

An Abstract of the Thesis of

Susan C. McNaught for the degree of Doctor of Philosophy in Education presented on April 16, 1992. Title: An Analysis of the Relationship Between the Preferred Cognitive Learning Style of Field Independence/Field Dependence and Success in Learning English as a Second Language Among Post-Secondary Japanese Students.

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The research analyzed the relationship between the preferred cognitive learning style of field independence/field dependence and success in learning English as a second language (ESL) among post-secondary Japanese students. The study provided a review of literature in the field and developed a methodology including identification of appropriate measurement instruments. The testing was done with students at Tokyo International University of American (TIUA) in Salem, Oregon, and the findings were used to make recommendations concerning field independence/field dependence (FI/FD) as it affects post-secondary Japanese ESL learners.

Three tests were administered to the entire TIUA student body of 117 students. The first, the Group Embedded Figures Test (GEFT) was administered to measure field independence/ field dependence. Two tests were administered to measure success in ESL. The Test of English as a Foreign Language (TOEFL) and the Comprehensive English Language Test (CELT) were both given to measure success in ESL. The differences between the pretest scores and post test scores were then compared to GEFT scores to determine the correlation of FI/FD and ESL success. Analysis of the testing indicated that for overall success in ESL, there does not seem to be a relationship with FI/FD. However, on specific skills, as measured by the subtests, there may be a relationship. Since results on the TOEFL and CELT were consistent with each other except for the listening subtest, it was further concluded that the two tests measure the same thing.

In addition to the relationship of FI/FD and ESL, certain demographic factors were

also examined to determine their relationship to success in ESL. While there does not appear to be a significant relationship between ESL success and a student's choice of major, there may be a relationship with the demographic factors of age, gender, and previous experience with English.

**An Analysis of the Relationship Between
the Preferred Cognitive Learning Style
of Field Independence/Field Dependence
and Success in Learning English as a Second Language
Among Post-Secondary Japanese Students**

by

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TABLE OF CONTENTS

Chapter One, Introduction	1
Background	1
Purpose	3
Rationale	4
Definition of Terms	7
Limitations and Delimitations of the Study	9
Chapter Two, Review of Literature	10
Cognitive Style Defined	11
Varieties of Preferred Cognitive Learning Styles	13
Field Independence/Field Dependence	15
Measures	15
Dimensions of Field Independence/Field Dependence	17
Characteristics	18
FI/FD and Intelligence	20
FI/FD and Gender	20
Causes	22
Field Independence/Field Dependence in Language Learning	26
Learning a Language versus Acquiring a Language	26
Culture and ESL	34
Strategies	36
Field Independence/Field Dependence Among Japanese ESL Learners	39
Summary	40

Chapter 3, Research Design	42
Introduction	42
Design of the Study	42
Population and Sample	43
Instrumentation	43
Group Embedded Figures Test (GEFT)	44
GEFT Format	44
GEFT Scoring	45
GEFT Reliability and Validity	45
Test of English as a Foreign Language (TOEFL)	46
TOEFL Format	46
TOEFL Scoring	47
TOEFL Reliability and Validity	47
Comprehensive English Language Test (CELT)	49
CELT Format	49
CELT Scoring	50
CELT Reliability and Validity	50
Data Collection Procedures	50
Assumptions	51
Hypotheses of the Study	52
Relationships to Be Examined	53
Treatment of Data	54
Pearson Product Moment Correlation	55
One-Way Analysis of Variance (ANOVA-F)	56

Chapter 4, Presentation of Findings	58
Introduction	58
Summary of the Variables	58
Measures of Achievement in English as a Second Language	58
Tests of Hypotheses	62
Summary	69
Chapter 5, Summary, Conclusions, Recommendations	71
Summary	71
Design	72
Objectives	72
Hypotheses	73
Treatment of Data	74
Findings	75
Discussion of Findings	75
Recommendations for Action	80
Recommendations for Further Study	81
Bibliography	83

LIST OF FIGURES

Figure		Page
1.	Sample Embedded Figure	17
2.	Learning Style Relationship	53
3.	Demographics	53
4.	CELT to Field Independence/Field Dependence	53
5.	Gender to Field Independence/Field Dependence	54
6.	Age to Field Independence/Field Dependence	54
7.	Previous English Experience to Field Independence/Field Dependence	54
8.	Study Major to Field Independence/Field Dependence	54

LIST OF TABLES

Table		Page
4.1	Descriptive Statistics for English Achievement - TOEFL	59
4.2	Differences in TOEFL Scores, Pretest to Post Test	59
4.3	Descriptive Statistics for English Achievement – CELT	60
4.4	Differences in CELT Scores, Pretest to Post Test	60
4.5	Correlation Between the TOEFL and the CELT	61
4.6	Descriptive Statistics for the Measure of Field Independence	61
4.7	Pearson Product Correlations between the Dependent Variables	62
4.8	Pearson Product–Moment Correlation between Overall TOEFL Score and GEFT	63
4.9	Pearson Product–Moment Correlation between Overall CELT Score and GEFT	63
4.10	Pearson Product–Moment Correlation between TOEFL Listening Score and GEFT	64
4.11	Pearson Product–Moment Correlation between CELT Listening Score and GEFT	64
4.12	Pearson Product–Moment Correlation between the TOEFL structure score and GEFT	65
4.13	Pearson Product–Moment Correlation between the CELT structure score and GEFT	65
4.14	Pearson Product–Moment Correlation between TOEFL reading score and the GEFT	66
4.15	Pearson Product–Moment Correlation between the CELT vocabulary score and the GEFT	66
4.16	Pearson Product–Moment Correlation between Previous Experience and the TOEFL and/or CELT	67
4.17	Pearson Product–Moment Correlation between age and the TOEFL and/or CELT	67
4.18	Pearson Product–Moment Correlation between gender and the TOEFL and/or CELT	68

4.19	Comparison of English Achievement by Majors.	68
4.20	ANOVA Table – TOEFL Overall Difference among Majors.	69
4.21	ANOVA Table – CELT Overall Difference among Majors.	69

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CHAPTER ONE

INTRODUCTION

Over the years, there have been many approaches to identifying and defining variables that affect the process of second language learning. In the past, researchers have focused on intelligence (Pimsleur, Mosberg and Morrison, 1962), teaching methodology (Chastain, 1969), politics (Thuy, 1979; Long, 1983), and socioeconomics (Spolsky, 1982) among other variables. While all these explanations have made important contributions to the understanding of the process of language learning, none explains it totally.

In order to better understand the process, researchers recently have given increased attention to the theory of preferred cognitive learning styles. The way things are learned in general and the particular approach to a specific problem seem to hinge on a loosely-defined link between personality and cognition; this link is referred to as cognitive learning style (Brown, 1980). Many of these preferred cognitive learning styles have been identified. However, the preferred cognitive learning style which has been the most extensively studied and which appears to have the widest application to educational issues (Witkin, et al., 1977; Witkin and Goodenough, 1981; Reardon, et al., 1982) is the field-independent/field-dependent (FI/FD) learning style.

Background

The preferred cognitive learning style of FI/FD was identified as early as 1942, as a result of Witkin's investigations of the perception of visual space (Witkin, et al., 1954). Witkin was investigating characteristic ways in which people perceive both the

environment and their relationship to it. For example, a person sitting in a chair, which may or may not be fully upright, has two major cues about his orientation. One cue is the perceived relationship of the chair to the external surroundings. The other cue comes from internal information about body position which comes mainly from muscle tension and from the vestibular system in the ear. If both the chair and the room are tipped to the same degree, then the only source of information the person has is from the internal sense receptors. Witkin found that some people tended to rely primarily on external cues. Because these people were influenced and, therefore, dependent on information from the outside world, he called these people "field dependent." Others relied exclusively on their own internal sensory processes and were unaffected by external evidence; these people he called "field independent."

Witkin continued to study the relationship between performance on these perceptual measures and other factors such as personality and cognition. Witkin and Goodenough (1981) contend that whether people tend to rely primarily on external cues or to be self-reliant may influence their manner of processing information from the field, specifically whether they will restructure the field on their own, or accede to its dominant form. It is important to note that the "field" may be perceptual or may be an abstract set of thoughts, ideas, or issues.

Research suggests that the FI/FD learning style tends to be on a continuum. Furthermore, these labels reflect a tendency, in varying degrees of strength, toward one mode of perception or the other. There is no implication that there exist two completely distinct types of preferred cognitive learning styles (Witkin, et al., 1977). People who tend to be more field independent are likely to approach problem situations analytically whereas field dependent people tend to be more global. Field independent people are usually better able to detect patterns and subpatterns than field dependent people who are more likely to be better able to perceive the whole of a situation. It does appear, however, that no one is totally field independent or field dependent.

Several researchers have explored the link between preferred cognitive learning style and personality, problem solving and learning (Witkin, et al., 1977; J.

Hansen and Stansfield, 1981; Chapelle and Roberts, 1986). FI/FD, as a factor of academic achievement, has been studied extensively. While researchers have established that there is no apparent relationship between preferred cognitive learning style and intelligence, they have demonstrated that there does appear to be a relationship between preferred cognitive learning style and the ability to learn certain subjects (Bialystock and Frolich, 1978; Boyle, 1987). For example, it has been established that field independent students seem to succeed better in courses that require the use of logic and linear development, such as math and the physical sciences, whereas field dependent students seem to perform better in courses which take a more holistic approach to subject development and problem solving, such as those in the social sciences (Bennett, 1979; Carbo, Dunn, and Dunn, 1986).

Researchers in English as a second language (ESL) have also become aware of the apparent link between FI/FD and achievement in language learning. Abraham (1985) has suggested links of FI/FD to language aptitude, to learning grammar, and to success on paper and pencil tests. Other research on second language learning has linked FI/FD to both aptitude and attitude (Bialystock and Frolich, 1978; McLeod and McNaughlin, 1986; Boyle, 1987) and to test performance (Stansfield and J. Hansen, 1983). Thus, FI/FD seems to be linked to success in learning ESL. An ever increasing number of students are studying ESL in American universities and colleges, and a large percentage of those students are Japanese. For these reasons, more needs to be understood about the relationship of FI/FD and success in ESL among Japanese post-secondary students.

Purpose

The purpose of this study was to analyze the relationship between the preferred cognitive learning style of field independence/field dependence and success in learning English as a second language (ESL). The major means of achieving the purpose of this study were:

1. To review existing research related to field independence/field

dependence as it relates to success in learning English as a second language (ESL) among post-secondary students.

2. To develop a methodology, including the identification of appropriate measurement instruments, in order to study the relationship between field independence/field dependence and success in ESL among post-secondary students.
3. To administer these instruments to students at Tokyo International University of America in Salem, Oregon.
4. To analyze the relationship between field independence/field dependence and success in ESL among post-secondary Japanese students.
5. To utilize the findings of this study to make recommendations concerning field independence/field dependence as it affects Japanese post-secondary ESL learners.

Rationale

In recent years, research in second language learning has shifted away from examining the product (what is learned) to looking at the process (how it is learned). The understanding of this process has both theoretical and practical implications (Brown, 1980).

One facet of the process of second language learning is students' preferred cognitive learning style. Researchers have investigated to determine if there is a link between the cognitive learning style of FI/FD and learning ESL. Early studies (Bialystock and Frolich, 1978; J. Hansen and Stansfield, 1982) were somewhat inconclusive because, while there did seem to be correlations, they were neither strong nor consistent. Later research (Chapelle and Roberts, 1986; Abraham, 1985) found a more significant relationship but the strength and pervasiveness of that relationship is still not clear. Further research needs to be done to more clearly determine this basic relationship.

There are additional issues to be investigated that past research has raised. One is the issue of test bias. The Test of English as a Foreign Language (TOEFL) is a test of proficiency in the English language which is taken annually by more than 250,000 foreign applicants to colleges and universities in the United States. It has been shown to correlate very well with other tests measuring English proficiency (Duran, et al., 1985; Darnell, 1970; Oller, 1981). It is a carefully constructed instrument and there is extensive and supportive information on the test's reliability and validity (Duran, et al., 1985; Swinton and Powers, 1980). However, while several studies have indicated that the TOEFL is not strongly related to a student's high school rank or G.P.A., Spurling and Ilyin (1985) found that the strongest factor associated with a student's language test performance was the student's high school grade average. Research into the implications of this relationship needs to be expanded.

Previous research findings have suggested that the TOEFL is potentially biased. While looking for components of second language aptitude, Chapelle and Roberts (1986) found significant correlations between FI and TOEFL scores, but not between FD and the TOEFL scores. Jamieson and Chapelle (1987) examined students, strategies and working styles on computers, and they, too, found a significant positive correlation between higher TOEFL scores and FI. Some researchers (J. Hansen and Stansfield, 1982; Brown, 1980) have suggested that the TOEFL is biased in favor of field independence. That is, the TOEFL may favor cognitive restructuring abilities more readily available to individuals who are more field independent.

