor impulse control, low self-esteem,
and an undifferentiated and primitive body image were designated "field dependent", while the opposite was true of field independent individuals. Witkin used a variety of perceptual instruments to assess field dependence (i.e. the Rod and Frame Test, the Body Adjustment Test, the Tilting Room Test, and the Embedded Figures Test). For example, the ability to perceive part of a field as discrete from the surroundings, rather than embedded in the field; the ability to which the organization of the prevailing field determines perception of its components; and the ability to perceive things analytically are perceptual abilities measured by these perceptual instruments. Three types of cognitive styles were distinguished by Kogan (1973, 1976). The first type referred to an ability to perform with performance judged against a standard. The second type placed value on one's ability to process information. The last type placed value on one's category width (i.e. stylistic categories or category width approach).

Since the work of Witkin and his associates appeared, many other approaches to the study of cognitive styles have been utilized. For instance, those derived from the work of Gardner and associates (1959), termed cognitive controls; and the work of Kelly (1955), Bieri, Atkins, Briar, Leaman, Miller, and Tripodi (1966); and Harvey, Hunt and Schroder (1961), which they called cognitive complexity. Finally, is
the approach used by Kagan, Rosman, Day, Albert and Phillips (1964), Pettigrew (1958), Kagan, Moss and Sigel (1963), and recently by Messick (1976). This category is called "reflection-impulsivity."

The study of cognitive style as was elaborated by Witkin and his associates has been used extensively not only in the United States but also in other parts of the world.

From the studies reviewed, it was seen that there was support for the notion, though not without discrepancies, that cognitive style (i.e. field dependence and field independence) was related to mental abilities and that field independence increased during the early developmental years. Also it was shown that for a given ethnic group, males and females tended to exhibit patterns of mental abilities characteristic of their sex. The patterns were only slightly modified by ethnic background. In addition, it was shown that there were small, but noticeable, sex differences in field dependent and field independent individuals in Western societies during adolescence.

The cross-cultural studies reviewed provided evidence indicating that there were some cultural factors and child-rearing practices (e.g. encouragement of autonomy) that appeared to specifically affect the development of field independence among individuals. However, Goldstein and
Blackman warned that most of the cross-cultural studies on cognitive style had developmental implications and advised cautious interpretations because of the difficulties involved in generalization of the results to Western societies.

Cognitive style has also been related to personality variables such as authoritarianism and dogmatism. It was assumed that since a significant relationship existed between field dependence and field independence and authoritarianism, and between authoritarianism and dogmatism, that these three variables were related.

It was also demonstrated that the development of authoritarianism was not only associated with child-rearing practices but that other factors such as cultural background, environment, and education contributed to the development of authoritarianism. These differences indicated that authoritarianism and dogmatism functioned differently in various cultures.

From the various reviews on cognitive styles (i.e. field dependence and field independence), authoritarianism, and dogmatism, it would not be improper for one to assume that since there are some significant relationships between authoritarianism and field dependence and field independence, and authoritarianism and dogmatism, that these three variables are related. One study conducted to confirm the above statement was by Clark (1968). He administered 38 items chosen
from both the F and the D scales on the basis of the earlier factor analysis by Kerlinger and Rokeach (1966). The low-authoritarian subjects were significantly more field independent than the high-authoritarian subjects. It could be assumed also that the low-dogmatic subjects were more field independent than the high-dogmatic subjects, since the items administered assessed both authoritarianism and dogmatism. In other words, the field independent persons scored low on both the F and the D tests; the F and D scales assess authoritarianism and dogmatism, respectfully. If these low-scoring subjects in these scales could be referred to as having low-authoritarian personalities, they could also be referred to as being low in dogmatism.

However, one has to be careful in drawing conclusions concerning the relationships between field dependence and field independence because of the many confounding findings. Some investigators reported that there were significant relationships between field dependence and field independence and authoritarianism; yet, other investigators found negative relationships. Clark (1968) suggested that the reason for the discrepancies might be that the two measures of authoritarianism used for the assessment of attitudes assessed different authoritarian attitudes. Kerlinger and Rokeach (1966) found that, while the F scale and the D scale correlated highly, they were factorially discriminable, the F items and
D items tending to load on different factors.

Although the study of cognitive style has generated a great deal of research, some investigators disagree on the details of the approach to the study of cognitive style and the use of measuring instruments. It is questionable if an individual's cognitive style would vary across different situations. Goldstein & Blackman (1978) pointed out that this disagreement in details of approach and measurement of cognitive style has resulted in a body of literature from which it is difficult to extract general principles. Additional investigations which will enable the research workers to come to agreement on the approach to the study of cognitive style and the use of measuring instruments appear to be needed at this time.
CHAPTER III

METHOD

Hypotheses

The following hypotheses were investigated:

1. There will be no significant difference in patterns of cognitive style between American and Third World foreign students. (The Group Embedded Figures Test was utilized in the assessment of cognitive style.)

2. There will be no significant difference in cognitive style between males and females.

3. There will be no significant difference in cognitive style between art majors and science majors.

4. There will be no significant relationship between dogmatism and level of experience as measured by education, age, and size of place of residence. (Dogmatism was assessed by the Rokeach D scale.)

5. There will be no significant relationship between authoritarianism and dogmatism. (Authoritarianism was assessed by the Adorno F scale.)

6. There will be no significant relationship between cognitive style, authoritarianism, and dogmatism.

7. There will be no significant differences in authoritarianism and dogmatism between American and Third World foreign students.
Hypotheses 2, 3, 4, and 5 were tested separately for American, and Third World foreign students.

Subjects

Subjects for this investigation consisted of a total of one hundred (100) graduate and senior-level undergraduate college students attending the following universities: Loyola University of Chicago (n=26), Roosevelt University (n=17), University of Illinois-Circle Campus (n=35), and Northeastern University (n=22). These universities were chosen because they have admissions of relatively large numbers of foreign students.

Fifty (50) of the subjects were Third World foreigners and were randomly sampled from lists of students supplied by the various foreign student advisors and registrars from the above-named institutions. These randomly selected subjects were then matched according to academic major with fifty (50) American students. By matching the two groups according to academic major, some extraneous variance was systematically controlled. Each of the two groups was further partitioned according to sex, socio-economic status (SES), place of birth and parental literacy (literacy was classified as literate or illiterate), age, and level of education (education was classified as high or low), and family-rearing practices (family-rearing practices were
classified as rigid or flexible).

Description of the American Sub-group

The American group was made up of both Black (n=15), and White (n=35) American college students. Since these two sub-groups live in the same country, under the same government, they apparently share many characteristics in common. Although individuals may not be exposed to the same level of cognitive sophistication, the educational system is the same, though the quality of input and output may not be the same. The two American sub-groups come from a high industrialized country.

Apparently, socio-economic status plays an important role in the development of mental abilities, and consequently in the patterns of cognitive style within these cultural groups. This statement was supported by the results of community studies which had described the subcultural groups labeled "social class." Kimball (1974) indicates that such studies had been made in all sections of the nation (i.e. the United States) and in all of them, social class emerged as a central aspect of the system of values and behavior. Differences have been found to exist in many aspects of cognitive style among social class. For example, Passow et al. (1967) found that the expressive style of the lower class child could be described as more often motoric, concrete,
"thing-oriented", and non-verbal, while the middle class child, on the other hand, is more often conceptual, abstract-symbolic, "idea-oriented", and verbal in his style of expression. Thus, socio-economic status can be used to partially analyze behavior.

Unlike the culture of the Third World group, the American culture is characterized by its emphasis on individualism, freedom, and equality. This statement was supported by Melkian (1956), who also stated that the American culture is that in which the small conjugal family is the rule, and in which, among the middle class, the mother tends to be the dominant figure of authority. In addition, the American culture does not encourage the expression of hostility in any form, and does not teach its members to relate themselves to authority figures without expressing discomfort. The ideologies of child-rearing practices include fewer anxiety-generating circumstances during the nursing period, a less indulgent and prolonged period, and less body contact (i.e. the infants begin at birth to sleep on separate beds). According to Okonji's (1969) findings, these characteristics are likely to promote the development of field independence. Therefore, in the present study, Black and White American students were chosen because the two subcultural groups have many things in common.
A foreigner was defined as anyone who was not born in the United States or had not become a United States citizen by naturalization. Third World countries are those countries that used to be known as underdeveloped countries, and which were colonized by some foreign powers. The Third world foreign students in this investigation were from selected countries in West Africa (n=22), the Far East (n=9), the Middle East (n=5), and India (n=14). These countries were selected for various reasons. In the first place, relevant comparative studies were available on them. Secondly, they share certain common characteristics. For example, the educational system is similar; it is based on the British system of education. As described by Ikejiani (1964), the British system of education reflects the philosophy of the educated gentleman (i.e. the refined elite). He added that there were too many "selfs" and too many "fellows." According to Ikejiani, "fellows" were the select group who formed the cream of society and were leaders chosen and trained for leadership. He termed this as the British philosophy of education. Because of the emphasis attached to educational attainment, acquiring an education has become competitive in nature in these countries. In this system of education, more emphasis is placed on verbal (i.e. involving the use of words) than on performance tasks (i.e. learning involving practical examples). All foreigners have
the same basic objectives, which is, to complete their studies and return home to their respective countries. All in all, the Third World foreign students' overall cultural experiences are very similar.

As stated by Kurani (1953), the authoritarian characteristics of the Middle East culture are reflected in its interpersonal relationships, in its institutional life, and in its centralized government services. Most of these characteristics are true of the other foreign countries used in this investigation. Moreover, the family life in these countries is patriarchal and is extended. The father is the figure of authority and the mother holds a secondary position.

Sex roles are well defined in each culture. Melkian (1956) indicated that because of the clearly defined roles and expectations, the condoning of hostility-anxiety levels is reduced among the members.

The pattern of child-rearing practices is shared among the cultures of these Third World foreign countries. The pattern is characterized by a relatively indulgent and prolonged nursing period. It is usually accompanied by close bodily contact between the child and the mother, as well as other members of the extended family, as noted by Okonji (1969). However, it should be pointed out that this pattern of child-rearing practices is more common and noticeable in the rural than in the urban areas of these countries.
**Procedure**

The data for this study were collected during the Spring semester of the 1978-79 academic year. The subjects were requested to give the following biographical information: age, sex, place of birth and upbringing (this was classified as urban or rural), sub-group (classified as American or Third World foreigner), specific sub-group (i.e. Black American, White American, Far Eastern, Indian, Middle Eastern, and West African), parental literacy (those with high school diplomas or higher degrees were considered literate, and those with anything lower than a high school diploma were termed illiterate), college classification (i.e. senior or graduate) and socio-economic status (SES). Socio-economic status was determined utilizing the Warner et al. (1960) index; subjects were classified as high, middle or low. Family rearing practices were classified as rigid or flexible.

The two sub-groups were tested utilizing the same testing materials. Three scales: Group Embedded Figures Test (GEFT), Facism Scale (F Scale), and Rokeach Dogmatism Scale (D Scale); assessing different variables (i.e. field dependence and field independence, authoritarianism, and dogmatism, respectively) were administered to the American and the Third World foreign sub-groups. These scales were administered individually or in groups depending on the instructions provided by the test manuals.
Instrumentation

Group Embedded Figures Test (GEFT): The GEFT was utilized to assess field dependent and field independent cognitive styles. The GEFT was designed to provide an adaptation of the original individually administered Embedded Figures Test (EFT) which would make possible group testing. With GEFT, scores for many individuals may be obtained in a single 20-minute testing session.

The GEFT had been modeled as closely as possible on the individually administered EFT with respect to mode of presentation and format. It contains eighteen (18) complex figures, seventeen (17) of which were taken from the EFT, according to the manual. In addition, as in the EFT, the subject is prevented from seeing simultaneously the simple form and the complex figure containing it. This was accomplished by printing the simple forms on the back cover of the GEFT booklet, and thus the complex figures cannot be exposed simultaneously. The GEFT contains three sections: the first one, which contains seven (7) very simple items and is primarily for practice, and the second and third sections, each of which contains nine (9) more difficult items.

The directions and the scoring of GEFT are provided in the manual. The score is the total number of simple forms correctly traced in second and third sections combined.
Omitted items are scored as incorrect.

The preliminary available norms are based on male and female college students from Eastern liberal arts colleges. Subsequent studies showed that field dependence and field independence were related to temperament or personality characteristics as well as to the spatial aspects of intelligence. Men in this sample (i.e. from Eastern liberal arts colleges) performed slightly but significantly better than women ($p < .005$), according to Witkin et al. (1971). These authors warned that the norms are strictly applicable only to individuals coming from populations similar to the group from which the norms were obtained. The norms serve as a general guide for other populations.

Witkin et al. also stated that the above norms were based on standard testing times of five minutes each for the Second and Third Sections. It was suggested that in order to maximize individual differences with some groups, the time limits would have to be adjusted. Thus, the norms for the GEFT need more extensive and more technical information. What the subjects who did well on the GEFT seemed to have in common was the ability to analyze a complex configuration and then to respond to some parts of it, ignoring others.

Witkin et al. (1971) noted that since the GEFT is a speed test, reliability was estimated by correlating parallel
forms with identical time limits. Correlations between the 9-item first section scores and the 9-item second section scores were computed and corrected by the Spearman-Brown prophecy formula, producing a reliability estimate of .82 for both males (n=80) and females (n=97). These authors maintained that these reliability estimates compare favorably with those of the EFT.

According to Witkin et al. (1971), validity was assessed in several ways. The first measure for evaluating GEFT validity was by using the "parent" form of the test, namely, the EFT as the most direct criterion measure. There was a significant correlation between the GEFT and the EFT, according to the results.

Another measure for evaluating GEFT validity was the Rod and Frame Test (RFT), which is itself a criterion measure of field dependence and field independence. In addition, the authors indicated that the GEFT could be evaluated in terms of its relationship to another measure of psychological differentiation, the degree of articulation of the body concept, which is assessed by means of a scale (ABC) applied to human figure drawings. The correlations between GEFT and ABC are substantial, particularly for male subjects, and are generally comparable with those that have been reported for the EFT, according to the manual.
Facism (F) Scale: Facism (F) scale, Form 40/45, was used to assess authoritarianism. As stated by Adorno et al. (1950), the F scale was developed with the intention that it would yield a valid estimate of anti-democratic personality tendencies. For this reason, the F scale is conceived of as a measure of personality, not attitudes. Goldstein and Blackman (1978) stated that the development of the F scale centered around interest in an instrument suitable for group administration that would measure prejudice without appearing to have this measurement as its aim. This instrument was so called to signify its concern with implicit pre-fascist tendencies.

The original F scale was Form 78, which contained 38 items. The final version (Form 40/45) contained 30 items, and the items were grouped according to the variables to which they pertain.

The F scale is a Likert type instrument requiring a response to each item along a three-point scale. The directions and the scoring of the items are provided in the manual. As explained in the manual by Adorno et al. (1950), the left column is used for the presumably high and the right column for the presumably low variant. The third rating, "Neutral", comprised two distinct possibilities: (1) the existing evidence was too colorless or self-contradictory with the category in question to warrant assignment
to either the "High" or the "Low" alternative; (2) there was no evidence at all pertinent to this category. Adorno et al. reported that, in some protocols, possibilities (1) and (2) were scored separately. A tabulation of interview rating by single categories was obtained by counting the instances of High (H), of Low (L), and of Neutral (N) ratings on a given category, among subjects of each group (i.e. high-scoring men, low-scoring men, high-scoring women, low-scoring women). The high and the low scorers were designated prejudiced persons (i.e. authoritarians) and un-prejudiced persons (i.e. non-authoritarians), respectively.

The sample was based on all fourteen groups of the people taking Forms 40 and 45. These included George Washington University women, California Service Club men, middle-class men, middle-class women, working-class men, working-class women, Los Angeles men, Los Angeles women (Form 40); Testing Class women, San Quentin men prisoners, psychiatric clinic women, psychiatric clinic men (Form 45); Employment Service men veterans, Maritime School men (Forms 40 and 45). The total number of subjects was one thousand, five hundred and eighteen (N=1, 518). Adorno et al. indicated that the emphasis was upon obtaining different kinds of subjects enough to insure wide variability of opinion and attitude and adequate coverage of the factors supposed to influence ideology. The overall mean was 3.90 with a standard deviation of .90.
Adorno et al. (1950) reported a mean split-half reliability for an F scale of .90. Subsequent research studies have reported reliability estimates which vary from one sample to another, and usually lower than the original .90 reported by Adorno et al. For example, Christie and Cook (1958) reported to have found the reliability estimates to be lower than .90. Goldstein and Blackman (1978) suggested that a possible reason might be that since abbreviated versions of the F scale were used in many studies, lower reliabilities were to be expected on psychometric bases alone. On the other hand, Cohn (1953, 1956) suggested that the F scale measures authoritarianism by virtue of acquiescence rather than consent. He found a significant correlation of .41 between scores on the F scale and scores on an MMPI derived measure of acquiescence for a sample of fifty-nine undergraduates.

Adorno et al. reported that the F scale was a valid measurement of anti-Semitism and ethnocentrism by assessing underlying personality traits. The authors reported correlations of about 175 between the ethnocentrism (E) and F scales. As indicated by Goldstein and Blackman, Adorno et al. noted that the correlations between scores on the F scale and generalized ethnocentrism items of the E scale were higher than those between scores on the F scale and anti-Semitism (A-S) items of the E scale. However, Adorno et al. pointed
out that the F scale was not designed to correlate perfectly with the A-S and E scales, that since the F scale provided what is essentially a personality measure, whereas A-S and E scales provided what are essentially attitude measures, therefore, that the measurement was valid.

The Rokeach Dogmatism (D) scale: As a measure of dogmatism the Rokeach Dogmatism (D) scale, Form E, was used for the assessment. The D scale contains forty items and like the F scale, is a Likert type of instrument requiring a response to each item along a six-point scale from "I agree very much" to "I disagree very much." For each item, agreement is scored as closed-minded (dogmatic) and disagreement as open-minded (non-dogmatic). The directions of the administration and the details of scoring are provided in the manual. Rokeach (1960) provides a copy of the scales.

The subjects of the study were one hundred and four (N=104) "religious-minded" persons enrolled in a denominational college. Students whose dogmatism scores were in the upper quartile were labeled "open," those in the lower quartile were labeled "closed," and the remaining half of the subjects were placed in a "middle" group. Alter and White (1966) reported the means and standard deviations of D scale scores for thirty-seven samples of various population. The results showed that women scored consistently lower than men. Anderson (1962)
showed no sex difference as a result of his study. Alter and White suggested that the wide range in the means could be counted for as a result of subcultural differences in dogmatism.

The Rokeach D scale appears to be a reliable instrument for the measurement of dogmatism. Reliability coefficients for Form E of the D scale for ten samples were reported by Rokeach (1960). Two of them based on test-retest data yielded reliability estimates of .71 and .84. The remaining eight samples, the reliability estimate for internal consistencies, ranged from .68 to .93. The average correlation was found to be .79. Zagona and Zurucher, Jr. (1965) reviewed the data on the reliability and validity of Rokeach's D scale. The two authors compared the test-retest reliability coefficients for the scales they obtained with those cited by Rokeach. Reliability was shown to be about the same for high dogmatics as well as for low dogmatics.

The major aim for the construction of the D scale was to provide an instrument that would be sensitive to authoritarianism of the left as well as authoritarianism of the right. Wrightsman (1972) noted that there were two ways of confirming these claims. One was through analyzing the statistical relationships between the F and the D scales; and the other was through comparing the responses of members of various political parties. He reported that two statistical studies (i.e.
Kerlinger and Rokeach, 1966; and Barker, 1963) had demonstrated that the F and the D scales were not completely overlapping in their measurements. Moreover, Wrightsman felt that the D scale was quite possibly not as free of ideological content as Rokeach had hoped. Some of its limitations are similar to those found in the F scale. For example, all its items are scored in such a way that agreement with the items is indicative of dogmatism. Peabody (1961, 1966) noted that a possible explanation of the results could be the presence of an acquiescent response set. However, according to Robinson and Shaver, Rokeach showed that dogmatism correlates positively with both right and left opinionation, but negligibly or negatively correlates with each other. The overall results indicate that the author's scale (i.e. Dogmatism Scale) has accomplished the purpose for which it was constructed. Moreover, Vacchiano et al. (1969) found so many substantive differences between persons scoring high and low on the scale which led to a conclusion that the D scale is a generally reliable and valid instrument. The test is self-administered and an estimated twenty minutes is needed to complete form E.

Procedures Used in Cross-Validating the F and the D Scales: Cross-Validation for the scale was accomplished by administering Budner (1962) Intolerance of Ambiguity Scale. This scale was chosen because it is different in form and is designed to measure the same variable (i.e. authoritarianism).
Moreover, it was constructed independently of the original F scale.

Two items, eight and nine, from the Intolerance of Ambiguity Scale were omitted because they appeared to be culturally biased. The remaining fourteen items were randomly selected and arranged in order to avoid any possible response set.

According to Robinson and Shaver (1969), the Intolerance of Ambiguity Scale consisted of an initial pool of thirty-three items, conforming to the three types of ambiguous situations (i.e. novelty, complexity, and insolubility) and four kinds of threat responses (i.e. repression and denial, anxiety and discomfort, destructive behavior and avoidance behavior) were administered in three pre-tests. Items yielding a Pearson r of .35 or higher were included in the final scale. Ten positively worded and eight negatively worded items met the criterion; two of the positives were discarded to yield a balanced 16-item scale. As stated in the instruction booklet, scoring is accomplished by assigning seven to strong agreement, one to strong disagreement, and so on, then adding across all items.

The sample for this instrument included the following groups of people for the pretest:

1. Two introductory sociology classes (combined) in the adult education division of a private university
in New York City (N=35).

2. An evening session class in graduate business administration at a university in New York City (N=37).

3. Two elective classes in education (combined) at one of the municipal colleges in New York City (N=45).

The sample for further study included the following:

4. An introductory psychology class, all freshmen, at a college in the New York suburbs (N=50).

5. An evening introductory psychology class in the same school (N=57).

6. Two elective sociology classes (combined) at a private women's college in New York City (N=41).

7. Two classes of engineering students (combined) in a required social studies course at a municipal college in New York City (N=58).

8. Two advanced classes in sociology (combined) at a private college in New York City (N=33).

9. A group of first-year student nurses at a local hospital in New York City (N=34).

10. Two classes in a special English course (combined) at one of the elite high schools in New York City (N=62).

11. The first-year class at an eastern medical school (N=79.)
12. The second-year class at the same school (N=75).
13. The third-year class at the same school (N=75).
14. The first-year class at a midwestern medical school (N=83).
15. The second-year class at the same school (N=80).
16. The third-year class at the same school (N=86).

According to Robinson and Shaver, the reliability of this scale in a test-retest study was found to be .85. The instrument is said to have acceptable reliability measure.

It was further stated by Robinson and Shaver that a measure of acquiescence or "agreement response set" did not yield significant correlations with Budner's Scale, nor did Edward's Scale of Social Desirability. It was also reported that from sample seven, as given on page 74, scores on three other tolerance of ambiguity scales were obtained: Coulter Scale (Eysenck 1954), Walk Scale (O'Connor 1952), Princeton Scale (Saunders 1955). All three scales were correlated.

The validity of Budner's Scale was also supported by other studies involving interjudge agreement on ratings of respondents' intolerance of ambiguity. In addition, Budner's Ambiguity Scale was found to be correlated with a number of variables used in a long series of correlational studies among which is dogmatism about one's religious beliefs. This scale is self-administered and takes between ten to fifteen minutes to complete.
The D Scale was validated by administering the Eysenck and Wilson (1975) Dogmatism Scale. This scale was constructed independently of the D Scale and it measures the same variable as the D Scale (i.e. dogmatism).