Thus, it is important to expand investigations about the relationship of FI/FD to English proficiency as measured by the TOEFL. It is also important to look at the relationship to other academic factors in order to account for possible test bias which has been reported in past research on FI/FD and the TOEFL.

There are also several cultural issues that must be addressed. While most of the research done on preferred cognitive learning styles has been done with students whose native language is English (Cavanaugh, 1981; Guilford, 1980; J. Hansen and Stansfield, 1981; Chapelle, 1988), there has been some research done on students whose first language is not English. This research has suggested that there are, indeed,

cultural differences in preferred cognitive learning styles (Reid, 1987). For example, members of industrialized societies and those of non-industrial societies respond quite differently to visual illustrations (Miller, 1982). Wong reported differences in the cognitive approaches of Chinese-speaking and Spanish-speaking kindergartners (Fillmore, 1981). Research by Ramirez, et al., (1974) has questioned the validity of standardized intelligence tests on the basis of cross-cultural differences in cognitive style, and Witkin (1974) has also shown that there are differences in the cognitive learning style preferences of people from different cultures. If different modes of thinking are characteristic of different cultures, learners from outside the mainstream of American culture may exhibit learning style characteristics different from mainstream learning styles, and ESL students may spend much time and effort trying to adjust to their new learning situations.

How significant these differences in learning styles are becomes an issue requiring further study since most assumptions about learning styles in U.S. universities are based on research done on American students. In the U.S., for example, Witkin, et al., (1977) has noted a small but persistent sex difference in FI/FD beginning in adolescence, with men tending to be more FI. Will Japanese students follow this tendency? Ramirez suggests the tendency toward FI or FD is, in part, due to child rearing practices, so Western cultures, which emphasize independence and self reliance, tend toward field independence. Japanese culture is less rooted in valuing individual independence; does this mean that Japanese students will tend to be more field dependent?

Finally, there is the internationalization of Japanese higher education. According to the *Chronicle of Higher Education* (10/26/88: A39), in 1988-89 Asian students accounted for over half the foreign students enrolled at American colleges and universities, with Japan ranking sixth in the number of students enrolled. In 1988 the number of Japanese students increased nearly 20% from the previous year to more than 18,000. In 1989-90, Japan sent 29,840 students to American colleges and universities. Japanese students are now the third largest group of international students in American post-secondary education (Institute of International Education,

Parade Magazine, Jan.16,1991, p 16). This is a significant number, and it must be noted that the increase is expected to continue as Japan enjoys steady economic and educational growth. As the *NAFSA NEWSLETTER* (140, #3, Dec-Jan, 1989, p. 1) reports, "internationalization" is the catch word in Japanese higher education, stimulated in part by Prime Minister Nakasone's "100,000 foreign students' goal." If American colleges and universities expect to serve their increasingly international student bodies, more needs to be understood about the learning style of all the students, including those from Japan.

Thus, despite the fact that a number of researchers have established that there does appear to be a relationship between FI/FD and success in ESL, the strength of that relationship and the ways it is manifested have not been fully explored. In addition, there have been too few cross cultural studies done on this topic and those that have been completed tended to focus on differences between cultures (Berry, 1966; Carter, 1988; Chapelle, 1988). This is valuable information but just as valuable is an understanding of how differences in FI/FD are manifested within a culture. This is crucial in order to avoid stereotyping individuals or cultural groups and to deny students the opportunity to develop more fully. More needs to be understood about the relationship of FI/FD intraculturally as well as cross culturally. Furthermore, researchers have not yet focused on a single cultural group in order to clarify this relationship. It is important to clarify not only the existence of the relationship between FI/FD and success in ESL, but also to examine the role of culture in such a relationship.

Definition of Terms

In order to facilitate common understanding and continuity, the terms frequently used in this research are defined as follows:

Active learning – the student is actively engaged in applying the knowledge gained to concrete situations.

Cloze Test – is a test which presents with a prose passage with words systematically omitted. The reader must fill in the blanks with appropriate words.

Cognitive style - the ways in which responses are made because of individual psychological differences. Characteristic modes of functioning are revealed throughout perception and intellectual activities in a highly consistent and pervasive way (Witkin, et al., 1977)

Communicative competence - the underlying knowledge of the system of a language, including linguistic, sociolinguistic, discourse and strategic competencies.

Comprehensive English Language Test (CELT) – a test of English language proficiency for the post-secondary level student.

Discovery learning - a method or approach to language teaching that proceeds from particular facts or examples to a general rule or principle; an inductive approach.

Draw-A-Person Test – a test to measure intelligence and maturity levels in children.

Embedded Figures Test (EFT) – a test requiring the subject to locate a simple figure within a complex design so patterned that the simple figure is hidden.

English as a second language (ESL) – the teaching of English to non-native speakers.

Field dependence (FD) – mode of perception which is strongly dominated by the overall organization of the surrounding field (Witkin, et al., 1977).

Field independence (FI) – mode of perception where the parts of the field are experienced as discrete from the organized ground (Witkin, et al., 1977).

Group Embedded Figures Test – GEFT. See EFT

Language acquisition- subconscious process of gaining a language which is parallel in all important ways to how children acquire language (Krashen, 1981).

Language learning - explicit, conscious process of gaining a language focusing on process and content (Krashen, 1981). Can become language acquisition (Long, 1983).

Learning style - consistent way that a person responds to and uses the environmental, emotional, sociological, and physical stimuli in the context of learning (Claxton and Ralston, 1978).

Metalinguage - language used to talk about language (e.g., noun, verb, communicative competence).

Monitor - process by which learners watch their own output to make alterations or corrections of errors as they are perceived (Krashen, 1981).

Passive learning – the student is not actively engaged in applying the knowledge gained to concrete situations.

Preferred cognitive learning style - term used to indicate that while cognitive learning styles are stable and pervasive in a person's functioning, they can be overcome by interest or motivation (Dunn, Dunn, and Price, 1979).

Second language learning - all non-native language learning.

Test of English as a Foreign Language (TOEFL) – a written test designed to test the English proficiency of foreign students applying for admission to U.S. colleges and universities, prepared and administered by the Educational Testing Service.

Weschler Intelligence Scale for Children (WISC) – an individual intelligence test for children and youth under the age 16.

Limitations and Delimitations of the Study

1. This study was delimited to students studying at the Tokyo International University of America, Salem, Oregon campus.
2. The definition of success in learning English as a second language for this research was limited to performance on the TOEFL and the CELT.
3. The ability to generalize the findings of this study may be limited by the size, nature and site from which the population is drawn.

Chapter Two

REVIEW OF LITERATURE

A review of existing literature describing the research on the role of the preferred cognitive learning style of field independence/field dependence in learning English as a second language (ESL) is presented in this chapter. The first section reviews literature that describes research on the concept of cognitive style in general and the field independence/field dependence style in particular. The second part of the chapter reviews literature that describes research on the role of field independence/field dependence in ESL.

The idea that people learn in different ways is hardly a new one. For instance, the ancient Hindus saw people as active or passive, emotional or thoughtful, and proposed that people needed four basic ways of practicing religion--the four yogas or pathways--which are described in the Bhagavad-Gita (Fizzell, 1984). Individual differences in learning have continued to intrigue researchers because it is generally agreed that all students do not learn in the same way. In Germany, psychologists were considering cognitive style around 1900 with Carl Jung's work on "psychological types" first appearing in 1921 (Jung, 1963).

By the 1950s and 1960s increasing attention was being paid to the different ways in which people learn. There is extensive literature on various approaches to learning in general and also to learning in more specific situations, such as learning English as a second language. Many approaches to learning have been tried with varying degrees of success, merely demonstrating that no one method works best with all students. A more important question than which method is superior to others is how students learn best. An emerging area of research which holds promise in providing some answers to this question is that of students' preferred cognitive learning styles.

Cognitive Style Defined

The terms "cognitive style," "learning style," and "preferred learning style" are often used interchangeably in the literature, and to add to the confusion, the term "style," itself, means different things to different people. This imprecision of language is not only bewildering, it can lead to a lack of focus in research and to fragmentation. However, there are differences in these terms and some clarification is possible.

To begin with, Claxton and Ralston (1978) suggest that the term "learning style" refers to the consistent way that a person responds to and uses environmental, emotional, sociological, and physical stimuli in the context of learning. Furthermore, learning style consists of distinctive and observable behavior which indicate how people learn from and adapt to their total environment (Dunn, Dunn, and Price, 1979; Carbo, Dunn and Dunn, 1986; Claxton and Murrell, 1987). Learning style, then, includes all the ways in which individuals interact with their world.

The largest portion of research on learning styles has been done on what is called "cognitive style." Cognitive style refers to the ways in which responses are made because of individual psychological differences and so are a component of learning style. Witkin and Berry (1975) define cognitive style as "cognitive characteristic modes of functioning that we reveal throughout our perception and intellectual activities, in a highly consistent and pervasive way" (p. 39). According to Vernon (1972), cognitive style is a "superordinate construct which is involved in many cognitive operations and which accounts for individual differences in a variety of cognitive, perceptual and personality variables" (p. 141).

Messick (1976) has stated that there are several dimensions of individual differences in the performance of cognitive tasks that appear to reflect consistencies in the manner or form of cognition, as distinct from the content of cognition or the level of skill displayed in the cognitive performance. They are conceptualized as stable attitudes, preferences, or habitual strategies determining a person's mode of perceiving, remembering, thinking, and problem solving. As such, their influence extends to almost all human activities that involve cognition, including social and

interpersonal functioning. Messick's definition is quite similar to that of Richardson, et al., (1987) who define cognitive style as a general term "covering all the various modes of knowing--perceiving, remembering, imagining, conceiving, judging, reasoning" (p. 3).

Although cognitive styles are viewed as habitual modes of information processing, they are not habits in the technical sense of learning theory according to several researchers (Bruner, Goodnow and Austin, 1956; Messick, 1976) because they are not directly responsive to principles of acquisition and extinction. They develop slowly and experientially and do not appear to be modified by specific tuition and training. In this regard, it is important to distinguish cognitive styles, which are high level heuristics that organize and control behavior across a wide variety of situations, from cognitive strategies, which are decision-making regularities in information processing that are, at least in part, a function of the conditions of a particular situation (Shouksmith, 1970).

The stability and pervasiveness of cognitive styles across diverse spheres of behavior suggest deeper roots in personality structure than might, at first glance, be implied by the concept of characteristic modes of cognition. Cognitive styles may entail generalized habits of information processing, but they develop in congenial ways around underlying personality traits. Thus, cognitive styles are immediately interwoven with affective, temperamental, and motivational structure as part of the personality.

There is also evidence in the literature that cognitive styles differ from intellectual abilities in a number of ways. Messick (1976) points out that ability refers to the content of cognition or to the question of what--what kind of information is being processed by what operation in what form. Cognitive styles, on the other hand, focus on the question of how--on the manner in which the behavior occurs. Furthermore, abilities are generally thought of as unipolar while cognitive styles are generally considered to be bipolar (Witkin, et al., 1975, 1977; Goodenough, 1976; Messick, 1976). (Unipolar means that one thing is being measured. It is there or it is absent. Bipolar means that two things are being measured and they are on a

continuum, so the measure falls between two poles.) These writers also stress that another way cognitive styles differ from abilities is in the values conferred upon them. Abilities are value directional; having more of an ability is better than having less. Cognitive styles are value differentiated; each pole has adaptive value in different circumstances.

A final way cognitive styles differ from abilities is in the breadth and depth of coverage and pervasiveness of application. An ability usually delineates a basic dimension underlying a fairly limited area. By and large, abilities are specific to a particular domain of content or function. For example, a person may be able to sing but not able to ski. Cognitive styles, in contrast, cut across domains. They appear to serve as high-level heuristics that organize low-level strategies, operations, and propensities—often including activities—in such complex sequential processes as problem solving and learning. The term, "preferred cognitive learning style," is used extensively in the literature because, while cognitive learning styles are stable over time and pervasive, they can be overcome by motivation and interest (Ramirez and Castañeda, 1974; Dunn, Dunn and Price, 1979; Kolb, 1984).

Varieties of Preferred Cognitive Learning Styles

Researchers have offered numerous varieties of preferred cognitive learning styles. Brown (1980) identifies over twenty different varieties. These can be grouped according to their organization. The styles in the first group focus on the way people tend to process information. These styles begin with strategies people use and include the style of Siegal and Siegal (1965) which they term "educational set." The theory behind this style focuses on sequence of learning. Schmeck (1983) offers a style called "deep-elaborative": information processing which focuses on whether more attention is paid to the meaning and classification of an idea suggested by a symbol or to the symbol itself. Another cognitive learning style is that of Kolb (1984) who bases his theory on experiential learning. Kolb deals with individual development as well as with style. Gregorc (1979) offers a similar perspective to Kolb's. Gregorc's style of

duality suggests that people are either abstract or concrete thinkers and either sequential or random, leading to four patterns.

A second group of styles focuses on social interaction patterns. Important characteristics identified in these styles are student attitudes--toward themselves, toward others, and toward the whole process of education. Mann, et al., (1967) examined student attitudes and grouped them into seven clusters based on behavior and roles exhibited in class.

A third group of styles is concerned with students' preferences for particular methods. A widely known and used style is cognitive-style mapping which was developed by Joseph E. Hill and his associates (Hill and Nunnery, 1973). Cognitive mapping involves assessing students' approaches to symbols and meaning, to modalities of influence, and biochemical and electrophysiological aspects of memory concern. Another style in the instructional preference category is the Canfield Learning Style Inventory (Canfield, 1980). Canfield is concerned with the conditions of learning, students' preferences in terms of content, students' preferences in terms of mode (listening, reading, and direct experience), and students' expectations as to what grade they thought they would receive.

The fourth, and final, group of styles is based on personality. Kagan (1965) offers a style of reflection versus impulsivity, the tendency of students in solving problems with highly uncertain responses "to reflect over alternative solution possibilities, in contrast with the tendency to make an impulsive selection of a solution" (Kagan, 1965, p. 609). And, of course, there is the style of field independence/field dependence offered by Herman Witkin (Witkin and Berry, 1975; Witkin et al., 1977; Witkin and Goodenough, 1981).

These styles offer great diversity as well as overlap, perhaps reflecting the fact that the concept of preferred cognitive learning style has been addressed by researchers in various disciplines asking different questions and focusing on different issues. While there has been research done on each of these styles, the style that has been the object of the most study is that of field independence/field dependence.

Field Independence/Field Dependence

Field independence/field dependence (FI/FD) is a preferred cognitive learning style that has been of great importance to psychologists and educators for many years. It has been one of the most thoroughly researched and articulated styles (Claxton and Murrell, 1987) with Witkin's work on FI/FD (Witkin and Berry, 1975; Witkin et al., 1977; Witkin and Goodenough, 1981) being the most influential. Witkin's work not only is the most extensive and comprehensive, but also has stimulated numerous other investigations.

Measures

The research of Witkin and Goodenough (1981) began as an effort to find out why pilots in World War II who lost sight of the ground would so frequently lose their sense of the upright and then fly upside down or sideways. The question became not just why that happened, but once it did, how were pilots able to correct their positions. Witkin's early work focused on the characteristic way in which people perceive both the world and themselves. He noted in his studies that people were markedly different from one another in their performance on given tasks and self consistent in their approach to the tasks. This suggested that people have preferred ways of integrating diverse sources of information available to them and he thought that to understand the perceptual phenomena, it was necessary to study the characteristics of the individual as well as aspects of the immediate situation (Witkin and Goodenough, 1981).

There are two sets of experiences which work together to enable one to perceive the upright. First is the external field which is perceived through vision. It usually provides the framework, the main axis of which correspond to the true vertical and horizontal directions of space. This is one basis for establishing the upright. Another definition of the vertical direction of space comes from the direction of gravity, perceived through the vestibular, tactile, and kinesthetic senses. In order to understand the basis of perception, Witkin's research strategy was to separate these

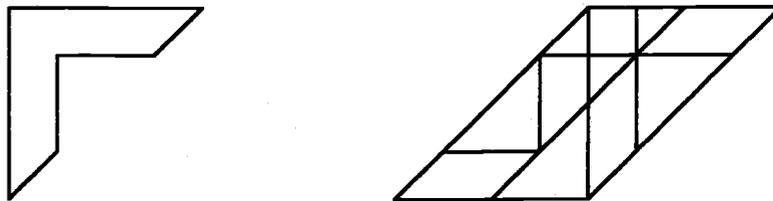
two standards experimentally.

One of the early tests developed by Witkin was the Body Adjustment Test (BAT) which consisted of a movable chair in a simulated room suspended on ball-bearing pivots. The subject was blindfolded and seated in a chair which could be tilted independently of the room. The room and chair were then tilted, and the blindfold removed. When the subject was asked to return his body to the true upright while the room remained tilted, some subjects aligned the body with the tilted room, and in that position, reported that they were sitting perfectly straight. Such subjects were clearly using the external visual field as the primary referent for perception of the upright, essentially to the exclusion of sensations from the body. At the other end of the performance range were subjects who brought the body close to the true, or gravitational, upright. These people were using the body as primary referent for perception of the upright. Witkin reported that most subjects brought their bodies to a position somewhere between these two extremes. (Witkin and Goodenough, 1981).

In another task, the Rod and Frame Test (RFT), the subject was seated in a totally darkened room facing a luminous rod enclosed by a luminous frame. The rod pivoted at the same center as the frame which could be tilted separately. The subject's task was to adjust the rod to the upright while the frame remained in its initial position of tilt. Here the position of an external object (the rod) in space had to be determined rather than the position of the body itself; however, this test provided another opportunity for the subject to use the body or field as referents. And here again, people differed substantially in the extent to which they relied upon one referent or the other. A significant correlation was noted between the two tests; those who had trouble with the BAT also had difficulty adjusting the rod to the upright position.

The third test that Witkin, et al., developed was the Embedded Figures Test (EFT). This test required the subject to disembed an item from an organized field of which it was a part but did not involve a body-field juxtaposition or perception of the upright. In this test (Witkin, 1950) the subject is shown a simple figure and then required to find it in a complex design that is so patterned that the simple figure is effectively hidden (Figure 1).

Figure 1: Sample Embedded Figure



In order to locate the simple figure, it was necessary to break up the organized pattern so as to expose the figure. People who found it easy to overcome the influence of the complex design in locating the simple figure within it were field independent. Those who had difficulty in separating the simple figure, who looked at the complex design holistically, were field dependent (Witkin and Goodenough, 1981). This test correlated with the BAT and RFT. People who could overcome the embedding of the complex design could also keep body or rod separate from room or frame in orientation tests. This correlation suggested that FI/FD was a general style and was, thus, specifically conceived to be a perceptual analytical quality that manifests itself pervasively throughout an individual's perceptual functioning (Witkin and Goodenough, 1981).

Dimensions of Field Independence/Field Dependence

Field independence/field dependence (FI/FD) is considered to be an expression of psychological differentiation; thus the theory supporting the style had its conceptual base in the larger theory of psychological differentiation. Differentiation is a structural property of an organic system. It is characterized by segregation of psychological activities from each other, as thinking from acting, feeling from perceiving. It also means that while functions within activities are separate, they are interrelated into a hierarchical structure, making them part of an articulated system (Witkin and Goodenough, 1981).

Field independence/field dependence can be defined as a preferred cognitive learning style which describes how people perceive a field. The "field" may be

perceptual or may be a more abstract set of thoughts, ideas, or feelings from which the task is to perceive specific relevant subsets. Field dependent people tend to perceive a situation holistically, depending upon the field (physical or psychological) for information. Field independent people tend to rely less on the field and to be able to restructure it if necessary for understanding. There are not, however, two different types of people making up the world--field dependents and field independents. Rather, people's standing on this dimension is described by their position relative to the mean. And there is now considerable evidence that this style extends beyond cognition into psychological domains. People who tend to be field dependent differ in personal characteristics from those who tend to be field independent (Witkin and Berry, 1975; Claxton and Ralston, 1978; Messick, 1976). For example, people who are uninfluenced in the lab by the surrounding visual framework in their perception of an item or task are also likely, in a social setting, to disregard the prevailing social frame of reference in defining their attitudes, beliefs, and self-views from moment to moment. Thus, Messick suggests that a social frame of reference can be substituted for the rod; there is continuity in what people are likely to do in both laboratory perceptual situations and social situations (Messick, 1976).

Characteristics

There are a number of distinct characteristics of the FI/FD style. First, as with all cognitive styles, it is concerned with the form rather than the content of a cognitive activity—with the process. Field independent/field dependent people differ consistently in how the learning process occurs rather than in how effective the process is (Goodenough, 1976). Secondly, FI/FD is a pervasive style, being manifested in the perceptual, intellectual, and social domains. It is a feature of personality and not just cognition in the narrow sense. People who are FI and thus able to "find the monkey hidden in this picture," being able to disembed the complex design, are also likely to be more adept at restructuring complex mathematical problems and at using elements in new and different ways. In social behavior, they

are more likely to have more independent opinions and to dislike system and routine (Witkin et al., 1977, Witkin and Goodenough, 1981; Guilford, 1980).

A third characteristic is that FI/FD is stable over time. Witkin and Goodenough (1981) reports that FI/FD is established in a stable way early in life and that preferred cognitive learning style in adulthood may be predicted with some accuracy from knowledge of preferred cognitive learning style in childhood. People who tend to be field independent as children will tend to be field independent as adults.

While Witkin, Goodenough, and Karp (1967) found negligible average change in FI/FD from age 17 to 24, Chickering (1976) found in his research on this age group that for college students, the fit between the characteristics of the student and those of the instructor could influence the students' preferred cognitive learning style. Thus, while FI/FD is stable, it can be modified by education and training. Researchers (Karp, 1963; Witkin et al., 1977; Crosson, 1984) have found a relatively stable performance up through the middle age years and then a decline in field independence after about the age of 50 (Lee and Pollack, 1978).

A final characteristic of FI/FD is that it is bipolar. Its bipolarity makes the style value neutral since each pole has qualities that are adaptive in particular circumstances. Several researchers (Witkin, et. al., 1977; Witkin and Goodenough, 1981; Claxton and Ralston, 1978) have suggested that people are likely to favor and do better in educational and vocational domains to which their preferred cognitive learning style suits them. For example, people who are field independent and interested in chemistry may prefer to do independent research while people who are interested in chemistry but are field dependent are more likely to teach chemistry than to work away from a more social setting. Furthermore, certain cultures tend to be more FI than FD, depending upon social structures and the ecology. This will be dealt with later as the role of culture in FI/FD is examined.

FI/FD and Intelligence

While field independence/field dependence is described as a preferred cognitive learning style dimension, one of the main measures of that style is cognitive restructuring which is defined as an ability dimension. This has implications for the relationship between FI/FD and intelligence. Several studies have shown a positive relationship between field independence and intelligence. Witkin, Goodenough and Karp (1967) measured FI/FD and children's ability to perform on the Weschler Intelligence Scale for Children (WISC) subtests of block design, picture completion, and object assembly. They found a relationship which they interpreted as providing evidence that these intellectual tests share the requirement of overcoming the embedding context with FI/FD. In a study of 150 male college undergraduates, similar results were obtained (Karp, 1963). In 1977, Witkin, et al., presented evidence that the moderate correlations between the Embedded Figures Test (EFT) and the Weschler IQ scales were due to the strong similarity in tasks between the EFT and Weschler subtests (block design, object assembly and picture completion). In later studies, Witkin and Goodenough (1981) found the FI/FD construct and verbal comprehension construct to be unrelated. They concluded that this absence of a relationship between FI/FD and verbal ability as expressed in vocabulary tests suggested that the relationship repeatedly found between field independence and restructuring ability could not be accounted for on the basis of one overall capability of field independent over field dependent people. Both Witkin and Goodenough(1981) and Vernon (1979) agree that, while the dimension of FI/FD cannot be equated with intelligence, it must be considered an ingredient of the intellect.

FI/FD and Gender

The early work of Witkin, et al., (1954, 1962), has often been cited as evidence that males are more field independent than women (Sherman, 1978; Claxton and

Murrell, 1987; Ehrman and Oxford, 1989). Witkin did report that males consistently scored higher on the Rod and Frame Test (RFT). Prominent sex differences were found both in children and teenagers. Consistent sex differences were not found on the Body Adjustment Test (BAT) but there are far fewer studies using this test and it does correlate strongly with the RFT so the conclusion was drawn that there were pronounced sex differences in spatial-visualization ability and restructuring (Witkin et al., 1977).

On the EFT, the test results have varied. Witkin (1954, 1962, 1981) reported that preschool girls tended to be more field independent than preschool boys but school age girls and young adult women tended to be more field dependent. Because of the variation in test results and the fact that different tests were used for different age groups, Witkin found it difficult to draw conclusions about trends in sex differences regarding disembedding ability and relied more on evidence from the RFT to conclude males tended to be more field independent than females (Witkin and Goodenough, 1981).

Witkin's model has received criticism because of the somewhat negative sounding traits of field independence. Field independent people are described as active, analytic and self reliant while field dependent people are passive, dependent on context, and conforming. Furthermore, as more women than men have been reported as field dependent, some people view the description of this field as sexist. Sherman (1978) considers the term field dependent to be pejorative to women because the term dependent feeds stereotypical thinking. She claims Witkin's work has been cited erroneously as "scientific proof" that women are not as analytical as men.

Kogan (1976) says that the investigation of a correlation between FI/FD and sex differences demands a high tolerance for ambiguity because the factor of gender interacts with age, socioeconomic status, cultural background, and other demographic factors. He adds the fact that there is the motivational issue; women may choose what they view as the more traditionally feminine part of a profession--teaching, for example, over research. According to Kogan (1976), "The most reasonable inference that can be drawn from the array of empirical evidence available at the present time is

that there are no systematic, overall sex differences on any cognitive dimension that have claimed the attention of psychologists." (p. 103).