Acquiescence response tendencies for the Eysenck and Wilson Dogmatism Scale were controlled by choosing an equal number of items of positive and negative answers. Twelve items will therefore be used (i.e. six positives and six negatives).

The Dogmatism Scale is the sixth scale in the Eysenck and Wilson (1975) toughmindedness cluster of traits. The toughmindedness-tendermindedness scales are grouped under one of the three major typologies of temperament. The other two are extroversion-introversion and emotional instability-adjustment. Among the characteristics included in the tough-mindedness-tendermindedness scales are aggressiveness, assertiveness, achievement orientation, manipulation, sensation-seeking, dogmatism and masculinity-femininity. They are used for measuring different personality variables.

The Dogmatism Scale contains thirty items requiring "yes" or "no" answers. The direction for administration is supplied as well as the scoring and the interpretation of the results. High scorers have set uncompromising views on most matters, and they are likely to defend them vigorously and
vociferously. Low scores are less rigid and less likely to see things in black and white: they are open to rational persuasion and very tolerant of uncertainty. In general, the test is self-explanatory and the scoring is simple.

The sample was taken from the reactions to the questions of many different people of varying standards of education and intelligence after giving them a considerable amount of pre-testing, and a final list was made and administered to large groups of people. Eysenck and Wilson cited evidence that the questionnaire is theoretically related to the concept of extraversion-intraversion, and thus gives some confidence to the question of validity. The scale takes about five minutes to complete.

Design and Statistical Analyses

The data collected in this study were analyzed using multivariate analysis of variance (MANOVA). These statistical techniques (a combination of analysis of variance and the multiple regression analysis) were chosen because the study involves many complex variables. MANOVA does not only consider all the variables simultaneously, but it also can ascertain how each variable contributes to the overall relationship. This technique, according to Timm (1975), deals with procedures for summarizing, representing, and analyzing multiple quantitative measurements obtained on a number of individuals.
Specifically, factorial analyses of variance (i.e. two-way and three-way analyses of variance) were used to analyze the independent and interactive effects of the independent variables on dependent variables. Moreover, factorial analysis of variance was used for precision purposes as well as to control for unmanipulated variables.

Multiple regression analyses were utilized to study the effects and magnitudes of the independent variables on the dependent variables. The technique was applicable to the present study since the independent variables were measured on at least an interval scale. In addition to these multivariate techniques, Pearson Correlation Coefficients were calculated to determine what relationships existed between the variables studied.

The overall analytic design utilized to test the seven major hypotheses was as follows:

<table>
<thead>
<tr>
<th>Sub-Group</th>
<th>Sex</th>
<th>Major</th>
<th>Level of Experience</th>
<th>COGNITIVE STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Field</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dependence</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Independence</td>
</tr>
<tr>
<td>Americans</td>
<td>M</td>
<td></td>
<td></td>
<td>Auth.</td>
</tr>
<tr>
<td>(N=50)</td>
<td></td>
<td></td>
<td></td>
<td>Non-Auth.</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td>Auth.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Non-Auth.</td>
</tr>
<tr>
<td>Foreigners</td>
<td>M</td>
<td></td>
<td></td>
<td>Auth.</td>
</tr>
<tr>
<td>(N=50)</td>
<td></td>
<td></td>
<td></td>
<td>Non-Auth.</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
<td>Auth.</td>
</tr>
</tbody>
</table>
The dependent variables were cognitive style (i.e. field dependent and field independent), and selected personality variables (i.e. authoritarianism and dogmatism). The independent variables included sex, country, academic major, age, size of place of residence, parental education, and parental occupation.

Though it was hypothesized that there would be no significant difference in patterns of cognitive style between the two sub-groups (i.e. the American and Third World foreign students) as a function of exposure to different environmental experiences, it was, however, anticipated that there would be more field independent subjects from the individuals and groups coming from technological and cognitively sophisticated backgrounds (i.e. from the Western countries). Whether an individual is field dependent or field independent would therefore be a function of cultural and environmental experiences.

It was expected that dogmatism would decrease with the level of experience (i.e. the level of educational attainment, age, and size of place of residence). In addition, it was anticipated that authoritarianism would be related to dogmatism; the more authoritarian a person was, the more dogmatic; the less authoritarian, the less dogmatic. Finally, it was anticipated that both authoritarianism and dogmatism would be related to one's cognitive style. An individual who is authoritarian and dogmatic would be more field dependent than one who is not authoritarian and dogmatic.
CHAPTER IV

RESULTS

In the present investigation, the dependent variables were scores on the Group Embedded Figures Test, Facism (F) Scale, and Dogmatism (D) Scale, while the independent or the experimental variables were sex, country, academic major, size of place of residence, education, child-rearing practices, and parental occupation. These variables were systematically described in Chapter Three. Chapter Four presents the detailed statistical results (i.e. factorial analysis of variance, regression analysis, and correlational analysis) for each hypothesis.

Factorial Analyses of Variance

The first analysis performed was a three-way factorial analysis of variance using sex, country, and academic major as the independent variables and scores on the Group Embedded Figures Test (GEFT) as the dependent variable. The results were as follows:

Results obtained for the three-way factorial analysis of variance for the Group Embedded Figures Test: The results of the three-way factorial analysis of variance performed for the GEFT on patterns of cognitive style (see Tables 1
and 2), indicated a significant difference in patterns of cognitive style between the American and Third World foreign students ($F=21.23; P < .001$). American students were more field independent ($X=10.34$) than Third World foreign students ($X=5.44$). Therefore, null hypothesis one (there will be no significant difference in patterns of cognitive style between American and Third World foreign students) was rejected.

No difference between the sexes ($F=0.81; \text{N.S.}$) was found in patterns of cognitive style. The results indicated that there did not exist significant differences between males and females in the combined sample in patterns of cognitive style. Null hypothesis two (there will be no significant difference in cognitive style between males and females) was therefore not rejected.

A significant effect ($F=6.93; P < .010$) was obtained for the results of the three-way analysis of variance on academic major for the combined sample. These results indicated that a significant difference did exist between art and science majors for the combined sample. Science majors were more field independent ($X=9.90$) than art majors ($X=6.61$). Therefore, null hypothesis three (there will be no significant difference in cognitive style between art and science majors) was rejected.
In addition, in the three-way factorial analysis of variance conducted with sex, country, and academic major as the independent variables using the GEFT as the dependent variables, none of the two-way and the three-way interactions was significant. Table one presents the factorial analysis of variance for the GEFT by sex, country, and academic major. Table two presents the means and the standard deviations for the GEFT by sex, country, and academic major for the two subgroups.

Results obtained for the three-way factorial analyses of variance for Facism (F) Scale and Rokeach (D) Scale: In order to determine if there exists a significant difference between the American and Third World foreign students in authoritarianism and in dogmatism, a three-way factorial analysis of variance was run separately using scores on the Facism (F) Scale (measuring authoritarianism), and scores on the Rokeach Dogmatism (D) Scale (measuring dogmatism) as the dependent variables, and sex, country, and academic major as the independent variables. The results indicated that there existed a significant difference on the F Scale between the American and Third World foreign students (F=34.70; P < .001). The Third World foreign students tended to be more authoritarian (X=133.36) than the American students (X=105.72). No other effects were found to be significant in this analysis. Table three summarizes the statistical
Table 1

Factorial Analysis of Variance Using the Group Embedded Figures Test as the Dependent Variable and Sex, Country, and Academic Major as the Independent Variables (Hypotheses One, Two and Three)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>20.46</td>
<td>1</td>
<td>20.46</td>
<td>.81</td>
</tr>
<tr>
<td>Country</td>
<td>536.62</td>
<td>1</td>
<td>536.62</td>
<td>21.23***</td>
</tr>
<tr>
<td>Major</td>
<td>175.12</td>
<td>1</td>
<td>175.12</td>
<td>6.93**</td>
</tr>
<tr>
<td><strong>Two-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex by Country</td>
<td>53.23</td>
<td>1</td>
<td>53.23</td>
<td>2.11</td>
</tr>
<tr>
<td>Sex by Major</td>
<td>13.50</td>
<td>1</td>
<td>13.50</td>
<td>.54</td>
</tr>
<tr>
<td>Country by Major</td>
<td>27.81</td>
<td>1</td>
<td>27.81</td>
<td>.10</td>
</tr>
<tr>
<td><strong>Three-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex by Country by Major</td>
<td>35.97</td>
<td>1</td>
<td>35.97</td>
<td>1.42</td>
</tr>
<tr>
<td>Residual</td>
<td>2325.10</td>
<td>92</td>
<td>25.27</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>3249.78</td>
<td>99</td>
<td>32.83</td>
<td></td>
</tr>
</tbody>
</table>

** p < .010
*** p < .001
Table 2

Comparison of the Mean Scores for Group Embedded Figures Test for Sex, Country, and Academic Major (Hypotheses One, Two, and Three)

<table>
<thead>
<tr>
<th>Academic Major</th>
<th>Americans</th>
<th></th>
<th></th>
<th>Foreigners</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>Art Majors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X=</td>
<td>10.54</td>
<td>8.60</td>
<td>9.50</td>
<td>4.59</td>
<td>3.69</td>
<td>4.15</td>
</tr>
<tr>
<td>SD=</td>
<td>5.90</td>
<td>4.91</td>
<td>5.38</td>
<td>4.86</td>
<td>4.22</td>
<td>4.51</td>
</tr>
<tr>
<td>N=</td>
<td>13</td>
<td>15</td>
<td>28</td>
<td>17</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Science Majors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X=</td>
<td>12.67</td>
<td>9.90</td>
<td>11.41</td>
<td>6.60</td>
<td>9.86</td>
<td>7.94</td>
</tr>
<tr>
<td>SD=</td>
<td>4.44</td>
<td>5.69</td>
<td>5.11</td>
<td>5.93</td>
<td>4.10</td>
<td>5.37</td>
</tr>
<tr>
<td>N=</td>
<td>12</td>
<td>10</td>
<td>22</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X=</td>
<td>11.56</td>
<td>9.12</td>
<td>10.34</td>
<td>5.33</td>
<td>5.57</td>
<td>5.44</td>
</tr>
<tr>
<td>SD=</td>
<td>5.25</td>
<td>5.16</td>
<td>5.30</td>
<td>5.26</td>
<td>5.02</td>
<td>5.10</td>
</tr>
<tr>
<td>N=</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>27</td>
<td>23</td>
<td>50</td>
</tr>
</tbody>
</table>
Table 3

Factorial Analysis of Variance Using the Facism (F) Scale as the Dependent Variable and Sex, Country, and Academic Major as the Independent Variables (Hypothesis Seven)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>1231.82</td>
<td>1</td>
<td>1231.82</td>
<td>2.27</td>
</tr>
<tr>
<td>Country</td>
<td>18814.05</td>
<td>1</td>
<td>18814.05</td>
<td>34.70***</td>
</tr>
<tr>
<td>Major</td>
<td>148.08</td>
<td>1</td>
<td>148.08</td>
<td>.27</td>
</tr>
<tr>
<td><strong>Two-Way Interaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex by Country</td>
<td>.06</td>
<td>1</td>
<td>.06</td>
<td>.00</td>
</tr>
<tr>
<td>Sex by Major</td>
<td>29.28</td>
<td>1</td>
<td>29.28</td>
<td>.05</td>
</tr>
<tr>
<td>Country by Major</td>
<td>46.98</td>
<td>1</td>
<td>46.98</td>
<td>.08</td>
</tr>
<tr>
<td><strong>Three-Way Interaction</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex by Country by Major</td>
<td>597.60</td>
<td>1</td>
<td>597.60</td>
<td>1.10</td>
</tr>
<tr>
<td>Residual</td>
<td>49884.87</td>
<td>92</td>
<td>542.23</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>71108.31</td>
<td>99</td>
<td>718.27</td>
<td></td>
</tr>
</tbody>
</table>

*** p < .001
analysis for the results obtained for the three-way factorial analysis of variance using the Facism (F) Scale as a dependent variable. Table four summarizes the means and the standard deviations for the Facism (F) Scale by sex, country, and academic major for the two sub-groups.

The results of a three-way analysis of variance with the Rokeach Dogmatism (D) Scale as a dependent variable, and sex, country, and academic major as the independent variables indicated that a significant difference in dogmatism (F=25.69; P <.001) was found between the American and Third World foreign students. The Third World foreign students were more dogmatic (X=168.46) than the American sub-group (X=140.50). However, the effects on sex differences, and on academic major were not significant. Combining this result with that of the previous analysis (i.e. results obtained for the three-way factorial analyses of variance for Facism Scale), null hypothesis seven (there will be no significant differences in authoritarianism and in dogmatism between American and Third World foreign students) was therefore rejected. None of the two-way interactions was found to be significant, but there was a significant three-way interaction (F=4.70; P <.05). This appears to be due to the fact that among Third World foreign students female art majors and male science majors were more dogmatic than male art majors and female science majors. Among the American students the reverse pattern held true.
Table 4

Comparison of the Mean Scores for the Facism (F) Scale as the Dependent Variable and Sex, Country, and Academic Major as Independent Variables (Hypothesis Seven)

<table>
<thead>
<tr>
<th>Academic Major</th>
<th>Americans</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
<td>Males</td>
<td>Females</td>
<td>Total</td>
</tr>
<tr>
<td>Art Majors</td>
<td>X= 109.38</td>
<td>98.93</td>
<td>103.79</td>
<td>134.06</td>
<td>131.50</td>
<td>132.82</td>
</tr>
<tr>
<td></td>
<td>SD= 20.58</td>
<td>21.55</td>
<td>21.38</td>
<td>20.01</td>
<td>30.74</td>
<td>25.40</td>
</tr>
<tr>
<td></td>
<td>N= 13</td>
<td>15</td>
<td>28</td>
<td>17</td>
<td>16</td>
<td>33</td>
</tr>
<tr>
<td>Science Majors</td>
<td>X= 109.58</td>
<td>106.50</td>
<td>108.18</td>
<td>140.80</td>
<td>125.29</td>
<td>134.41</td>
</tr>
<tr>
<td></td>
<td>SD= 17.26</td>
<td>22.14</td>
<td>19.20</td>
<td>19.11</td>
<td>33.50</td>
<td>25.23</td>
</tr>
<tr>
<td></td>
<td>N= 12</td>
<td>10</td>
<td>22</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>X= 109.48</td>
<td>101.96</td>
<td>105.72</td>
<td>136.56</td>
<td>129.61</td>
<td>133.36</td>
</tr>
<tr>
<td></td>
<td>SD= 18.66</td>
<td>21.65</td>
<td>20.36</td>
<td>19.59</td>
<td>30.98</td>
<td>25.43</td>
</tr>
<tr>
<td></td>
<td>N= 25</td>
<td>25</td>
<td>50</td>
<td>27</td>
<td>23</td>
<td>50</td>
</tr>
</tbody>
</table>
Table five presents the results of the factorial analysis of variance using the Rokeach Dogmatism (D) Scale as the dependent variable and sex, country, and academic major as the independent variables.

Table six presents a comparison of the means and the standard deviations for the Rokeach Dogmatism (D) Scale by sex, country, and academic major, and Figure one represents the results of the three-way interaction.

Correlation and Regression Analyses

Results for the level of experience variables on the Rokeach Dogmatism (D) Scale: Multiple regression analyses were run using the three levels of experience variables (i.e. age, size of place of residence, and education) as the independent variables and the scores of Rokeach Dogmatism (D) Scale as the criterion variable for both the combined sample and each sub-group (i.e. American and Third World foreign students) separately. There was no significant relation between dogmatism and level of experience as measured by education, age, and size of place of residence for the combined sample (R=.11; F=.36; N.S.). However, for the American subsample, a significant relationship between the level of experience and dogmatism was found (R=.40; F=2.92; P <.05). This relationship was due mostly to age, with the younger subjects exhibiting a higher degree of dogmatism than the older ones.
Table 5

Factorial Analysis of Variance Using Rokeach Dogmatism (D) Scale as the Dependent Variable and Sex, Country, and Academic Major as the Independent Variables (Hypothesis 7)

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Effects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>235.12</td>
<td>1</td>
<td>235.12</td>
<td>.32</td>
</tr>
<tr>
<td>Country</td>
<td>18623.93</td>
<td>1</td>
<td>18623.93</td>
<td>25.69***</td>
</tr>
<tr>
<td>Major</td>
<td>315.52</td>
<td>1</td>
<td>315.52</td>
<td>.44</td>
</tr>
<tr>
<td><strong>Two-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex by Country</td>
<td>52.44</td>
<td>1</td>
<td>52.44</td>
<td>.07</td>
</tr>
<tr>
<td>Sex by Major</td>
<td>273.42</td>
<td>1</td>
<td>273.41</td>
<td>.38</td>
</tr>
<tr>
<td>Country by Major</td>
<td>1045.16</td>
<td>1</td>
<td>1045.16</td>
<td>1.44</td>
</tr>
<tr>
<td><strong>Three-Way Interactions</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex by Country by Major</td>
<td>3409.29</td>
<td>1</td>
<td>3409.29</td>
<td>4.70*</td>
</tr>
<tr>
<td>Residual</td>
<td>66705.88</td>
<td>92</td>
<td>725.06</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>91568.13</td>
<td>99</td>
<td>924.93</td>
<td></td>
</tr>
</tbody>
</table>

*** p \( < .001 \)
* p \( < .05 \)
Table 6

Comparison of the Mean Scores for the Rokeach Dogmatism (D) Scale as the Dependent Variable and Sex, Country, and Academic Major as the Independent Variables (Hypothesis Seven)

<table>
<thead>
<tr>
<th>Academic Major</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art Majors</td>
<td>X= 145.62</td>
<td>133.67</td>
<td>139.21</td>
<td>167.35</td>
<td>176.94</td>
<td>172.00</td>
</tr>
<tr>
<td></td>
<td>SD= 18.24</td>
<td>26.96</td>
<td>23.69</td>
<td>30.25</td>
<td>29.51</td>
<td>29.83</td>
</tr>
<tr>
<td></td>
<td>N= 13</td>
<td>15</td>
<td>28</td>
<td>17</td>
<td>16</td>
<td>33</td>
</tr>
<tr>
<td>Science Majors</td>
<td>X= 140.25</td>
<td>144.40</td>
<td>142.14</td>
<td>171.00</td>
<td>148.14</td>
<td>161.59</td>
</tr>
<tr>
<td></td>
<td>SD= 11.58</td>
<td>20.81</td>
<td>16.13</td>
<td>22.13</td>
<td>50.10</td>
<td>36.75</td>
</tr>
<tr>
<td></td>
<td>N= 12</td>
<td>10</td>
<td>22</td>
<td>10</td>
<td>7</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>X= 143.04</td>
<td>137.96</td>
<td>140.50</td>
<td>168.70</td>
<td>168.17</td>
<td>168.46</td>
</tr>
<tr>
<td></td>
<td>SD= 15.34</td>
<td>24.80</td>
<td>20.57</td>
<td>27.13</td>
<td>38.23</td>
<td>32.36</td>
</tr>
<tr>
<td></td>
<td>N= 25</td>
<td>25</td>
<td>50</td>
<td>27</td>
<td>23</td>
<td>50</td>
</tr>
</tbody>
</table>
Figure 1

Interactions Table for Performance on the Rokeach Dogmatism (D) Scale Showing Sex by Country by Academic Major
(r=-.35). No significant relationship was found for the Third World foreign sub-group. Thus, null hypothesis four (there will be no significant relationship between dogmatism and level of experience as measured by education, age, and size of place of residence) was rejected for the combined sample but not for the American sub-group. Tables seven, eight, and nine present the statistical summaries related to hypothesis four.

Results for dogmatism and authoritarianism on scores of GEFT: Multiple regression analyses were run using scores of dogmatism and authoritarianism as the independent variables and the scores of GEFT as the criterion variable for each of the sub-groups. The results indicated that there was no significant multivariate relationship between dogmatism, authoritarianism, and cognitive style for either the American sub-sample (R=.15; F=.55; N.S.), or the Third World foreign sub-sample (R=.27; F=1.90; N.S.).

When the same analyses were conducted for the combined sample, a significant relationship was found (R=.37; F=7.76; P <.01). However, when country and academic major were controlled for, the effects disappeared. Thus, null hypothesis six (there will be no significant relationship between cognitive style, authoritarianism, and dogmatism) was therefore not rejected. Tables ten, eleven, and twelve present the summaries of the statistical results related to hypothesis six.
Table 7

Stepwise Multiple Regression Analysis
Using Age, Education, and Size of Place of Residence as the Independent Variables
and Rokeach (D) Scale as a Dependent Variable
(Hypothesis Four, Combined Sample)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Simple r</th>
<th>Beta</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.10</td>
<td>.09</td>
<td>.55</td>
</tr>
<tr>
<td>Education</td>
<td>-.05</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Size of place of residence</td>
<td>-.06</td>
<td>-.03</td>
<td>.10</td>
</tr>
</tbody>
</table>

R = .11
F = .36 (N.S.)
Table 8

Stepwise Multiple Regression Analysis
Using Age, Education, and Size of Place of Residence
as the Independent Variables and
Rokeach (D) Scale as a Dependent Variable
(Hypothesis Four, American Sub-Group)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Simple r</th>
<th>Beta</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.35</td>
<td>-.35</td>
<td>5.32*</td>
</tr>
<tr>
<td>Education</td>
<td>.23</td>
<td>.11</td>
<td>1.48</td>
</tr>
<tr>
<td>Size of place of residence</td>
<td>-.06</td>
<td>-.17</td>
<td>.49</td>
</tr>
</tbody>
</table>

R = .40

F = 2.92*

*p < .05
Table 9

Stepwise Multiple Regression Analysis
Using Age, Education, and Size of Place of Residence
as the Independent Variables and
Rokeach (D) Scale as a Dependent Variable
(Hypothesis Four, Third World Sub-Group)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Simple r</th>
<th>Beta</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>-.02</td>
<td>.05</td>
<td>.09</td>
</tr>
<tr>
<td>Education</td>
<td>.13</td>
<td>.13</td>
<td>.70</td>
</tr>
<tr>
<td>Size of place of residence</td>
<td>.07</td>
<td>.07</td>
<td>.17</td>
</tr>
</tbody>
</table>

R = .14
F = .31 (N.S.)
Table 10

Stepwise Multiple Regression Analysis Using the (F) Scale and the (D) Scale as the Independent Variables, and GEFT as the Independent Variable (Hypothesis Six, American Sub-Group)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Simple r</th>
<th>Beta</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritarianism</td>
<td>-.15</td>
<td>-.12</td>
<td>.41</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>-.12</td>
<td>-.05</td>
<td>.06</td>
</tr>
</tbody>
</table>

R = .15
F = .55 (N.S.)
Table 11

Stepwise Multiple Regression Analysis Using the (F) Scale and the (D) Scale as the Independent Variables, and GEFT as the Independent Variable
(Hypothesis Six, Third World Sub-Group)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Simple r</th>
<th>Beta</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritarianism</td>
<td>-.11</td>
<td>.09</td>
<td>.23</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>-.27</td>
<td>-.32</td>
<td>3.19</td>
</tr>
</tbody>
</table>

R = .27

F = 1.90 (N.S.)
Table 12

Stepwise Multiple Regression Analysis Using the (F) Scale and the (D) Scale as the Independent Variables, and GEFT as the Independent Variable (Hypothesis Six, Combined Group)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Simple $r$</th>
<th>Beta</th>
<th>$F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoritarianism</td>
<td>-.32</td>
<td>-.13</td>
<td>.97</td>
</tr>
<tr>
<td>Dogmatism</td>
<td>-.36</td>
<td>-.27</td>
<td>4.03*</td>
</tr>
</tbody>
</table>

$R = .37$

$F = 7.76$

$* P < .01$
Results of Pearson correlation coefficients between the Rokeach Dogmatism (D) Scale and the Facism (F) Scale: Pearson correlation coefficients between the Rokeach (D) Scale and the (F) Scale were computed for each sub-group separately in order to determine if a relationship existed between authoritarianism and dogmatism. A correlation of .62 (P < .01) was found for each of the sub-groups. Thus, null hypothesis five (there will be no significant relationship between authoritarianism and dogmatism) was rejected.