Causes

What causes a person to be field independent or field dependent? Researchers have focused on biological, family, and cultural factors. Because of his findings that males in Western cultures tend to be more field independent than females, Witkin's attention was first drawn to the possible roles of hormones and sex-linked genetic factors in the development of FI/FD. After examining the evidence from his own studies (1962, 1971, 1981) he concluded that it was possible that restructuring ability in some people could vary due to an X-linked genetic determinant and that hormone factors might mediate; however, the evidence was very limited so a definitive statement was not possible. Other researchers (Maccoby and Jacklin, 1974; Kogan, 1976) have also examined the role of biological factors--genetic, hormonal, neurological--in the development of preferred cognitive learning styles, and they, too, found inconclusive evidence and complicating factors. This line of study has not been pursued since the 1970's.

Whatever role future studies may assign to biological factors, there is, at present, a large body of evidence on the role of child-raising practices. One aspect of child-raising that has been examined is the similarity of cognitive style between parent and child. Corah (1965) investigated this relationship and determined that there was a significant relationship. However, Goldstein and Blackman (1978) point out that Corah's conclusion was based on an index of FI/FD derived from EFT and the Draw a Person (DAP) test scores. Since the DAP is not central to the measurement of FI/FD, they question Corah's conclusion. Dyk and Witkin (1965) investigated this relationship also and found no significant correlation in cognitive style in 26 pairs of mothers and sons. These studies do not indicate that the level of field independence or field dependence of children is related to that of their parents, but they do lend support to the notion that biological factors are not significant factors in the origins of FI/FD.

While parent-child similarities in FI/FD may not be crucial to the development of this cognitive learning style, the relationship between mother and child does seem to be. There are a number of studies which suggest that interactions of parent, particularly the mother, and child are significant in the development of field independence or field dependence. Several studies (Dyk and Witkin, 1965; Witkin, 1971; Ramirez and Castañeda, 1974) have concluded that child-raising practices which encourage separate autonomous functioning foster the development of differentiation in general, and field independence in particular. The more self realized and self assured a mother is, the more likely she is to encourage her children to see themselves as a separate people, to encourage her children's curiosity, to stimulate the children to assume responsibilities. Conversely, child-rearing practices which encourage reliance on parental authority are likely to allow for less differentiation and, thus, a more field dependent cognitive style. Mothers of field dependent children were more likely to limit their children's activities, to emphasize cooperation with others as opposed to competition, and to emphasize achievement for family rather than for personal gain. Witkin (Witkin, et al., 1962; Witkin and Goodenough, 1981) has suggested that in western culture, mothers of field dependent children may have a hard time defining their role as mother and thus are either too indulgent and protective or else very authoritarian. Witkin and others have consistently concluded that family environments which encourage autonomous functioning in children are likely to produce children who tend to be field independent. This conclusion also has support from studies which examined the role of culture and ecology in the development of FI/FD.

There is a substantial body of research available which concerns the contribution of social setting to the development of FI/FD. The societies compared in these studies which are considered to be tightly structured tend to have elaborate social structure, have considerable role diversity, and have emphasis on conformity with religious, political and social authority. Societies which are considered to be loosely structured have less elaborate social structure, have fewer roles, and individuals are more likely to do their own thing. Since the main way a society encourages

perpetuation of its values is through socialization in the family, tight societies are characterized by stress on conformity and parental authority within the family.

The earliest studies investigating the relationship between FI/FD and culture were done by Berry (1966) with the Temne of Sierra Leone and the Eskimos of Baffin Island. Similar studies were carried out about the same time by Dawson (1967) with the Temne and the Mende, the latter also of Sierra Leone.

Both Dawson and Berry found the Temne to be very field dependent as measured by the EFT. Child-raising practices were correlated with those of western cultures where field dependence is the norm: stress was placed on conformity, discipline of children was severe, and children were encouraged to be very dependent upon parents. The Mende, who tested more field independent, also had child-raising practices correlating with those already done on western cultures. Their discipline of children was not as strict, greater emphasis was placed upon children assuming responsibility at an earlier age, and children were encouraged to "do their own thing."

Berry expected the Eskimo to be more field independent and, indeed, that proved to be the case (Berry, 1966). Berry's examination of child-raising practices showed that Eskimo parents generally avoided punishment of children and allowed them to have extreme freedom. They encouraged independence, self-reliance, skills, and ingenuity. Class distinction and social and political stratification were not found in the social system.

Berry's expectations of greater field independence among the Eskimos was also based on differences in the ecological requirements. The environment of the Temne is highly variegated with brush and colorful vegetation, whereas the endless, uniform snow fields of the Eskimo environment is extremely homogeneous. Articulation, thus, is a built-in feature of the Temne's visual world, but it is essentially lacking in the Eskimo world. In addition, the Temne are farmers who are sedentary, whereas the Eskimo are hunters who must be able to find their way around in a highly uniform terrain and so a great premium is placed upon development of the articulation of space.

Berry (1966, 1976), Dawson (1967), and Witkin and Berry (1975) have all

examined FI/FD in relation to economic organization of a society. They have found that migratory hunters tend to be more field independent, which seems to fit since, in order to get home safely, they would need to be self reliant, autonomous, and continually aware of location in space; their interpersonal skills would not be as important because of the hunter's relatively isolated life. On the other hand, farming cultures would find field dependence more adaptive since greater importance is usually placed on roles and social relationships.

Most observers of Japanese society tend to focus on the emphasis placed on harmony and identification with the group (Horio, 1988; Rohlen, 1989; *U.S. Study of Education in Japan*, 1987). There is an emphasis in the literature on the push for conformity, on avoidance of overt recognition of differences in individual ability, on minimizing one-to-one competition, and on the fact that independence is not a goal in child raising practices. This would seem to encourage field dependence.

However, Markus and Kitayama (1991) point out that the western notion of self may not be an adequate description of selfhood in other cultures, that in Japan the experience of self includes a sense of interdependence of one's individual self with one's status as a participant in a larger group. In Japanese society, rather than there being a single social reality of independence or dependence, there are a number of possible perspectives acknowledged of both self and social life. The focus is on making appropriate choices, which will depend on the situation. The sense of identity comes in part through interpersonal relationships; self and independence are not constants like ego, but are fluid.

Furthermore, Markus and Kitayama (1991) stress that, while cooperation in the west implies a certain giving up of one's self, in Japan it implies working with others as a way of expressing and enhancing one's self—that giving reflects tolerance, self-control, flexibility, and maturity. Therefore, on the surface, it might appear that Japanese culture would foster field dependence because of stress on conformity and maintaining social relationships; however, the child-raising practices could also be said to foster field independence. The emphasis on the group doesn't mean that the individual is subjugated to the group but rather that the individual helps define the

group as well as be defined by it. Interdependence is the ideal, and interdependence cannot be achieved without a certain degree of independence. Thus, while the role of biological factors in the development of FI/FD seem at this time to be minor, the role of culture in general, and child-raising practices in particular, seems to be very important.

With this background on the preferred cognitive learning style, attention will now be turned to the role field independence/field dependence plays in ESL.

Field Independence/Field Dependence in Language Learning

The review in the following section will first explore the general issue of language learning and the main underlying assumptions about the goals of language learning, then how field independence/field dependence has been held to figure in learning English as a second language, and finally, how this specifically effects Japanese students learning ESL.

In dealing with the topic of success in ESL, there are two crucial issues that must be clarified. These issues relate to the underlying assumptions about how language is learned and what is important in that process. The first issue concerns the concept of learning.

Learning a Language versus Acquiring a Language

For years, those in the field of ESL have made the distinction between learning a language and acquiring a language. This distinction is based on Krashen's contention (1981, 1983) that language can be acquired or it can be learned and that these processes are very different and are independent. According to Krashen, acquisition is a subconscious process parallel in all important ways to the process which children use in acquiring their first language. Not only is the process subconscious (the learners are not particularly aware they are in the process of

learning a language), the knowledge itself is subconscious. For example, native speakers do not always know that they know (are conscious of) the rules or grammar of their language, but they use those rules.

Learning, on the other hand, is a very conscious and explicit effort. Learners are aware of both the process and knowledge. There is a focus on the rules, the forms, the content. It is a structured and more formal process.

A corollary to the acquisition/learning distinction is the monitor theory (Krashen and Scarcella, 1978; Krashen, 1981, 1983) which describes the interrelationship of these two processes. Krashen believes that acquisition, not learning, is responsible for fluency in second language performance, for ability to use a second language easily and comfortably. Learning, or conscious knowledge, serves only as an editor which Krashen labels the monitor. The monitor is the process by which learners watch their own output to make alterations and correction of errors as they are perceived. It is used to make corrections in the output of the acquired system, is the result of instruction or learning, and can interfere with language acquisition.

Long (1983) argues that Krashen's definition of learning is too narrow and that learning involves more than just knowledge of grammar rules. He suggests that learning involves the experience (possibly obtained through instruction) of dealing with language as object and the concomitant abilities this brings. It includes the ability to monitor with rules when conditions permit, and also the ability to improve ESL ability in general.

Furthermore, Long suggests that with a broader concept of learning, it would be possible for learning to become acquisition, a possibility which the monitor theory flatly rules out (Krashen and Scarcella, 1978). The change would account for the apparent effect of instruction on second language learners at the intermediate and advanced levels for whom instruction is associated with proficiency and so for acquisition.

Gathercole (1988) also takes issue with the acquisition/learning distinction. She notes that adult second language learners have a more well-developed understanding of the world around them and, therefore, will have already developed

many concepts necessary for language comprehension. For instance, children learning to count in their first language have to learn not only the names of numerals, but also the concept of number; adults have the concept of number and the understanding of its application, and thus, they just need to learn the names of the numerals. Because of what they already know, this is knowledge to be learned rather than acquired. Also, she points out that the second language learner has already acquired one language and can draw on information provided by that first language.

Thus, evidence suggests that a sharp distinction between acquisition and learning may not be valid. Long's broader definition of learning (Long, 1983), which can encompass acquisition, seems to be most appropriate. This is especially true when examining research based on students enrolled in formal programs for the specific purpose of language learning, with success being measured by an academically-based instrument.

The second area of contention is what is being measured when defining successful language learning. Most definitions have something to do with competence. The concept of competence is not a new one nor is the effort to define it. For many years, scholars have drawn a basic distinction between competence and performance. Competence is generally held to refer to the underlying knowledge of a system, event, or fact. It is the unobservable, idealized understanding. Performance, in contrast, is the overtly observable and applied manifestation of competence. It is the actual doing of something--walking, talking, playing basketball. In western society, the competence/performance distinction is present in all areas. For example, in school it is assumed that students have a certain competence in given areas and that this competence can be measured and evaluated by means of the observation of samples of performance called tests and evaluations.

Linguists have also used this distinction. Saussure (1959) noted the difference between competence, which he called "langue" and defined as "the form of a sum of the impressions deposited in the brain of each member of the community" (pp. 14-15), and performance, which he called "parole" and defined as "an individual, willful act" (p. 19). Another noted linguist, Chomsky (1965), compared competence to an

idealized speaker who does not manifest such performance variables as memory limitations, distractions, shifts in attention and interest, errors, and hesitational phenomena such as false starts, repeats, pauses, omissions, and additions.

In reference to language learning, competence is the underlying knowledge of the system of a language (Savignon, 1983). The term, "communicative competence," in fact, was coined by a sociolinguist, Dell Hymes, in 1974 to include knowledge of sociolinguistic rules, or the appropriateness of an utterance, in addition to knowledge of grammar rules (Savignon, 1987). Savignon (1983) identifies four areas of competence. One is grammatical competence such as knowing what verb tense to use. Another is sociolinguistic competence which she defines as an interdisciplinary field of inquiry having to do with the social rules of language--understanding the social context in which language is used: the roles of the participants, the information they share, and the function of the interaction. For example, one is much more likely to use informal language, including slang, when at a party with friends but to use much more formal language when addressing a group of vice presidents of the company for which one works. The use of dialect might be fine in one's immediate neighborhood but not acceptable outside of that neighborhood.

Discourse competence is a third area of competence. Discourse competence refers to connections--how sentences or utterances form a meaningful whole. The connections that exist between sentences are often not explicit so readers/listeners must infer meaning based on general knowledge of the real world. For instance, if students read that Mary invited a new friend to her house and when he left, she could not find her purse, they might infer that the new friend stole the purse, or that Mary forgot where she put the purse, or that when the friend helped her move furniture the purse fell behind the sofa, or any number of conclusions based as much on the students' understanding of what seems logical as on what the text actually says.

The fourth and final area is strategic competence. Strategic competence includes coping or survival strategies--what does one do when one cannot think of a word? How does one let a speaker know the speaker was speaking too fast? This ability to communicate within restrictions requires one to take the perspective of the

other participants in the interaction, to empathize with the perspective of others (Savignon, 1983).

Communicative competence, then, includes all the pieces of a language and how those pieces fit together (Savignon, 1983). While communicative competence is generally held to be the goal in language acquisition (Krashen, 1982, 1985; Canale and Swain, 1980; Duran, et al., 1985; Oller, 1986) it can only be measured by performance (Savignon, 1983). Most research focuses on performance because it is observable and because it is assumed to be the applied manifestation of competence (Brown, 1980; Savignon, 1983). Extended research into the ramifications of that assumption is beyond the scope of this immediate research project.

The possible relevance of preferred cognitive learning style to second language learning was first suggested over fifteen years ago (Brown, 1973). For years there had been discussions about whether affective variables such as motivation, or cognitive variables such as intelligence, were more important in learning English as a second language (ESL). Since the preferred cognitive learning style refers both to individual principles of cognitive organization and to various tendencies that have more to do with personality, it really mediates between cognition and emotion (Brown, 1980). Much has been written about the role of the preferred cognitive learning style of field independence/field dependence (FI/FD) in cognitive and affective variables involved in second language learning.

One of the cognitive factors examined in an attempt to identify universal factors in second language learning proficiency is intelligence. Pimsleur, et al., (1962) consider intelligence to be a significant factor in foreign language achievement, contending that verbal ability in a first language was positively and strongly correlated with success in a second language. Other researchers also have found intelligence to be positively related to second language learning but they hold that the relationship was low and given to variation (von Wittich, 1962; Chastain, 1969; Genesee, 1976). In one recent study different conclusions were drawn. In their study of adults learning French as a second language in Canada, d'Anglejan and Renaud (1985) found intelligence to be a factor in second language success and furthermore, to be

significantly related to field independence. They cite a correlation between intelligence and field independence of .71. A correlation this strong runs counter to all other research which generally suggests that field independence and intelligence are not highly correlated (Witkin and Goodenough, 1981; Ramirez and Castañeda, 1974; Brown, 1980; Messick, 1976). For the most part, researchers have reported a slight relationship between field independence and intelligence and between intelligence and language learning. While it clearly is a factor in second language learning, intelligence, per se, is no guarantee of success in ESL.

There are other cognitive variables which have been identified as important in second language learning, and in ESL in particular. These variables include inferences, detecting and analyzing patterns, attending to form, and monitoring (Rubin, 1975). All these traits are more commonly found among people who are more field independent than those who are more field dependent (Messick, 1976; Witkin, 1980). Much of the literature on ESL and cognitive style indicates that when these cognitive variables are tested, field independent students do score higher. Abraham (1985) examined the relationship of FI/FD and the learning of grammar, and reported significant correlations between field independence and the use of monitoring by ESL students on each of three tasks—proofreading, filling in the blank, and composition. He further reported that field independent students were more adept at learning and using the rules than were field dependent students. Similarly, Chapelle and Roberts (1986) report field independence to be a significant predictor of success on a multiple choice grammar test. McLeod and McNaughlin (1986) examined the role of restructuring in reading in a second language. Restructuring involves reforming the components of a task so that they become coordinated, integrated, or reorganized into new units of meaning, thereby allowing what the student already understands to be applied to understanding the new material. They found field independent students restructure more easily while reading and they hold this to account for the fact that reading comprehension scores of field independent students tend to be higher than those of field dependent students. J. Hansen and Stansfield (1981) suggested that field independence may lead to greater metalinguistic awareness in a second language and,

furthermore, may be the underlying basis for successful monitoring behavior described by Krashen (1985) as a technique which aids the development of conscious grammar knowledge so necessary on most traditional ESL exams.

Another variable in learning English as a second language which has been identified and researched is memory. In general academic tasks, individuals tending to be field independent generally perform slightly better than those tending to be field dependent when assigned such specific memory tasks as recall and recognition (Reardon, et al., 1982; Globerson, 1985). According to Kiewra and Frank (1988), field independent learners generally achieve higher test scores under conditions requiring immediate and rapid encoding of stimulus into memory, but when more time is available during a review for encoding what is externally stored, then the difference in test performance for field independent and field dependent learners is less pronounced.

Other researchers (Witkin, 1977; Even, 1982; Carter, 1988) have noted that, when perception information is presented in social settings and, thus, is more relevant to them, field dependent learners do as well as field independent learners and may even outperform them. Goodenough (1976) notes that learners who are field dependent not only remember more in social contexts, but also their incidental learning of social information is greater.

According to Reardon, et al., (1982), active learning, which should compensate for performance decrements of field dependent persons, may actually make things worse for them by increasing demands for processing. A passive approach to memory and learning may be used by field dependent learners to minimize the effort of the processing load.

The role of affective variables has also been extensively studied. Among the characteristics of a good language learner that have been identified (Rubin, 1975) is the willingness to live with vagueness--to keep trying to understand and not give up in frustration when not understood. Chapelle and Roberts (1986) have provided additional research on this variable. They report that students who have a tolerance for vagueness (they call it ambiguity tolerance) score significantly higher on ESL proficiency tests and that students who are field independent tend to be more tolerant

of ambiguities. They suggest that this could be due to field independent students being better able to detect patterns and subpatterns in a language (and thus more fully grasping a grammar) and being less likely to get lost in the totality of the stimuli.

Guiora, et al., (1972) have also examined tolerance for vagueness; they examined the tolerance for vagueness of identity. They contend that to engage in learning a new language is to step into a new world. It is the act of extending oneself to take on a new, often unclear identity. Field dependent students tend to be less self-differentiated than field independent students (Witkin et al., 1976, Witkin and Goodenough, 1981) and, because they are more global in their general approach, may be better able to suspend at least partially and temporarily the functions that maintain their separateness from others. Stevick (1976a) supports the findings of Guiora, et al., (1972) and raises the issue of identity with those who speak the target language. (e.g., Will I lose my identity as a Japanese person if I learn English?) Stevick suggests that those who are ready to interact with people in general and with others in the new language in particular are more apt to succeed in learning the new language because they are not as fearful of loss of identity. If Guiora's research is extended it may be inferred that field dependent people would be more tolerant of ambiguity in social settings and, therefore, according to Stevick, better language learners.

Furthermore, Guiora, et al., (1972) contend that the quality of empathy figures importantly, too, because the language learners need to be able to care more about communicating ideas than about avoiding language errors. However, Dulay, Burt and Krashen (1982) caution that there are not clear research findings on the relationship between empathy and ESL learning. They hold that if empathy is an important factor, it is most likely to be manifested in the development of communication skills which enable understanding another's feelings and ideas.

Linguistic playfulness, which is typically more of a field dependent trait than field independent (Witkin and Goodenough, 1981), has been identified by Fillmore (1981) as being important in language learning because it seems to go along with mental flexibility. Bloomberg (1967) says some field independent people are unable to adopt a playful whimsical style of functioning which he holds is a necessary

condition for creativity. Linguistic playfulness reflects the tendency away from overly analytic behavior to move toward more risk-taking. Kogan and Wallach (1964) suggest that field dependent people tend to be risk-takers more than field independent people. A willingness to take risks, to try out new knowledge, to take advantage of opportunity to practice and use the new language is considered to be part of being a good language learner (Rubin, 1975; Brown, 1980). Risk takers, for example, are more likely to guess on difficult multiple choice questions, or to ask questions when they don't understand. While field dependent people are usually thought to be the more likely to take risks, Kogan (1964) points out that they don't all risk in the same way. His studies show men to be more willing to risk inclusion errors in setting category limits and women are more likely to risk exclusion errors in establishing category boundaries.

Other writers (Yando, Seitz and Zigler, 1979; Lesser, 1976) note links between risk-taking and culture. They point out that ethnicity is less predictive of risk-taking than social class, with the disadvantaged being more spontaneous and willing to risk, probably because of having less to lose.

Culture and ESL

This leads to the issue of the role of culture in learning ESL. There is considerable research on how culture influences the development of field independence/field independence (Witkin and Goodenough, 1981; Berry, 1976). One area where culture and field independence/field dependence effect language learning is in the understanding of cultural norms. As Tharp (1987) points out, cultural norms often involve values which are neither explicit nor shared such as cooperation/competition, being/doing, reticence/expressiveness. Most ESL research has indicated that active learners are more successful than passive learners (Rubin, 1975, Brown, 1980). Typically, field independent learners tend to be more active and field dependent learners more passive (Gregorc, 1979b). However, Rubin (1975)

points out that the observation of a lack of activity may be deceptive. In some societies, students are expected to delay production of oral language until the entire linguistic code has been processed and can be perfectly produced. In others, successive approximations are expected; in still others, rote learning is common. All of these are active but judged in different ways depending upon underlying assumptions of those doing the observing. Hayes (1983) points out that research is beginning to suggest that some cultures may encompass a particular set of cognitive and social styles that together appear to be incompatible with the cognitive and social styles fostered by schools in the United States.

There is also the matter of world view. Hall (1959) observes that the recognition of culture as a hidden but powerful psychological reality progresses slowly. He also underlines the importance of culture in creating strong dispositions to see and understand the world in a particular way (Hall, 1976). He says that people from different cultures may not only speak different languages, they may inhabit different sensory worlds. Selectively screening out sensory data admits some things while filtering out others. Thus, experience as it is perceived through one set of culturally-patterned sensory screens may be quite different from the experience perceived through another. Szalay (1982) supports Hall's thesis and thinks that we may share more than we have thought and differ in deeper and more consistent ways than we may have assumed. Conflicts at the interface of culture and cognition may arise over what is transmitted (content) or the efficacy of transmission, or both. It may help to examine a specific example, reading comprehension.

In several studies of cultural schemata and reading comprehension, there is solid evidence that cultural schemata effects understanding. Reynolds, et al., (1982) suggest that cultural schemata can effect how prose material is interpreted. Foreign students have not had much opportunity to acquire the schemata of American culture. Many find classroom material difficult because they process information differently. Hall flatly states that ". . . people reared in different cultures learn to learn differently" (1959, p. 948).

Andersson and Barnitz (1984) point out that reading is a meaning-driven,

multi-leveled, interactive, hypothesis-generating process, and that cultural schemata provide the context for comprehension. The interrelationship between the structure of discourse and thought patterns of people from various cultures is well-documented (Hall, 1959; Kearney, 1984). For example, story organization may vary across cultures. Most American folk tales have heroes who are very goal-oriented while most Japanese folk tales do not have main characters who are goal oriented (Andersson and Barnitz, 1984). Cultural content can also influence the reader's recall—what is filtered in or out and how it is organized in the memory.

Strategies

We now come to the question of how field independence/field dependence affects learning strategies involved with ESL. According to Witkin and Goodenough(1981) and Ehrman and Oxford (1989), learning strategies are much more specific than cognitive learning style because they involve a specific approach to structuring or organizing a specific task. It is not a matter of how people are going to learn English but how they are going to find out what this unknown word means.

As has been stated earlier, researchers stress the fact that both field dependence and field independence have advantages and disadvantages depending on the situation or the task (Goodenough, 1976; Chickering, 1976; Carter, 1988). Certain general behaviors which promote success as well as nonadaptive behaviors have been identified (Gregorc, 1979b).

Gregorc (1979a) identifies adaptive field independent behaviors as individual competition, ability to work independently on tasks, the use of deductive reasoning in learning, and the ability to deal with abstractions. While no research has been done on how this specifically relates to ESL, there are some logical connections. Gregorc holds that individual competition leads to more active involvement in learning. An active approach to learning has been identified as leading to more successful language learning than a passive approach (Rubin, 1975; Bialystock and Frolich, 1978). In

addition, competition is an implicit cultural value in western English-speaking societies and thus the field independent learner would fit in better in terms of adjustment to cultural norms. Being able to work independently also is an implicit value in most English-speaking societies and does generally allow the learner to take advantage of independent learning labs as well as to make fuller use of study time outside of class. The ability to deal with abstractions has been identified by Gregorc (1979a) as leading to increased ability to make inferences and to analyze patterns, which O'Malley, et al., (1985) have identified as important strategies in ESL.

Gregorc (1979a) cites nonadaptive field independent behaviors which include excessive attention to form. Brown (1980) says this may lead to the learner being more concerned about grammar than communication. Krashen (1983) also cautions that excessive attention to form leads to an over-reliance on monitoring. Another nonadaptive field independent behavior Gregorc cites is excessive concern with detail. A final nonadaptive field independent behavior for ESL is rigidity of role. Brown (1980) and Porte (1988) both hold that flexibility is important in being able to not only use strategies but to choose appropriate ones. Porte (1988), for example, says that students identified as poor language learners often use the same strategies as those who are more successful in their endeavors, but they demonstrate less sophistication and have trouble knowing when a strategy is appropriate.

Gregorc (1979b) also lists adaptive and nonadaptive field dependent behaviors. Adaptive behavior includes being able to work cooperatively. Cooperation is identified by Gardner and Lambert (1972) as fostering a concern to communicate. Attention to social environment is another adaptive field dependent behavior and has been identified by Savignon (1983) as leading to sociolinguistic competence—knowing what language is appropriate given the situation. For example, students need to understand that the casual language used in the residence hall is not appropriate when discussing issues with an instructor in class. Field dependent learners' willingness to assume new roles leads to students' being able to learn from modeling and adjust to new situations.