Ancillary Analyses

In order to investigate the relative effects of authoritarianism and acquiescence, the 14 items of the Budner Ambiguity Scale were broken up into two seven-item sub-scales according to whether the item was such that agreement indicated high authoritarianism (i.e. authoritarian acquiescence) or such that high agreement indicated low authoritarianism (i.e. anti-authoritarian acquiescence). The score on the Budner Ambiguity Scale is the difference of the two scales, but their sum can be used as a measure of acquiescence.

The two acquiescence subscales were not significantly correlated (r = .03; N.S.) for the American sub-sample, but were positively and significantly correlated for the foreign sample (r = .44; p < .01). Both the American and the Third World
foreign sub-samples tended to agree more with anti-authoritarian items than with authoritarian items, but a repeated measures t-test indicated a stronger effect for the American sub-sample \( (t=-7.44; P < .01) \).

A three-way analysis of variance, comparable to that conducted with the F scale, revealed a significant difference between American and Third World foreign students on authoritarian acquiescence \( (F=20.38; P < .001) \) but not on anti-authoritarian acquiescence \( (F=.67; \text{N.S.}) \). For the American sub-sample, authoritarian acquiescence correlated significantly with the F Scale \( (r=.43; P < .01) \), and the Rokeach Dogmatism Scale \( (r=.48; P < .01) \). The correlations of anti-authoritarian acquiescence with these two variables were \(-.25\) for the F Scale and \(-.02\) with the Rokeach Dogmatism scale.

For the Third World foreign sub-sample, both types of acquiescence correlated significantly and positively with the F Scale \( (r=.69; P < .01) \) for authoritarian acquiescence and \( (r=.32; P < .05) \) for anti-authoritarian acquiescence, and with the Rokeach Dogmatism Scale \( (r=.72; P < .01) \) and \( (r=.51; P < .01) \). Thus, it appears that acquiescence is an important factor in the higher scores on dogmatism and authoritarianism on the part of Third World foreign students.

Total acquiescence was the strongest correlate of field independence among the Third World foreign students \( (r=-.35; \)
P < .05), but was unrelated to field independence among American students (r = .12; N.S.). In other words, the more field dependent, the more acquiescence for the Third World foreign students.

A modified Eysenck and Wilson Dogmatism Scale was also used with a similar intention in mind. The scale correlated significantly with the Rokeach Dogmatism scale (r = .37; P < .01) for the American students and for the Third World foreign students (r = .43; P < .01). However, measures of acquiescence derived from this scale did not yield significant correlates and further analysis was not conducted.

In order to examine the relationship between the dependent variables (i.e. authoritarianism, dogmatism, and field dependence) and parental occupational and educational levels, simple correlations were calculated separately for the American and Third World foreign sub-samples. Only field dependence exhibited significant correlations with parental occupational level, and it did so consistently for both sub-groups and for all measures of occupational or educational level for either parent. Field independent students had parents with higher educational and occupational backgrounds for each sample (see table 13).

A t-test was also conducted to examine the effect of subjects' responses to family rigidity on authoritarianism
Table 13

Pearson Correlation Coefficients Using Authoritarianism, Dogmatism, and Field Dependence as the Dependent Variables, and Parental Education and Occupation (SES) as the Independent Variables (American and Third World Foreign Sub-Samples)

<table>
<thead>
<tr>
<th>Sub-Group</th>
<th>Dependent Variables</th>
<th>Father's Education</th>
<th>Mother's Education</th>
<th>Father's Occupation</th>
<th>Mother's Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Authoritarianism</td>
<td>-.12</td>
<td>-.04</td>
<td>.15</td>
<td>.30</td>
</tr>
<tr>
<td>American</td>
<td>Dogmatism</td>
<td>-.02</td>
<td>.06</td>
<td>.17</td>
<td>.22</td>
</tr>
<tr>
<td></td>
<td>Field Dependence</td>
<td>.42**</td>
<td>.35*</td>
<td>-.39**</td>
<td>-.32*</td>
</tr>
<tr>
<td></td>
<td>Authoritarianism</td>
<td>-.16</td>
<td>-.16</td>
<td>.21</td>
<td>.17</td>
</tr>
<tr>
<td>Third World</td>
<td>Dogmatism</td>
<td>-.10</td>
<td>-.15</td>
<td>.22</td>
<td>.14</td>
</tr>
<tr>
<td></td>
<td>Field Dependence</td>
<td>.34**</td>
<td>.39**</td>
<td>-.38**</td>
<td>-.42**</td>
</tr>
</tbody>
</table>

**P < .01
*P < .05
and dogmatism both for the American and Third World foreign sub-samples. The results indicated that there was no significant effect of family rigidity on authoritarianism for the American sub-sample \(t=1.84; \text{N.S.}\), and for the Third World foreign sub-sample \(t=.51; \text{N.S.}\). Furthermore, there was no significant effect of subjects' responses to family rigidity on dogmatism for the American sample \(t=.07; \text{N.S.}\), and for the Third World foreign students \(t=.72; \text{N.S.}\).

In order to further examine differences in authoritarianism, dogmatism, and field dependence, the American sub-group was broken down into White Americans and Black Americans. The Third World foreign sub-group was broken down into four groups: Far Eastern, Indian, Middle Eastern, and West African. A one-way analysis of variance was conducted for each dependent variable and Duncan's New Multiple Range test was used to examine group differences.

Results for the F Scale indicated significant differences between the six sub-groups \(F=9.65; P < .001\) and Duncan's procedure showed that the two American sub-groups and the Far Eastern sub-group were significantly less authoritarian than the other three Third World foreign sub-groups.

The analysis for dogmatism also indicated significant differences \(F=5.50; P < .001\), and Duncan's procedure indicated that the two American sub-groups were significantly less
dogmatic than the Middle Eastern, West African, and Indian sub-groups. The Far Eastern sub-group fell between the Americans and the other Third World foreign sub-groups.

Results for field dependence, in addition, indicated significant differences ($F=13.52; P < .001$). Duncan's procedure indicated that the White American sub-group was significantly more field independent than all the other sub-groups except the Indian sub-group. At the other extreme, the Middle Eastern and the West African sub-groups were more field dependent than the other four sub-groups.

Summary of Results

Hypothesis one, which stated that there would be no significant difference in patterns of cognitive style between American and Third World foreign students was rejected. The statistical analysis of data indicated that there did exist a significant difference in patterns of cognitive style between these two sub-groups. The American sub-group was more field independent than Third World foreign students.

Hypothesis two, which stated that there would be no significant difference in cognitive style between males and females, was not rejected. The statistical analysis of data indicated that males and females did not exhibit any significant differences in patterns of cognitive style for both the American and Third World foreign students.
Hypothesis three, which stated that there would be no significant differences in cognitive style between art and science majors, was also rejected. The statistical analysis of data indicated that the science majors from each sub-group were more field independent than their art major counterparts.

Hypothesis four, which stated that there would be no significant relationship between dogmatism and level of experience as measured by education, age, and size of place of residence, was only partially rejected. The statistical analysis of data showed that there was no significant relationship between dogmatism and level of experience as measured by age, education, and size of place of residence for the combined sample. However, it was indicated by the analysis that dogmatism and level of experience were related for the American sub-sample. The relationship was due mostly to age. The younger subjects exhibited a higher degree of dogmatism than the older ones. No significant relationship was found for the Third World foreign sub-sample.

Hypothesis five, which stated that there would be no significant relationship between authoritarianism and dogmatism, was also rejected. The statistical analysis indicated that authoritarianism and dogmatism were significantly related. Furthermore, the analysis indicated that among the Third World foreign sub-sample, female art majors and male science majors were more dogmatic than male art majors and female
science majors. The reverse pattern held true among the American sub-sample.

Hypothesis six, which stated that there would be no significant relationship between cognitive style, authoritarianism, and dogmatism, was not rejected. The statistical analysis indicated that cognitive style, authoritarianism, and dogmatism were not significantly related for either the American sub-sample or the Third World foreign sub-sample. However, a significant relationship was found for the combined sample (i.e. the American and Third World foreign sub-samples), but when country and academic major were controlled for, the effects disappeared.

Hypothesis seven, which stated that there would be no significant differences in authoritarianism and dogmatism between American and Third World foreign students, was also rejected. The statistical analysis indicated that a significant difference existed between the American and Third World foreign students in both authoritarianism and dogmatism. The Third World foreign students were more authoritarian and dogmatic than their American counterparts.

The results of the ancillary analyses indicated that the two acquiescence subscales were not significantly correlated for the American sub-sample, but were positively and significantly correlated for the Third World foreign
sub-sample. In addition, for the American sub-sample, the authoritarian acquiescence subscale correlated significantly with the F Scale and the Rokeach Dogmatism Scale. For the Third World foreign students, both types of acquiescence (i.e. authoritarian acquiescence and anti-authoritarian acquiescence) correlated significantly and positively with the F Scale. Thus, acquiescence appears to be an important factor in high scores on authoritarianism and dogmatism on the part of the Third World foreign students. Moreover, total acquiescence was the strongest correlate of field independence among the Third World foreign students (i.e. the more field dependent, the more acquiescent for the Third World foreign sub-sample), but unrelated to field independence among American students.

There was no significant relationship found between the dependent variables (authoritarianism and dogmatism) and parental occupational and educational level. Only field dependence exhibited significant correlations with parental occupational level. Field independent students had parents with higher educational and occupational backgrounds for both the American sub-sample and the Third World foreign sub-sample.

It was also indicated by the results that there was no significant effect of family rigidity on authoritarianism and dogmatism for both the American and Third World foreign students.
Furthermore, the results indicated significant differences between the six sub-groups (i.e. Black American, White American, Far Eastern, West African, Middle Eastern, and Indian). The two American sub-groups and the Far Eastern sub-group were significantly less authoritarian than the other three Third World foreign sub-groups.

The analysis for dogmatism indicated that the two American sub-groups were significantly less dogmatic than the Middle Eastern, West African, and Indian sub-groups. The Far Eastern sub-group fell between the Americans and the other Third World foreign sub-groups.

Moreover, the results indicated that the White American sub-group was significantly more field independent than all the other sub-groups except the Indian sub-group. At the other extreme, the Middle Eastern and West African sub-groups were more field dependent than the other four sub-groups.
Null hypothesis one, which stated that there would be no significant difference in cognitive style between the American and Third World foreign students, was rejected. Results indicated that there did exist a significant difference in patterns of cognitive style between the American and Third World foreign students. This result implies that the two sub-groups utilized different cognitive styles in responding to a similar problem-solving situation. The Third World foreign students were more perceptually field dependent than the American students (i.e. the Third World foreign sub-sample functioned more globally, were poorer at imposing structure upon experience, had more difficulties with differentiation and integrating abilities, and tended to be more social than the American sample). On the other hand, the American sub-group was more perceptually field independent, functioned with greater autonomy, were more articulate, and had greater skill in cognitive and structuring activities than the Third World foreign sub-group.

However, null hypothesis two, which stated that there would be no significant difference in cognitive style between males and females, was not rejected. This result indicated
that males and females from the two sub-groups did not exhibit differences in cognitive style. Thus, the hypothesis suggested by Witkin et al. (1962) that females were more socialized and less psychologically differentiated than males, and therefore more socially dependent, was not supported.