Nonadaptive behaviors include too much adherence to whole structures as

given so the student cannot distinguish important details. Birckbichler and Omagpro (1978) hold that field dependent ESL learners are easily frustrated because of their lack of focusing skill, distraction by detail, and inability to distinguish relevant information. A second nonadaptive behavior is need for external reward which would lead to over reliance on the teacher. Finally, field dependent learners tend to be more concerned with criticism than field independent learners and, therefore, have difficulty in accepting or evaluating feedback on language performance.

Field independence/field dependence has also been indicated as a possible source of test variance (L. Hansen, 1984; Stansfield and J. Hansen, 1983). Researchers have noted correlations between field independence and language test scores which seems to provide evidence that field independence is a trait of a successful language learner, with language test performance defining what successful means. However, in interpreting these results, researchers have been careful to suggest that perhaps field independent students may be simply good at taking particular language tests (Bialystock and Frolich, 1978). Therefore, recent research has included a variety of language assessment methods in an attempt to keep testing methods from restricting the definition of good language learner to mean a good classroom test taker. Researchers have also sought factors other than language proficiency which may be responsible for language test performance.

There is some evidence that field independence may be one variable responsible for introducing systematic error into language test scores. Stansfield and J. Hansen (1983) examined the relationship of field independence/field independence and cloze test performance. A cloze test presents the reader with a passage of prose which has had words systematically deleted from the text. The reader's task is to fill in the blanks with the appropriate word. The cloze test technique is considered to be an easily constructed, reliable, and valid test of second language proficiency (Oller, 1986; J. Hansen and Stansfield, 1981, 1982; Spurling and Ilyin, 1985) and, therefore, is often used in ESL classes. Stansfield and J. Hansen (1983) reported a .43 ($p < .001$) correlation between student field independence and cloze test performance, noting that cognitive restructuring abilities are more conducive to success on a cloze

reconstruction task. Lynne Hansen (1984) validated the findings of Stansfield and J. Hansen in terms of cognitive style bias in the cloze test. However, her data indicates that cognitive style bias in cloze testing does not extend across all cultural groups and ability levels.

Chapelle (1988) examined the relationship of field independence/field dependence with cloze, dictation and multiple-choice language tests and reported that not only did the relationships differ but that they differed in strength for native speakers in regular English classes, native speakers in remedial English classes, and non-native speakers. For non-native speakers, the only significant correlation was between field independence and the multiple-choice test and, while it was not very strong (.341), it did support the hypothesis that field independent learners tend to do better than field dependent learners on relatively more discrete tasks. The correlation between field independence and the cloze test was quite different from what Stansfield and Hansen found.

Field Independence/Field Dependence Among Japanese ESL Learners

Finally, there is the specific issue of preferred cognitive learning styles of Japanese students studying ESL. No extensive research has been done on this topic. However, some research has been done which can be applied. Nishida (1985) reports on the relationship between ambiguity tolerance and culture shock among Japanese students. He found that those more tolerant of ambiguity experienced less severe culture shock. Culture shock becomes a factor in language learning when it is so severe as to interfere with learners' ability to participate in language learning activities. Culture shock also figures in the learner's attitude toward the new language being learned (Ramirez and Castañeda, 1974).

Japanese society places a high value on harmony in interpersonal relations and on cooperation with others. Schools reflect this cultural priority. According to the *U.S. Study of Education in Japan* (1987), classroom activities are structured to encourage or require participation in group activities, to emphasize the responsibility

of individual students to the class as a group and the school as a whole, and to develop group loyalty. The heavy emphasis on group activities and social consensus results in considerable conformity in behavior. Hall (1977) also reports that in the Japanese community, the child moves into the larger world of the adult but does not establish an identity separate from that of the community. According to most researchers (Witkin, 1975, 1981; Ramirez and Castañeda, 1974; Goodenough, 1976), these cultural values would tend to encourage field dependence. Japanese students study ESL from the time they are in junior high school. The purpose of the English curriculum in Japan is to train students to read and write English, relying on grammatical analysis and translation to and from Japanese (*U.S. Study of Education in Japan, 1987*). Although there have been various efforts over the years to provide more experience in listening to and speaking English, these dimensions remain underdeveloped. The English portions of the university entrance examinations have focused exclusively on the written rather than spoken language, and instruction at the secondary school level is primarily geared to what will be tested at the university entrance examinations.

Summary

In conclusion, research has defined the term "preferred cognitive learning style" as one dealing with the way individuals process information. It is held to belong to the general family of personality traits and has been defined by Witkin, et al., (1977) as a characteristic mode of functioning that is revealed throughout perceptual and intellectual activity. Many of these preferred cognitive learning styles have been identified, but the one which has been the most extensively researched is that of field independence/field dependence (Witkin, 1974; Witkin, et al., 1977).

Field independence/field dependence (FI/FD) has been of great importance to educators for many years. It is considered to be an expression of psychological differentiation and is concerned with how an individual perceives a field which may be perceptual or may be an abstract set of ideas, thoughts, or feelings (Brown, 1980).

The development of field independence/field dependence is strongly influenced by culture in general and child-raising practices in particular (Witkin, et al., 1977). This dimension has general implications for education and has been considered as a factor in research on second language learning.

Research does seem to indicate a relationship between field independence/field dependence and learning English as a second language (ESL). Its role in ESL has been examined in relationship to both cognitive and affective variables. Field independence/field dependence has been shown to be a factor in such cognitive skills as inferencing, detecting and analyzing patterns, and recognizing and attending to form and in such affective skills as ambiguity tolerance, willingness to take risks, and drive to communicate. However, the extent of that relationship does not seem to be adequately defined.

And finally, most research on the relationship of field independence/field dependence to success in learning ESL has been done with groups of students from many cultures. There has been little intracultural research done on non-western individuals. It is anticipated that this study will contribute to a broader understanding of the relationship of field independence/field dependence to learning ESL by examining the success in ESL of those students identified as field independent or field dependent, success being measured by the Test of English as a Foreign Language (TOEFL) and by the Comprehensive English Language Test (CELT). In addition, demographic factors will be examined which could account for ESL success. Specifically, this project will study post-secondary Japanese students to determine patterns of field dependence and field independence and how the specific preferred cognitive learning style affects ESL progress.

CHAPTER 3

RESEARCH DESIGN

Introduction

This study was designed to analyze the relationship between the preferred cognitive learning style of field independence/field dependence and the learning of English as a second language. This chapter is included in order to provide an overview of the procedures used in the collection of data. This chapter includes the following sections:

1. The design of the study
2. A description of the population and the sample
3. A description of the instruments utilized in the research
4. The steps and procedures for the collection of the data
5. The assumptions which were made
6. The hypotheses that were tested
7. The statistical treatment of the data

Design of the Study

In order to adequately fulfill the intended purpose of this research, the following procedures and steps were followed:

1. A review of research studies concerned with the preferred cognitive learning style of field independence/field dependence (FI/FD) and English as a second language (ESL) was completed.
2. A review of existing assessment instruments designed to measure FI/FD was conducted as well as a review of instruments designed to measure proficiency in ESL.
3. As a result of the review, the Group Embedded Figures Test (GEFT) was

selected to measure FI/FD. The Test of English as a Foreign Language (TOEFL) and the Comprehensive English Language Test (CELT) were selected to measure proficiency in ESL.

4. An outline of the proposed research, explaining the methodology and instrumentation, was submitted to the Oregon State University Human Subjects Committee for review and approval.
5. The respondents for the study were drawn from the entire student body at Tokyo International University of America on the Salem, Oregon, campus.
6. The TOEFL was administered as a pretest in February, 1990, and as a posttest in August, 1990.
7. The CELT was administered as a pretest in February, 1990, and as a posttest in December, 1990.
8. The GEFT was administered in April, 1990.
9. The resulting data were compiled, programmed, and tabulated. Appropriate statistical tools were applied.
10. Responses to the hypotheses, delineated in the study, were prepared.
11. The findings were summarized, followed by recommendations for further study or action.

Population and Sample

The sample for this research was drawn from the entire student population of Tokyo International University of America (TIUA) in Salem, Oregon. There was a total of 117 students.

Instrumentation

There were three instruments used in this research: the Group Embedded Figures Test (GEFT), the Test of English as a Foreign Language (TOEFL), and the

Comprehension English Language Test (CELT). The following section outlines these instruments, describing the reliability and validity as well as the procedures for administration and scoring.

Group Embedded Figures Test (GEFT)

The Group Embedded Figures Test (GEFT) (Witkin, et al., 1971) is an adaptation of the individually administered Embedded Figures Test (EFT) which was developed in 1950 by Herman Witkin. Both the EFT and GEFT are perceptual tests. They are designed to measure a subject's ability to disembed a figure from an organized field of which it is a part. The task on each trial is to look at a simple geometric figure, then find that simple figure within a complex figure which has been drawn so as to obscure or embed the original simple figure.

The GEFT was designed to be used in situations where there are many subjects to be tested for field independence/field dependence (FI/FD). It has been shown to be closely related to other measures of FI/FD and to correlate with the EFT (Witkin, 1971).

GEFT Format

The GEFT is a thirty-two page booklet. The front cover has instructions printed on it and a sample exercise. The correct solution to that problem and an additional practice exercise are found on page two. On page three is the correct solution to the second practice exercise and further instructions. On the back cover are seven simple figures with a letter above each one.

Inside, beginning on page five, there are one or two complex figures printed on each page with instructions to find the simple figure identified by letter, e.g.: "Find simple form B." Once the subjects locate the simple figure within the complex one, they are to trace it in pencil and then proceed to the next figure. They may look back at the simple forms as often as necessary. The problems are to be done in order with no problem to be skipped unless the subject is absolutely unable to do it. The subjects are to trace only one simple form in each problem even if they see more than one. The

simple form is always present in the complex figure in the same size, the same proportions, and facing in the same direction as it appears on the back cover.

The GEFT is composed of three sections. The first section contains seven relatively simple items and is intended mainly for practice. The second and third sections each contain nine items which are more complex than those found in section one. Each section is timed. Two minutes are allowed for section one and five minutes each for sections two and three. When one section is completed, the subjects may not return to it.

GEFT Scoring

Scoring is based on the number of figures identified and correctly traced. Only items from sections two and three are used so total scores can range from zero to eighteen. Problems not attempted are counted as incorrect.

A scoring key is provided with the simple form traced over each complex figure. To receive credit, the outline must duplicate the ones shown. The higher the score on the test, the greater the field independence.

GEFT Reliability and Validity

The second and third sections of the GEFT are divided into two equivalent forms of nine items each which allows an estimation of reliability coefficients. The forms are closely matched for item difficulty, discriminative indices, and the frequency with which the different simple forms are present in the more complex figures. Witkin, et al., (1971) report a 0.82 reliability estimate for the correlation between the two sections.

Evidence of validity for the EFT (an appropriate criterion measure since the GEFT is intended as a group form of this test) has been established through a number of studies with other measures. In their study of development differences in FI/FD, Witkin, Goodenough and Karp (1967) generally found statistically significant correlations between the EFT and both the Rod and Frame Test and the Body Adjustment Test. Witkin, et al., (1977) report that performance on the EFT is related to performance on other perceptual tests involving the ability to overcome an embedding context. Furthermore, they report correlations with the EFT and various

measure of both performance and verbal intelligence.

Test of English as a Foreign Language (TOEFL)

The Test of English as a Foreign Language (TOEFL) is designed to evaluate the English language proficiency of individuals at or above the eleventh grade level whose native language is not English. It is most often administered to those individuals who seek admission at the graduate or undergraduate level to approximately 2,500 universities and colleges in the U.S., Canada, and other countries. TOEFL results are also required by a number of certifying boards or agencies, academic institutions, and governmental groups in the U.S. and elsewhere.

TOEFL Format

Since 1976, the TOEFL has consisted of three sections, each separately timed. There is a test booklet consisting of a multiple-choice four option format and a separate answer sheet to be used with all sections. All instructions and examples are in English.

The three sections are Listening Comprehension, Structure and Written Expression, and Reading Comprehension and Vocabulary.

Listening Comprehension, which measures ability to understand English as spoken in the U.S., takes thirty-five minutes. This section is divided into three parts. In the first part, the option must be chosen which most closely corresponds to a statement spoken once on a tape. In the second part, short conversations are heard followed by a question. The best response is chosen from four printed options (15 items). In the third part, several brief talks held to be representative of academic or student contexts in the U.S. are presented. Each is followed by spoken questions (15 items).

The Structure and Written Expression part (25 minutes) has two parts. One part consists of incomplete sentences with words or phrases as options (15 items). The other part consists of sentences in which some words or phrases are underlined (25 items); the task is to identify the words or phrases in each sentence that are not

appropriate to standard, formal written English.

The third section, Reading Comprehension and Vocabulary, takes forty-five minutes. There are two parts consisting of thirty items each. In the first part, a word or phrase in a sentence is underlined; the task is to choose the option which, when substituted, best preserves the original meaning of the underlined word or phrase. In the second part, short reading passages are presented, followed by questions requiring either informational or inferential responses.