Null hypothesis three, which stated that there would be no significant differences in cognitive style between art and science majors, was also rejected. The results indicated that regardless of the sub-group, the science majors from each were more field independent than the art majors.

Null hypothesis four, which stated that there would be no significant relationship between dogmatism and level of experience as measured by education, age, and size of place of residence, was only partially rejected. No significant overall relationship was indicated for the combined sample. However, dogmatism and level of experience were related for the American sample. This relationship was due mostly to age (i.e. the younger subjects exhibited a higher degree of dogmatism than the older ones; level of education and size of place of residence did not affect the level of dogmatism).

Null hypothesis five, which stated that there would be no significant relationship between authoritarianism and dogmatism, was also rejected. There was an indication from the results that authoritarianism and dogmatism were
significantly related. This result implies that one who is authoritarian is also likely to be dogmatic and vice versa. In other words, one who is rigid, or one who has difficulties dealing with ambiguous situations, would also be likely to use conservative strategies in problem-solving tasks. In addition, a rigid person would be more concerned with rules and procedures, would perceive authority figures in a more realistic way, and would be likely to come from an authoritarian family. Furthermore, the results indicated that among the Third World foreign sub-sample, female art majors and male science majors were more dogmatic than male art majors and female science majors. The reverse pattern was true among the American students.

However, null hypothesis six, which stated that there would be no significant relationship between cognitive style, authoritarianism, and dogmatism, was not rejected. The data showed that cognitive style, authoritarianism, and dogmatism were not related for either the American sub-sample or the Third World sub-sample. This finding implies that field dependent and field independent cognitive styles had no relationship with authoritarianism and dogmatism. Apparently, cognitive style is not a determining factor for authoritarianism and dogmatism, nor do these two personality variables (i.e. authoritarianism and dogmatism) serve as determining factors for cognitive style.
Null hypothesis seven, which stated that there would be no significant differences in authoritarianism and dogmatism between the American and Third World foreign students, was also rejected. The results indicated that the Third World foreign sub-sample was more authoritarian and dogmatic than the American sub-sample. This result implies that the Third World foreign students were more concerned with rules and procedures and tended to perceive authority figures in a more realistic way than the American students. In addition, it was found that the Third World students were psychologically more rigid than the American students and were more likely to come from authoritarian families.

For the American sub-group, a negative relationship was found for the authoritarian acquiescence and the anti-authoritarian subscales. However, these two subscales were positively and significantly correlated for the Third World foreign sub-sample. This result implies that acquiescence was an important factor in high scores on authoritarianism and dogmatism only on the part of the Third World foreign students, but not the American sub-group.

Moreover, the results indicated that cognitive style was significantly related to parental occupational level. Field independent students had parents with higher occupational backgrounds for both the American sub-sample and the Third World foreign sub-sample.
There were, however, significant differences within the two sub-groups in authoritarianism, dogmatism, and cognitive style. The two American sub-groups and the Far Eastern sub-group were significantly less authoritarian and dogmatic than the other three Third World foreign sub-groups. Finally, the results indicated that the White American sub-group was significantly more field independent than all the other sub-groups except the Indian sub-group. At the other extreme, the Middle Eastern and West African sub-groups were more field dependent than the other four sub-groups.

Implications of the Hypotheses

It was pointed out earlier in this manuscript that cognitive styles leading to learning differences may be due not only to the differences in prior learning but also to physical functioning, different handicapping conditions, and numerous environmental influences. In the present investigation, the statistical analyses indicated that the American students were more field independent than the Third World foreign students. Therefore, evidence is provided which shows that both cultural and environmental factors have apparently affected the performance of the Third World foreign students on the test that was used to determine field dependence (i.e. the Group Embedded Figures Test). It is important to point out that this test is a perceptual ability test, which was
developed in an advanced, technological country. Dyk and Witkin (1965) state that, as the child interacts with his environment, he develops the ability to perceive a figure as discrete from its background, and that this provides the basis for organization of the field in addition to that indicated by structural properties. The ability to organize, structure, perceive perceptually, and educe are field independent characteristics. Since a significant difference was found between the two sub-groups (i.e. the American and the Third World foreign students), it could be implied that the Third World foreign students might not have mastered, to the same level as the American students, the skills necessary for high levels of field independent cognitive functioning.

In addition, differences in child-rearing practices in American and in the Third World countries used in this study might have contributed to the development of different cognitive styles. Okonji (1969) found that if the pattern of child-rearing was prolonged and was accompanied by close bodily contact between the child and the mother (as well as other members of the family) that this pattern of child-rearing was likely to promote the development of field dependent characteristics. And Witkin (1966, 1967) states that markedly limiting the child's activities because of fears and anxieties was conducive to the development of field dependence. The Third World foreign sub-sample apparently represents a field dependent culture.
It was also interesting to observe that science majors were more field independent than art majors. This result appears to be logically consistent with previous research.

A positive relationship was found between authoritarianism and dogmatism. A number of other studies have also found a positive relationship between authoritarianism and dogmatism. Kerlinger and Rokeach (1966), for example, found a significant relationship between the F Scale and the D Scale. However, in the present investigation, it was interesting to note that among the Third World foreign students, female art majors and male science majors were more dogmatic than male art majors and female science majors. The reverse pattern held true among the American sub-sample. Thus, this result indicated certain implications as to how authoritarianism and dogmatism function in the cultures of the two sub-groups (e.g. the effect authoritarianism and dogmatism have on sex differences and on academic majors). The relationship of authoritarianism and dogmatism to sex differences and academic major appear to be an important and complex problem requiring further systematic research.

The results indicated that the Third World foreign students were more authoritarian and dogmatic than the American students. This result is consistent with Prothro and Melikian (1953), who indicated that residence in an authoritarian culture leads to higher scores on the F Scale. It was expected
that residence in an authoritarian culture leads to higher scores on the F Scale. One explanation for the high scores on the F Scale on the part of the Third World foreign sub-sample is that this sub-group came from cultures where authoritarianism and dogmatism begin in the family and express themselves in social and political activities.

Moreover, it should be noted that the majority of the Third World foreign sub-sample came from the Moslem World, or from cultures where authoritarianism and dogmatism are stronger than in the Christian World. Therefore, another possible explanation for higher scores on the F Scale and D Scale on the part of the Third World foreign sub-sample could be due to religious training. In addition, the Middle Eastern sub-group (predominantly Moslems) had the highest means for both authoritarianism and dogmatism.

Furthermore, the results indicated that for the Third World foreign students, acquiescence was an important factor in the higher scores on dogmatism and on authoritarianism. One possible explanation for the acquiescence response set, or subjects' tendency to respond in an agreeing manner, regardless of content, appears to be that the Third World foreign sub-sample, by virtue of certain common experiences, tended to interpret a given F Scale item in the same way as his or her peers with similar backgrounds.
In addition, Goldstein and Blackman (1978) reported that the wording of each item of the F Scale is such that agreement with the item contributes to a higher authoritarian score. They also reported that Cohn (1953, 1956) was the first investigator to call attention to the problem of the acquiescence response set with the F Scale. Cohn suggested that the F Scale measures authoritarianism by virtue of acquiescence rather than content. This statement appears to be consistent with the present findings. However, Messick and Frederiksen (1958), found that individuals who acquiesced are likely to be authoritarian, thus the response set may not necessarily adversely bias the instrument.

Goldstein and Blackman (1978) also noted that since the D Scale, like the F Scale, is worded so that agreement with each statement contributes to a high score, it is to be expected that the same concern about acquiescence response tendencies also appears applicable for the measurement of dogmatism.

It is rather interesting to note that, of the three dependent variables (i.e. authoritarianism, dogmatism, and cognitive style) used to examine the relationship to parental occupational and educational levels, only field dependence (cognitive style) exhibited a significant relationship. The relationship was consistent for both sub-groups and for all measures of occupational and educational level for all parents.
The overall results indicated that field independent students had parents with higher occupational backgrounds. It thus appears that field independence is associated with socioeconomic status (SES) because social class is frequently assessed utilizing a measure of parental level of education and/or occupation in Western society. It could, therefore, be postulated that the low scores on the GEFT on the part of the Third World foreign students were due partially to the lack of stimulating environments. This statement was supported by Bakare (1972), who found social class differences in the performance of Nigerian students on the Goodenough-Harris Draw-A-Man test. Fifer (in Anastasi, 1966) showed that class and cultural influences differ not only in degree but in kind, with the consequence that different kinds of intellectual skills are fostered in various environments.

The results also indicated some surprising findings, which have important relevant implications. There was no significant difference between sexes on the patterns of cognitive style for both sub-samples. However, it was expected that among the Third World foreign students, males would be more field independent than females. The seeming rationale for this assumption was that most of the subjects from the Third World sub-sample came from countries where the Moslem religion was practiced which created social attitudes where educational opportunities for females were greatly restricted.
One would expect these restricted educational opportunities to affect the development of a field independent cognitive style.

The results which were obtained might be attributable to the fact that social attitudes, especially those attitudes related to sex differences, are currently changing even in the Moslem World. All in all, it appears that given similar cultural opportunities, females are as field independent as males. This result was supported by Naditch (1976), who also concluded that evidence regarding sex differences in field dependence is inconclusive, and by Maccoby and Jackline (1974), who concluded that the evidence for a sex difference in field dependence was itself so weak and inconsistent that it was unlikely to account for the sex differences in field dependence that were so consistently found.

In addition, the results did not indicate significant relationships between dogmatism and level of experience as measured by age, education, and size of place of residence for the combined sample. Dogmatism and level of experience were only related for the American sub-group. This relationship was due to age; the younger subjects exhibited higher levels of dogmatism than the older ones. This result was also contrary to expectation. It was expected that dogmatism would decrease with increasing age and that both education and size of place of residence would lead to a decrease in
dogmatism. Unfortunately, the present investigation did not clarify the specific nature of the relationship between dogmatism and level of experience. Generally, it appears that environmental differences and the availability of technological objects were not specifically related to differences in dogmatism.

Finally, no significant relationship was found between cognitive style, authoritarianism, and dogmatism. Since there were significant relationships between authoritarianism and field dependence and field independence, and authoritarianism and dogmatism, it was rather surprising that these three variables were not specifically related to each other. Further research is required to clarify the present findings.

Limitations of the Study

It has already been pointed out that the present investigation focused mainly on field dependent and field independent cognitive styles and selected personality variables (i.e. authoritarianism and dogmatism). Specifically, this investigation was aimed at determining the existence of the two cognitive styles and their relationship to authoritarianism and dogmatism among the American and Third World foreign subsamples. It must be borne in mind that the present study utilized only one of the five approaches (i.e. field dependence and field independence) and some of the themes (i.e.
Goldstein and Blackman (1978) presented in their review of studies of cognitive styles. Goldstein and Blackman were interested in the various approaches selected to illustrate the movement from a content-oriented to a structure-oriented emphasis and to trace the origins of the relationship of cognitive style to a number of themes. The present study differed from those reviewed by Goldstein and Blackman in some of the themes used in the study of cognitive style, in the major hypotheses which were studied, in the samples studied, and in the design and statistical analyses used.

Utilizing Kerlinger's (1973) "maximincon principle" in the evaluation of the present study, experimental variance was maximized by using culturally different sub-groups (Black American, White American, Far Eastern, Indian, Middle Eastern, and West African). Extraneous variance was controlled by insure that the groups being compared were similar on relevant independent variables by randomization of subjects, by matching the Third World foreign students with the American students by academic majors, by drawing of all the subjects from college and university students residing in the Chicago vicinity, and by building extraneous variables such as sex, SES, parental educational and occupational levels into the overall design.
Two of the major weaknesses of the study were lack of opportunity to obtain the subjects' grade point averages, and failure to document the number of years the Third World foreign sub-group had spent in the United States. These extraneous variables are very important factors which could have aided the investigator in the interpretation of the results, and for this reason, this failure is considered an unfortunate shortcoming in this study.

In addition, since one of the tests (GEFT) administered was a timed test, it is possible that it might have created a problem in performance for some subjects. It was observed that some subjects were fast and were able to complete the items before the given time. On the other hand, slow subjects might have been anxious and this might have affected their performance. Unfortunately, this problem was not controlled. Moreover, the experiment was conducted at a time when some of the universities used in this study (i.e. those on the quarter system) were preparing for the spring quarter examinations. Apparently, pressure from school work could have led to unreliable performance on the tests. This uncontrolled factor is another weakness in the study. Lastly, fatigue for some of the students, especially for those students who worked at night and attended school in the morning, might have been a problem which was not controlled. For this group of students, the only available time for the experiment was in the evenings after classes.
Error variance was minimized in two ways: by controlling conditions so that errors of measurement were reduced and by insuring psychometrically adequate instrumentations. The present study accomplished the first by utilizing standardized tests. The instructions in the manual were followed strictly, the testing situation was made as uniform as possible, and the time allotted to each group or individual did not vary. As for the instrumentation, the GEFT, the F Scale, and the D Scale used in this study were reliable and the tests themselves were objectively scored. The GEFT was reported to have a reliability estimate of .82 for both males and females. In addition, reliability of analysis was conducted for both the F Scale and the D Scale. An alpha of .88 was found for the F Scale, and .89 for the D Scale. Moreover, the three scales have been used in many other similar studies.

In terms of internal validity, extraneous variables were controlled by randomization, by matching subjects, by using reliable tests, and by building in some of the extraneous variables into the design. External validity appears limited since the present study used only American and Third World foreign students in the Chicago area.

Suggestions for Future Research

The findings in the present study have shed light on some areas of cognitive style and related fields that are yet
Wober (1966a, 1966b, 1967) argues that Africans have been reported to perform relatively inefficiently in visually specialized tasks and African cultures place "considerable emphasis on sensory phenomena apart from the visual world". A line of research that would determine if the Third World foreign students would react differently to tests of cognitive style that do not emphasize visually specialized tasks would be an interesting, researchable area for the future.

In addition, it remains questionable as to whether an individual's cognitive style would vary across different situations. Goldstein and Blackman (1978) point out that the disagreement in details of approach and measurement of cognitive style has resulted in a body of literature from which it is difficult to extract general principles. Additional research which could enable investigators to come to agreement on the approach to the study of cognitive style and the use of assessment instruments appears to be needed at this time.

Furthermore, certain psychological differentiations and cognitive abilities are usually associated with perceptually field dependent and field independent cognitive styles in Western cultures. It would be interesting to determine if the same personality characteristics found in the Western world would hold for individuals from the Third World foreign
countries who have been classified as field dependent or field independent on the basis of Witkin's GEFT.

Also, the results indicated that cognitive style is related to parental occupational level for both the American and the Third World foreign students. The relationship was found to be consistent for both sub-groups and for all measures of occupational and educational levels for either parent. Investigations are needed to determine if SES, or both the cultural and environmental factors, contributed more to the development of field independent than field dependent cognitive styles.

Finally, the present study points out the need for further systematic investigation as to how dogmatism functions across cultural groups. The results indicated that female art majors and male science majors were more dogmatic than male art majors and female science majors among the Third World foreign students. The reverse pattern held true for the American students.

Educational Implications

The educational implications following the results of this study are discussed in terms of how students' learning is affected by their cognitive styles; how reinforcement can be applied effectively under the two cognitive styles (i.e. field dependence and field independence); the relative effects
of SES on cognitive styles; and how authoritarianism and dogmatism can affect academic performance.

The results of the present study imply that knowledge of a student's cognitive style could be used to enhance academic achievements. Since the Third World foreign students tend to be more interested in social phenomena than the American students, the former could be given more opportunities to learn educational materials that have social content. According to the indication of the results of the present investigation, it appears that one explanation why many field dependent foreign students have learning difficulties might be the relative lack of organization and structure which are commonplace in many college classes. Apparently, learning would be more effective for this group of students if the information they have to learn were highly structured, since they tend to rely mostly on the characteristics of the learning task itself. Greater attention should be paid to differences in cognitive styles so that in learning situations, instructional procedures could be adapted more effectively to meet the needs of field dependent foreign students. In addition, it would be helpful if academic majors were carefully chosen from areas similar to their interests. Workshops to alert professors about the Third World field dependent students are suggested as well.
On the other hand, field independent American students, due to their cognitive qualities (e.g. the abilities to organize, structure, conceptualize, and abstract), frequently structure and organize learning activities on their own. In choosing an academic major, this group of students would do well in scientific fields that are similar to their interests (i.e. those subjects that involve structure, organization, and abstract objects).

The present study did not indicate whether a teacher's cognitive style is likely to affect the way a teacher teaches in a classroom. However, Witkin et al. (1977) report that it has not yet been clarified whether the differences in teaching preferences and in teaching behavior between relative field dependent and field independent teachers are representative of cognitive style differences in actual classroom teaching.

Differences in cognitive styles do not seem to make a teacher less competent in teaching, according to some reported studies. However, since the two cognitive styles have both advantages and disadvantages, the two methods should be used in the classroom.

Research has shown that field independent students tend to learn more in the presence of intrinsic reward than field dependent persons (Fitz, 1971; Steinfeld, 1973). Therefore, it appears that both field dependent and field independent
individuals would need different kinds of reinforcements in learning strategies. Since field dependent Third World foreign students tend to rely on external social referents, learning would be enhanced with the presence of carefully defined educational objectives and external rewards; field independent American students would function with greater autonomy.

In addition, since field dependent people function better in social situations, punishment would be more effective for the Third World field dependent students if it is in the form of verbal criticism. Witkin et al. (1977) supported this statement in addition to reviewing a number of studies which also provide evidence that field dependent persons are more affected by criticism than field independent persons. They also concluded that whether criticism has a positive or adverse effect on learning depended upon the manner in which the criticism was administered.

The results of the present study also have shown that the performance of both the American and the Third World foreign students on the GEFT depended to a certain extent on parental occupational level. In view of the fact that SES is frequently assessed utilizing a measure of parental level of education and/or occupation in Western society, it is apparent that differential environmental stimulations in the early years of schooling and in the family might have contributed
to the differences in cognitive styles between the two sub-groups. Parental occupational level is usually manifested directly through the schools the children attend and the type of educational enrichment facilities available to the children in their homes. It could be said that most of these field dependent students in the present study from low SES families did not have the opportunity in their early years of schooling to utilize educational resources for learning purposes. In addition, the fact that these field dependent students came from low income families leads one to the conclusion that they might have attended schools for low income families, with a sharply different curriculum from those schools which serve the middle and upper classes. It is, therefore, suggested that the educational authorities of the two sub-groups re-evaluate their respective curricula, especially curricula which serve the children from low income families. Under this view, unless the respective educational authorities adopt a policy to bridge the gap in curricula differences which serve the lower, middle, and upper classes in the early years of schooling, students from low income families could be disadvantaged in cognitive abilities.

The marked differences in authoritarianism and dogmatism between the American and the Third World foreign students are particularly interesting in this study. The results indicated that the Third World foreign students were more
authoritarian and dogmatic than the American students. These two personality variables (i.e. authoritarianism and dogmatism) appear to have adverse effects on the Third World foreign subgroup on test-taking behavior, specifically on objective tests. Due to their authoritarian and dogmatic attitudes, the Third World foreign students would tend to use conservative strategies in problem-solving tasks. They would tend to adhere to the older and longer methods of solving a problem, especially a mathematical problem, instead of using the newer and shorter methods. This conservative attitude is likely to hinder their competitive performance on a test, especially if the test is a speeded one. This group of students should be made to realize that rules and procedures are made according to the needs of the people in the modern world and are subject to changes. Unless the Third World students are made to understand this fact, the anxieties and the frustrations they tend to have in their educational programs will possibly not be quickly eliminated.
CHAPTER VI

SUMMARY

Interest in studying perceptual field dependent and field independent cognitive styles and their related personality variables has grown steadily since the appearance of the work of Witkin et al. (1954), who first used the terms "field dependence" and "field independence". Witkin later described the field dependence and independence dimensions as global versus articulated functioning, which he hypothesized as broadly cutting across many areas of psychological functioning and providing behavioral consistencies in personality. Recent studies in cognitive style have suggested the existence of a close and meaningful relationship between cognitive style, authoritarianism, and dogmatism.

The specific goal of this study was to determine if the two cognitive styles (i.e. field dependence and field independence) exist among selected American and Third World foreign students attending various universities in the Chicago area, and if they do, to establish relationships between selected personality variables (i.e. authoritarianism and dogmatism) and the two cognitive styles. Three scales, namely, the Group Embedded Figures Test (GEFT), the Facism Scale (F Scale), and the Rokeach Dogmatism Scale (D Scale)
assessing different variables (i.e. field dependence and field independence, authoritarianism, and dogmatism, respectively) were administered to the two sub-groups (i.e. the American and the Third World foreign students). In addition to these tests, the Budner (1962) Intolerance of Ambiguity Scale, and a modified Eysenck and Wilson Dogmatism Scale were utilized in cross-validating the F Scale and the D Scale, respectively. The effect on the performance of the GEFT, the F Scale, and the D Scale of the following cultural and environmental factors--age, sex, country, education, academic major, size of place of residence, child-rearing practices, and parental educational and occupational levels--were systematically examined.

The sample consisted of a total of one hundred (100) randomly selected graduate and senior level undergraduate college students attending various universities in the Chicago area. Fifty (50) of the subjects were Third World foreign students who were then matched according to academic major with fifty (50) American students.

The data collected in this study was analyzed using multivariate analysis of variance (MANOVA). In addition, Pearson correlation coefficients were calculated to determine what relationships existed between the variables studied.

The results indicated the following: (1) that the
American sub-group was more field independent than the Third World foreign sub-group; (2) that there was no sex difference between the two sub-groups in patterns of cognitive style; (3) that science majors were more field independent than art majors; (4) that level of experience as measured by age, education, and size of place of residence was not related to dogmatism for the combined sample; however, that age was related to dogmatism for the American students only; (5) that among the Third World foreign sub-group, female art majors and male science majors were more dogmatic than male art majors and female science majors; the reverse pattern held true for the American sub-group; (6) that cognitive style, authoritarianism, and dogmatism were not significantly related for either the American or the Third World foreign sub-group; (7) that the Third World foreign students were more authoritarian and dogmatic than the American students; and (8) that field independent students had parents with higher occupational levels for both the American and the Third World foreign sub-samples.

The results of this study led to the following conclusions: (1) that the development of field independent characteristics could possibly be enhanced if the related cultural and environmental factors were provided early in life; (2) that the two cognitive styles (i.e. field dependence and field independence) could be used selectively in
teaching depending on the peculiar needs of the students; and (3) that the amount of anxieties and frustrations many foreign students experience in their educational programs could possibly be reduced if these students were trained to be less authoritarian and dogmatic.
REFERENCES


133


Cohn, T. S. The relation of the F scale to a response set to answer positively. *American Psychologist, 1953, 8, 335.*


Constantinople, A. Analytical ability and perceived similarity to parents. *Psychological Reports, 1974, 35, 1335-1345.*


Miller, M. D. Patterns of relationships of fluid and crystallized mental abilities to achievement in different ethnic groups. *Dissertation Abstracts International*, April 1973, 33 (10-A), 5558.


Plant, W. T. Longitudinal changes in intolerance and authoritarianism for subjects differing in amount of college education over four years. *Genetic Psychology Monographs*, 1965a, 72, 247-287.


Rosenman, M. F. Dogmatism and the movie "Dr. Strangelove." *Psychological Reports*, 1967, 20, 942.

Rudin, S. A., & Stagner, R. Figure-ground phenomena in the perception of physical and social stimuli. *Journal of Psychology*, 1958, 45, 213-225.


Schratz, M. M. A developmental investigation of sex differences in spatial (visual-analytic) and mathematical skills in three ethnic groups. Developmental Psychology, May 1978, 14(3).