TOEFL Scoring

Raw scores (number of questions correctly answered) are converted to scaled scores ranging from 20-80 for the three sections and scaled scores ranging from 200-800 for the total test, with section scores on each form usually ranging from 22-67 and total scores from 227-677. (The native speaker average is 569.) The manual for the test contains information on various reference groups (e.g., percentile rank by graduate, undergraduate, male/female, professional license, native language and area), and the results of how various institutions use TOEFL scores. The point is made consistently that the individual institutions must determine whether or not the TOEFL is appropriate for their needs and must establish levels of acceptable performance. Score users are cautioned against unwarranted reliance on the TOEFL.

TOEFL Reliability and Validity

The reliabilities reported for the three subsections range from 0.87 to 0.89, and 0.95 for the total scores. Estimates vary among form and groups, but generally cluster around or above the 0.90 level.

The TOEFL is unusual among the standardized ESL tests now in use around the world for two reasons. First, by far it is the most extensively researched of all foreign language tests. Secondly, it is without a doubt the most widely-used. In 1985, over 450,000 examinees took the TOEFL at 1000 test centers in 135 countries. And more than 2,500 universities and colleges made use of TOEFL scores (Anderson, et al., 1987). As a result, the TOEFL's information and databases are unparalleled among ESL tests and measures. The content validity of the TOEFL ultimately rests, as with all proficiency measures, on the degree to which experts perceive it to be valid.

The TOEFL correlates well with other tests measuring English proficiency (Duran, et al., 1985).

The TOEFL has been criticized for various perceived weaknesses. Several studies (J. Hansen and Stansfield, 1981; Duran, et al., 1984; Graham, 1987) have indicated the TOEFL is not strongly related to measure of academic performance such as a grade point average (GPA). However, Savignon (1987) points out that the 1983 edition of the TOEFL Test and Score Manual states unequivocally that TOEFL scores should not be used to predict academic performance. The manual does claim that the TOEFL is a measure of English proficiency and can assist an institution in making decisions as to an applicant's eligibility to begin an academic program. Research on the test has clearly demonstrated its value as an instrument for assessing the language proficiency of incoming foreign students (Duran, et al., 1985).

A second criticism is that the TOEFL is very much a blunt instrument, failing to adequately discriminate, particularly at the upper levels (Traynor, 1985). Duran, et al., (1985) report evidence that while the TOEFL is appropriate for assessing the language proficiency of basic, intermediate, and advanced learners of ESL, it does not appear appropriate for identifying or discriminating among highly proficient, near-native speakers.

The third major concern which has been raised about the TOEFL is whether it is an adequate measure of communicative competence (Traynor, 1985). Duran, et al., (1985) note that the TOEFL is not designed to be a test of extended communication skills. However, Oller concludes, based on his analysis of the test, that "everything points to the conclusion that the TOEFL is presently a fairly good measure of communicative competence" (Oller, 1986). Duran, et al., (1985) conclude that based on their research, there is no reason to believe any other similar currently available language proficiency test would be evaluated any more favorably than the TOEFL test.

Comprehensive English Language Test (CELT)

The Comprehensive English Language Test (CELT) is designed to measure the English language proficiency of non-native speakers at the secondary and post-secondary levels. It is intended for those who have had some formal instruction in English and have come to the United States for further training or instruction. While the TOEFL is used mainly as a screening device, the CELT is intended to be used as a placement device.

CELT Format

This test is "comprehensive" in that it provides information in three critical areas: listening comprehension, knowledge of structure, and reading vocabulary. The time required to administer the complete CELT is approximately two hours. Although the use of the complete test is recommended, each section is of sufficient length to yield reliable results, and therefore individual sections may be administered if conditions warrant.

The three sections of the CELT are contained in a 300 page reusable booklet. Answer sheets and scoring keys are provided by the publisher. There are two forms for the CELT.

The listening comprehension section has three parts with a total of 50 items. In the first part the students hear short questions and select the one best answer from four choices printed in the test booklet. The printed alternatives are brief so as to minimize the reading factor. The second section requires students to listen to short statements and select an accurate paraphrase from four choices printed in the test booklet. In the third section, the students hear short dialogues, a question about the conversation, and must choose an answer to the question.

The structure section includes seventy-five items to be answered in 45 minutes. All of the items test structure points which have been found to pose particular problems for foreign learners of English.

The vocabulary section is in two parts and takes 35 minutes. The first part consists of 35 sentences from which one word has been omitted. Students must select

the most logical word to complete the sentence from four alternatives. Part two consists of 40 short definitions followed by a set of four possible choices. Students must choose the correct word.

CELT Scoring

Test scores are expressed as the percentage of items answered correctly.

CELT Reliability and Validity

Reliability coefficients were computed according to the Kuder–Richardson formula, which is used for tests that are essentially power rather than speed measures. (In the groups used to establish norms, all the subjects completed the sections within the time limits so the CELT is generally regarded as a non–speeded instrument.)

Reliability coefficients range from .82 to .97. The intertest correlations are not so high as to suggest that the subscores are all measuring the same thing, yet not so low as to suggest that they are measuring totally different domains. There is sufficient normative data offered to enable the user to interpret the scores with confidence.

Several studies of concurrent validity were conducted by the authors of the CELT and show substantial correlations between the CELT and other standardized measures of ESL proficiency. For example, there was a correlation of .79 between CELT scores and scores on the TOEFL for 140 students attending ESL classes in three U.S. universities (Harris and Palmer, 1970). Hosley and Meredith (1979) found a correlation of .64 for total scores of the two tests. This is considered a moderately high correlation coefficient.

Data Collection Procedures

The following steps were used in collecting data for this study:

1. The GEFT was given to determine FI/FD in February, 1990, during a class at Tokyo International University of America .
2. The TOEFL was administered as a pretest to the entire student body of the Tokyo International University of America, Salem, Oregon, campus in

February, 1990.

3. The TOEFL was administered as a posttest to the entire student body of the Tokyo International University of America, Salem campus, in August, 1990.
4. Pretest and posttest TOEFL scores were compared to determine the amount of change in English proficiency.
5. The CELT was administered as a pretest to the entire student body of the Tokyo International University of America, Salem, Oregon, campus in February, 1990.
6. The CELT was administered as a posttest to the entire student body of the Tokyo International University of America, Salem campus, in December, 1990.
7. Pretest and posttest CELT scores were compared to determine the amount of change in English proficiency.
8. The changes in the TOEFL scores and CELT scores were compared to scores on the GEFT in order to determine the correlation of FI/FD and ESL proficiency
9. The changes in the TOEFL scores and CELT scores were compared with demographic factors to determine the correlation of English proficiency and demographic factors.
10. The changes in the TOEFL scores and CELT scores were compared with the majors to determine the correlation of English proficiency and the students' choice of majors.

Assumptions

In conducting this research, the following assumptions were made:

1. Student's test scores reflect an accurate assessment and were not affected by extraneous factors.

2. The test instruments themselves are reliable and valid in terms of the purpose of this particular research.
3. The sample taken is representative of the broader population.

Hypotheses of the Study

In an attempt to determine some of the correlates of field independence/field dependence and success in English as second language, specific hypotheses were considered. The following null hypotheses were proposed:

- H₀1: There is no significant correlation between the subjects' overall English achievement as measured by the TOEFL and the subjects' level of field independence/dependence (FI/FD) as measured by the GEFT.
- H₀2: There is no significant correlation between the subjects' overall English achievement as measured by the CELT and the subjects' level of FI/FD, as measured by the GEFT.
- H₀3: There is no significant correlation between the subjects' achievement in listening comprehension as measured by the TOEFL and the subjects' level of FI/FD as measured by the GEFT.
- H₀4: There is no significant correlation between the subjects' achievement in listening comprehension as measured by the CELT and the subjects' level of FI/FD as measured by the GEFT.
- H₀5: There is no significant correlation between the subjects' achievement in structure as measured by the TOEFL and the subjects' level of FI/FD as measured by the GEFT.
- H₀6: There is no significant correlation between the subjects' achievement in structure as measured by the CELT and the subjects' level of FI/FD as measured by the GEFT.
- H₀7: There is no significant correlation between the subjects' achievement in reading as measured by the TOEFL and the subjects' level of FI/FD as measured by the GEFT.

- H₀8: There is no significant correlation between the subjects' achievement in vocabulary as measured by the CELT and the subjects' level of FI/FD as measured by the GEFT.
- H₀9: There is no significant correlation between the subjects' overall English achievement and the subjects' previous experience in English learning.
- H₀10: There is no significant correlation between the subjects' overall English achievement and the subjects' age.
- H₀11: There is no significant correlation between the subjects' overall English achievement and the subjects' gender.
- H₀12: There is no significant relationship between the subjects' overall English achievement and the subjects' major.

Relationships to Be Examined

Figure 2. Learning Style Relationship

Learning Style

Independent Variable	Field Independence
	Field Dependence

Figure 3. Demographics

Demographics

Gender
Age
Previous English Experience

Figure 4. CELT to Field Independence/Field Dependence

	Overall CELT	Listening	Structure	Vocabulary
Field Independence				
Field Dependence				

Figure 5. Gender to Field Independence/Field Dependence

Gender	Male	Female
Field Independence		
Field Dependence		

Figure 6. Age to Field Independence/Field Dependence

Age	Age
Field Independence	
Field Dependence	

Figure 7. Previous English Experience to Field Independence/Field Dependence

Previous English Experience	Yrs. of English
Field Independence	
Field Dependence	

Figure 8. Study Major to Field Independence/Field Dependence

Majors	Commerce	Economics	Liberal Arts
Field Independence			
Field Dependence			

Treatment of Data

Initially the TOEFL was computer scored, and the GEFT and the CELT were

hand scored. Statistical tests for the difference between mean performance on the pretest and posttest TOEFL and pretest and posttest CELT were conducted using the *t*-test. A correlation design, utilizing the Pearson product correlation, was used to analyze the relationship between the dependent variable of FI/FD and the independent variable of English proficiency. Correlations were computed with all three subscores on the TOEFL (Listening, Structure, Reading) as well as the overall score. Correlations were made with all three subscores on the CELT (Listening, Structure, Vocabulary) as well as the overall score. Further correlations were made with the demographic variables of gender, age, and number of years students had studied English. A oneway analysis of variance (ANOVA) was conducted to show the contrast between English achievement and majors.

Pearson Product Moment Correlation

Correlational designs are intended to measure the linear relationship between two or more variables. The Pearson Product Moment Correlation (r) is a statistical technique appropriate for determining the degree of linear relationship existing between two sets of data when assumptions of linearity, normality, and interval scale have been tested.

The range for coefficients of correlation may range from -1.00 through 0 to $+1.00$. Coefficients are interpreted according to the way in which the sets of variables do, or do not, relate to another. For example, a coefficient of positive 1.00 ($r = +1.00$) represents a situation where two sets co-vary perfectly with the high scores in one group corresponding with high scores in the other group; or similarly, the low scores would correspond. A negative 1.00 ($r = -1.00$) means the two sets co-vary perfectly with the high score in one group corresponding with the low score in the other group and vice versa. When the sets do not co-vary, there is a zero relationship. The 0.00 relationship does not indicate great variation among the scores.

The strength of the linear relationship is determined by the absolute value of

"r" itself. The following standards may be used for interpreting the strength of the correlations (Courtney and Sedgwich, 1974):

- less than .20 slight, almost negligible relationship
- .20 - .40 low correlation, definite but small relationship
- .40 - .70 moderate correlation, substantial relationship
- .70 - .90 high correlation, marked relationship
- .90 - 1.00 very high correlation, very dependable relationship

In any hypothesis testing, some risk is involved when decisions are made as to their rejection or retention. This risk is stated as a probability which is called the level of significance of the hypothesis test. In this study, the 5% (0.05) level was used. This indicates that there are only five chances out of 100 that the correlations established in this research are due to chance errors in sampling.

One-Way Analysis of Variance (ANOVA-F)

When determining whether the means of two or more random samples are too different to attribute to sampling error, analysis of variance may be used. All data may be treated at once by means of this singular test, and a general null hypothesis of difference among the means of the various groups can be tested. ANOVA addresses the question of whether the means differ from one another (between-group variance) to a greater degree than the scores differ from their own sample means (within-group variance). The samples are considered to be different enough to reject a null hypothesis if the variation of the sample means from the grand mean is substantially greater than the variation from the individual scores. If the among-group variance is not substantially larger than the within-group variance, the samples are not significantly different and probably behave as random samples from the same population.

The significance of the F ratio is determined by using an F table and comparing F values with statistically-calculated tabular F values. The probability level, read from the F tables, acts as a comparison point or tolerance for making decisions as to

whether or not the hypothesis should be retained. In this study, the .05 level of significance was used to determine if the differences between sets of means were due to chance variance or if they were due to real differences that required the null hypothesis to be rejected.