Wober, J. M. Psychological factors in the adjustment to industrial life among employees of a firm in S. Nigeria. Dept. of Anthropology, University of Edinburg and University of Ibadan, 1966a.


APPENDIX A
Bernadette E. Opara-Nadi  
c/o Dr. R. Morgan  
Loyola University of Chicago  
Department of Foundations of Education  
820 N. Michigan Avenue  
Chicago, IL 60611

Dear student:

I am a foreign graduate student at Loyola University of Chicago. I am from Nigeria. I have lived in this country for nine years, three years in the South and six years in Chicago.

Presently, I am conducting a research project in partial fulfillment of the requirements of my doctoral program of studies. It is believed that this research will make an important contribution to education in general, and to educational psychology in particular. I am currently seeking subjects to participate in the research project. If you should choose to participate in this study, you will be requested to do the following:

1. fill in the biographical inventory requested;
2. complete all the items in the questionnaire;
3. spend about 20 minutes in a group experiment.

Note: Most of the items in the biographical inventory and in the questionnaire only need a check mark (✓), thus you will not spend much time completing them. All information that you provide will be held absolutely confidential; no identification will be required.

I shall be contacting you again soon to arrange for the collection of the completed data. I would like to call your attention to the urgency of this research. Only the subjects who respond in time (i.e., by April 30, 1979) will be used for this research project, since I am pressured by time.

Thank you.

Yours sincerely,

Bernadette E. Opara-Nadi
PLEASE FOLLOW THE DIRECTIONS:

1. Please read each item carefully and answer all of them frankly. Where there are brackets, fill in a (✓).

   Example: 1. (✓) a. I am a student.
            ( ) b. I am not a student.

Part 1 Your Biographical Inventory

1. Your date of birth is _____________________________.

2. You are ( ) a. male.
   ( ) b. female.

3. You are ( ) a. an American student.
   ( ) b. a Third World foreign student.

4. Specific sub-group, e.g. ( ) 1 = Black American
   ( ) 2 = White American
   ( ) 3 = Far Eastern
   ( ) 4 = West African
   ( ) 5 = Middle Eastern
   ( ) 6 = Indian

5. Your present college classification is:
   ( ) a. graduate student.
   ( ) b. senior in college.

6. Your academic major is _________________________________.

7. You spent your early childhood in a place with a population of approximately:
   ( ) a. less than 20,000 inhabitants.
   ( ) b. between 20,000 and 99,999 inhabitants.
   ( ) c. 100,000 and over inhabitants.

8. Are you from
   ( ) a. a flexible family?
   ( ) b. a rigid family?

9. Your father's educational level was/is:
   ( ) a. no general education.
   ( ) b. primary education/grade school education.
   ( ) c. secondary education/high school education.
   ( ) d. one to three years of university/college education.
   ( ) e. a B. A. degree or higher.
10. Your mother's educational level was/is:
   ( ) a. no general education.
   ( ) b. primary education/grade school education.
   ( ) c. secondary education/high school education.
   ( ) d. one to three years of university/college education.
   ( ) e. a B.A. degree or higher.

11. Your father's occupation was/is ____________________________.

12. Your mother's occupation was/is ____________________________.

**FOR PARTS II THROUGH V, PLEASE MARK A "✓" UNDER ONE OF THE FOLLOWING CATEGORIES TO EXPRESS YOUR RESPONSE FOR EACH OF THE ITEMS.**

**EXAMPLE:**

It is only natural and right that women be restricted in certain ways in which men have more freedom.

<table>
<thead>
<tr>
<th>Agree Strongly</th>
<th>Agree</th>
<th>Agree Somewhat</th>
<th>Disagree Somewhat</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part II**

1. Obedience and respect for authority are the most important virtues children should learn.

<table>
<thead>
<tr>
<th>Agree Strongly</th>
<th>Agree Somewhat</th>
<th>Disagree Somewhat</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. A person who had bad manners, habits, and breeding can hardly expect to get along with decent people.

<table>
<thead>
<tr>
<th>Agree Strongly</th>
<th>Agree Somewhat</th>
<th>Disagree Somewhat</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. If people would talk less and work more, everybody would be better off.

<table>
<thead>
<tr>
<th>Agree Strongly</th>
<th>Agree Somewhat</th>
<th>Disagree Somewhat</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4. The businessman and the manufacturer are much more important to society than the artist and the professor. 

5. Science has its place, but there are many important things that can never possibly be understood by the human mind. 

6. Every person should have complete faith in some supernatural power whose decisions he obeys without question. 

7. Young people sometimes get rebellious ideas, but as they grow up, they ought to get over them and settle down. 

8. What this country needs most, more than laws and political programs, is a few courageous, tireless, devoted leaders in whom the people can put their faith. 

9. No sane, normal, decent person could ever think of hurting a close friend or relative. 

10. Nobody ever learned anything really important except through suffering. 

11. What the youth needs most is strict discipline, rugged determination, and the will to work and fight for family and country.
12. An insult to our honor should always be punished.

13. Sex crimes, such as rape and attacks on children, deserve more than mere imprisonment; such criminals ought to be publicly whipped, or worse.

14. There is hardly anything lower than a person who does not feel a great love, gratitude, and respect for his parents.

15. Most of our social problems would be solved if we could somehow get rid of the immoral, crooked, and feebleminded people.

16. Homosexuals are hardly better than criminals and ought to be severely punished.

17. When a person has a problem or worry, it is best for him not to think about it, but to keep busy with more cheerful things.

18. Nowadays more and more people are prying into matters that should remain personal and private.

19. Some people are born with an urge to jump from high places.

20. People can be divided into two distinct classes: the weak and the strong.
<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>Someday it will probably be shown that astrology can explain a lot of things.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Wars and social troubles may someday be ended by an earthquake or flood that will destroy the whole world.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>No weakness or difficulty can hold us back if we have enough will power.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>It is best to use some prewar authorities in Germany to keep order and prevent chaos.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Most people don't realize how much our lives are controlled by plots hatched in secret places.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>Human nature being what it is, there will always be war and conflict.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Familiarity breeds contempt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Nowadays when so many different kinds of people move around and mix together so much, a person has to protect himself especially carefully against catching an infection or disease from them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>The wild sex life of the old Greeks and Romans was tame compared to some of the goings-on in this country, even in places where people might least expect it.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Part III**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Somewhat Agree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. U.S. and Russia have nothing in common.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Best government is democracy run by most intelligent.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Belief in free speech, but not for all.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Better knowledge of beliefs than disbeliefs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Man on his own is helpless and miserable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. World we live in a lonesome place.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Most people don't give a &quot;damn&quot; for others.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I want to find someone to solve my problems.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. It's natural to fear future.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. So much to do, so little time to do it in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Once I get wound up, I can't stop.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. I repeat myself to make sure I'm understood.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. I don't listen.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Secret ambition is to become a great man.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Main thing in life is to do something important.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agree Strongly</td>
<td>Agree Somewhat</td>
<td>Disagree Somewhat</td>
<td>Disagree</td>
<td>Strongly Disagree</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>----------------</td>
<td>-------------------</td>
<td>----------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>17. If given a chance I'd benefit world.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. There are just a handful of great thinkers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. I hate some people because of what they stand for.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. A man without a cause hasn't lived.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. Life meaningful when there is devotion to cause.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. There is only one correct philosophy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. Person believing in too many causes is &quot;wishy-washy.&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. To compromise is to betray own side.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. In religion, we should not compromise.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26. To consider only one's own happiness is selfish.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Worse crime is to attack those of similar beliefs.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Guard against subversion from within.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29. Groups tolerating diverse opinions can't exist.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30. Two kinds of people: those for, those against truth.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31. My blood boils when others won't admit they're wrong.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>Strongly</td>
<td>Agree</td>
<td>Somewhat</td>
<td>Disagree</td>
<td>Strongly</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>----------</td>
<td>-------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>32. One who thinks of own happiness beneath contempt.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33. Most printed ideas aren't worth paper printed on.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34. To know what's going on, rely on leaders.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35. Reserve judgment until you hear leaders' opinions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36. Pick friends who believe as you do.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37. Present unhappy. Future is what counts.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38. To accomplish mission, gamble all or nothing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39. Most people don't understand what's going on.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40. Most people don't know what's good for them.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PART IV**

<table>
<thead>
<tr>
<th></th>
<th>Agree</th>
<th>Strongly</th>
<th>Agree</th>
<th>Somewhat</th>
<th>Disagree</th>
<th>Strongly</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A good job is one where what is to be done and how it is to be done are always clear.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. What we are used to is always preferable to what is unfamiliar.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Agree</td>
<td>Agree</td>
<td>Disagree</td>
<td>Strongly Agree</td>
<td>Strongly Disagree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>-------</td>
<td>----------</td>
<td>----------------</td>
<td>------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I like parties where I know most of the people more than ones where all or most of the people are complete strangers.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. People who fit their lives to a schedule probably miss most of the joy of living.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. People who insist upon a yes or no answer just don't know how complicated things really are.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Teachers or supervisors who hand out vague assignments give a chance for one to show initiative and originality.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. An expert who doesn't come with a definite answer probably doesn't know too much.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. In the long run it is possible to get more done by tackling small, simple problems rather than large and complicated ones.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. A person who leads an even, regular life in which few surprises or unexpected happenings arise, really has a lot to be grateful for.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. It is more fun to tackle a complicated problem than to solve a simple one.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Many of our most important decisions are based upon insufficient information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. A good teacher is one who makes you wonder about your way of looking at things.

13. There is really no such thing as a problem that can't be solved.

14. Often the most interesting and stimulating people are those who don't mind being different and original.

<table>
<thead>
<tr>
<th>Agree</th>
<th>Strongly</th>
<th>Agree</th>
<th>Somewhat</th>
<th>Disagree</th>
<th>Strongly</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Part V

1. Do you often question your own morality and rules of conduct?

2. Do you agree that most politicians talk a load of rubbish?

3. Do you think people with extreme political views should be allowed to air them in public?

4. In the case of a disagreement, do you try to put yourself in the other person's position and try to understand his point of view?

5. Do you attempt to convert others to your own point of view on matters of religion, morality and politics?

6. Do you sometimes argue for the sake of argument, even when you know underneath that you are wrong?

7. Do you find that your own way of attacking a problem always turns out to be the best in the long run?

8. Does it annoy you when a supposed expert fails to come up with a definite solution to a social problem?

9. Do you think it would be a good thing if everybody shared the same ideas and values?
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>10.</td>
<td>Are you inclined to see things in various shades of grey rather than in black and white?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>11.</td>
<td>Do you think a good teacher is one who makes you wonder rather than telling you all the answers?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>Does your blood boil when people stubbornly refuse to admit they are wrong?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Are you often uncertain as to which way you are going to vote in an election?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Do you think that other cultures have a lot to teach us about how to live?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Do you find it easy to be friendly with people of different religions from your own?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Do you think it is often necessary to use force to advance an idea?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Do you change your mind readily if someone puts up a convincing argument?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Do you think there is a kernel of truth in nearly everybody's point of view?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>Do you often repeat yourself to make sure that you are properly understood?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>Do you carefully consider everybody else's viewpoint before arriving at your own?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>Do you determine nearly all of your conduct in relation to a single great cause?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>Are you appalled by the ignorance shown by the majority of people on social and political matters?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The dissertation submitted by Bernadette Ego Opara-Nadi has been read and approved by the following Committee:

Dr. Ronald R. Morgan  
Associate Professor and Director  
Foundations of Education  
Loyola University of Chicago

Dr. Jack A. Kavanagh  
Chairman and Associate Professor  
Foundations of Education  
Loyola University of Chicago

Dr. Steven I. Miller  
Associate Professor  
Foundations of Education  
Loyola University of Chicago

Dr. Pedro J. Saavedra  
Assistant Professor  
Foundations of Education  
Loyola University of Chicago

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Education.

Date: 12/14/79  
Director's Signature: [Signature]