CHAPTER 4

PRESENTATION OF FINDINGS

Introduction

The purpose of this research was to investigate the relationship between the preferred cognitive learning style of field independence/dependence and achievement in learning English as a second language (ESL). In addition, certain demographic factors were examined. The objective was to discover if field independence/dependence was a factor in ESL achievement.

The results of the analysis of data are presented in this chapter. There are three sections. The first section presents descriptive statistics for the dependent variables (measures of achievement in ESL) and for the independent variables (learner characteristics of field independence, previous experience, gender, age, and major) in the study. The second section presents the hypotheses that were tested. Each hypothesis is presented along with supportive data, followed by a rationale for accepting or rejecting the hypothesis and a discussion of the decision. A probability level of .05 was required for significance for all analyses. The final section contains a summary of the findings.

Summary of the Variables

This study investigated the relationship between achievement in learning ESL and the preferred cognitive learning style of field independence/field dependence. Also included was a comparison of achievement in ESL with certain demographics.

Measures of Achievement in English as a Second Language

For this study, achievement in learning English as a second language (ESL) was determined by examining the differences between pretest scores and posttest test scores of two tests of English proficiency: the Test of English as a Foreign Language

(TOEFL) and the Comprehensive English Language Test (CELT). Tables 4.1 and 4.2 present the means, standard deviations, the minimum and maximum scores of the subjects, and the number of subjects for the TOEFL.

Table 4.1 Descriptive Statistics for English Achievement - TOEFL

TOEFL Score Comparison – Pretest to Posttest

	Mean	S. Dev.	Minimum	Maximum
Overall Pretest	413.73	29.81	350	503
Overall Post Test	439.35	38.71	350	560
Listening Pretest	44.30	4.60	29	61
Listening Post Test	40.71	3.40	31	52
Structure Pretest	43.96	5.28	30	59
Structure Post Test	41.30	4.38	31	58
Reading Pretest	43.36	5.16	28	55
Reading Post test	41.54	4.04	30	50

N = 113

Table 4.2 Differences in TOEFL Scores, Pretest to Posttest

	Mean	S. Dev.
Overall TOEFL	25.62	28.91
TOEFL Listening	-3.51	4.47
TOEFL Structure	-2.65	4.76
TOEFL Reading	-1.81	5.10

N = 113

Scores on the TOEFL pretest ranged from 350 to 503, and from 350 to 560 on the posttest. There was an increase in the overall mean of 25.62. However, there was a decrease in the mean in listening, structure, and reading. Pretest listening scores ranged from 29 to 61, and from 31 to 52 on the posttest. The mean on the listening test decreased by 3.51. Pretest structure scores ranged from 30 to 59, and from 31 to 58 on the posttest. The mean on the structure test decreased by 2.65. Pretest reading scores ranged from 28 to 55, and from 30 to 50 on the posttest. The mean on the structure test decreased by 1.81.

Table 4.3 and 4.4 present the means, standard deviations, and number of subjects for the CELT.

Table 4.3 Descriptive Statistics for English Achievement – CELT.

CELT Score Comparisons - Pretest to Posttest

	Mean	S. Dev	Minimum	Maximum
Overall Pretest	137.71	28.41	79	236
Overall Post Test	167.12	30.57	94	261
Listening Pretest	44.83	12.14	22	86
Listening Post Test	61.17	12.53	32	94
Structure Pretest	55.35	11.96	28	83
Structure Post Test	61.77	11.46	23	85
Vocabulary Pretest	37.52	10.51	13	75
Vocabulary Post Test	44.18	11.78	19	85

N = 113

Table 4.4 Differences in CELT Scores, Pretest to Posttest

	Mean	S. Dev
Overall CELT	29.41	15.95
CELT – Listening	16.34	9.49
CELT – Structure	6.41	7.87
CELT – Vocabulary	6.66	7.87

N = 113

Scores on the CELT pretest ranged from 45 to 236, and from 95 to 261 on the posttest. There was an increase in the overall mean of 29.41. Pretest listening scores ranged from 22 to 86 and from 32 to 94 on the posttest. The mean on the listening test increased by a 16.34. Pretest structure scores ranged from 28 to 83 and from 23 to 85 on the posttest. The mean on the structure test increased by 6.41. Pretest vocabulary scores ranged from -7 to 75, and from 13 to 85 on the posttest. The mean on the vocabulary test increased by 6.66. It should be noted that both of these tests provide

overall test scores as well as three subtest scores. Both tests measure listening proficiency and structure. The TOEFL includes a reading section which the CELT does not, and the CELT includes a vocabulary section which the TOEFL does not. Correlations were made for the overall scores, and for the listening and structure subtests. Those correlations are given in Table 4.5.

Table 4.5 Correlation Between the TOEFL and the CELT.

	Pretest	Post Test
Total Score	0.66	0.78
Structure Score	0.66	0.54
Listening Score	0.56	0.45

N = 113

These correlations range from .45 to .78. According to Courtney and Sedgwich (1974), correlations in the .40 to .70 range indicate moderate correlations with a substantial relationship. The .78 correlation on the posttest total scores is considered to be a high correlation with a marked relationship.

In addition to the independent variables measuring achievement in ESL, there were the dependent variables of field independence and the demographic variables of previous experience with English instruction, age, and gender. The following tables provide the descriptive statistics for these dependent variables. Table 4.6 presents the means, standard deviation, range in scores, and number of subjects for the variable of field independence as measured by the Group Embedded Figures Tests (GEFT).

Table 4.6 Descriptive Statistics for the Measure of Field Independence.

	Mean	S. Dev	Minimum	Maximum
GEFT Scores	14.93	3.59	1	18

N = 113

The mean score was 14.93 out of a possible 18. There were students who made only one correct response as well as students who made all responses correctly.

Table 4.7 provides correlations between the dependent variables of preferred

cognitive learning style and the demographics.

Table 4.7 Pearson Product Correlations between the Dependent Variables

Pearson Product–Moment Correlations between Four Learner Characteristics

	2	3	4
1. GEFT	.02	-0.02	.15
2. Previous Experience		.31	-.21
3. Age			.17
4. Gender			

N=113

Most of the correlations among the dependent variables were quite small. The only correlation that was even moderate was that between age and years of previous experience in English (.31).

Tests of Hypotheses

There were twelve hypotheses in this study. Eight hypotheses were concerned with the relationship between achievement in English as a second language (ESL) and field independence/dependence. The other four hypotheses were concerned with demographic factors and achievement in ESL. To test the hypotheses, the Pearson product correlation (r) was calculated between the mean scores of the Group Embedded Figures Test (GEFT) and the amount of change that occurred from pretest to posttest on both the TOEFL and the CELT and on the subtests of each test. A t -test was conducted to determine significance of correlations. A oneway analysis of variance (ANOVA) was conducted on the hypothesis contrasting the differences among English achievement and study majors. The probability level used was $p < .05$.

The first two hypotheses concerned the relationship between overall English achievement and level of field independence.

H₀1 There is no significant correlation between the subjects' overall English achievement, as measured by the TOEFL, and the subjects' level of field independence/dependence, as measured by the GEFT.

Table 4.8 Pearson Product-Moment Correlation between Overall TOEFL Score and GEFT

	r	Significance
GEFT with TOEFL	-0.01	ns

N = 113

The correlation coefficient of the GEFT and the TOEFL was $-.01$, which indicates no correlation between the GEFT and the TOEFL difference of the means. The probability level was too small to reject the null hypothesis, so it was retained.

H₀2 There is no significant correlation between the subjects' overall English achievement, as measured by the CELT, and the subjects' level of field independence/dependence, as measured by the GEFT.

Table 4.9 Pearson Product-Moment Correlation between Overall CELT Score and GEFT

	r	Significance
GEFT with CELT	0.13	ns

N = 113

On the second hypothesis, the correlation between the GEFT and the CELT was 0.13. Although higher than that for the GEFT with the TOEFL, this indicated no significant correlation. The probability level was also too small to allow rejection of hypothesis; therefore it was retained. Field independence does not seem to be related to overall achievement in ESL as measured by either the overall TOEFL or the overall CELT.

The third and fourth hypotheses concerned the relationship between listening comprehension and level of field independence/dependence.

H_{o3} There is no significant correlation between the subjects' achievement in listening comprehension as measured by the TOEFL and the subjects' level of field independence/dependence.

Table 4.10 Pearson Product-Moment Correlation between TOEFL Listening Score and GEFT

	r	Significance
GEFT with TOEFL	-0.05	p<.05

N = 113

The correlation coefficient of -.05 between the GEFT and the difference of the means on the TOEFL listening subtest indicated that there was no significant correlation between the means of the scores. The probability level was considerably larger than the tabular value; therefore, the null hypothesis was rejected. There does appear to be a small negative relationship between field independence/dependence and success on the listening subtest of the TOEFL.

H_{o4} There is no significant correlation between the subjects' achievement in listening comprehension as measured by the CELT and the subjects' level of field independence/dependence.

Table 4.11 Pearson Product-Moment Correlation between CELT Listening Score and GEFT

	r	Significance
GEFT with CELT	0.13	ns

N = 113

The correlation between the mean GEFT score and the mean CELT listening score was also examined. The correlation coefficient was low, indicating no significant correlation between the mean scores. The probability level was also low, so the null hypothesis was retained. There does not appear to be a relationship between field independence/dependence and success in ESL listening as measured by

the CELT listening subtest.

The next two hypotheses concerned the relationship between structure and the level of field independence/dependence.

H₀₅ There is no significant correlation between the subjects' achievement in structure as measured by the TOEFL and the subjects' level of field independence/dependence.

Table 4.12 Pearson Product-Moment Correlation between the TOEFL Structure Score and GEFT.

	r	Significance
GEFT with TOEFL	0.10	p<.05

N = 113

The correlation coefficient for this measure is small and the probability level high, therefore this null hypotheses is rejected. There appears to be no significant relationship between field independence/dependence and ESL achievement in structure as measured by the TOEFL.

H₀₆ There is no significant correlation between the subjects' achievement in structure as measured by the CELT and the subjects' level of field independence/dependence.

Table 4.13 Pearson Product-Moment Correlation between the CELT Structure Score and GEFT.

	r	Significance
GEFT with CELT	-0.11	p<.05

N = 113

The correlation coefficients for this measure is small and the probability level high, therefore this null hypotheses is rejected. There appears to be a negative significant relationship between field independence/dependence and ESL achievement in structure as measured the CELT.

H₀7 There is no significant correlation between the subjects' achievement in reading as measured by the TOEFL and the subjects' level of field independence/dependence.

Table 4.14 Pearson Product-Moment Correlation between TOEFL Reading Score and the GEFT.

	r	Significance
GEFT with TOEFL	-0.04	p<.05

N = 113

The correlation coefficient of -0.04 was low and the probability level was very high. Therefore, the null hypothesis is rejected. There appears to be no significant relationship between field independence/dependence and achievement in ESL reading as measured by the TOEFL, although a small negative one.

H₀8 There is no significant correlation between the subjects' achievement in vocabulary as measured by the CELT and the subjects' level of field independence/dependence.

Table 4.15 Pearson Product-Moment Correlation between the CELT Vocabulary Score and the GEFT.

	r	Significance
GEFT w. CELT Vocabulary	-0.08	p<.05

N = 113

The correlation coefficient of -0.08 was low and the probability level was very high. Therefore, the null hypothesis is rejected. There is a negative significant relationship between field independence/dependence and achievement in ESL vocabulary as measured by the CELT.

The final four hypotheses concern the relationship of demographics and English achievement.

H₀9 There is no significant correlation between the subjects' overall English achievement and the subjects' previous experience in English learning.

Table 4.16 Pearson Product-Moment Correlation between Previous Experience and the TOEFL and/or CELT.

	r	Significance
Previous Exper. with TOEFL	-0.17	p<.05
Previous Exper. with CELT	-0.17	p<.05

N = 113

The correlation between previous experience and English achievement as measured by both the TOEFL and CELT was a small negative one. The probability level, however, was high enough that the null hypothesis could not be retained. Therefore, there is a negative significant correlation between English achievement and previous experience.

H₀10 There is no correlation between the subjects' overall English achievement and the subjects' age.

Table 4.17 Pearson Product-Moment Correlation between Age and the TOEFL and/or CELT.

	r	Significance
Age with TOEFL	-0.12	p<.05
Age with CELT	-0.12	p<.05

N = 113

Age also seemed to be correlated with English achievement. The Pearson product moment correlations coefficients between age and TOEFL, as well as age and CELT were small and negative. However, probability levels were high so the null hypothesis was rejected. Therefore, there is a negative significant correlation between English achievement and age.

H₀11 There is no significant correlation between the subjects' overall English achievement and the subjects' gender.

Table 4.18 Pearson Product-Moment Correlation between Gender and the TOEFL and/or CELT.

	r	Significance
Gender w. TOEFL	-0.01	p<.05
Gender w. CELT	-0.17	p<.05

N = 113

Gender also seemed to be correlated with English achievement. The Pearson product moment correlations between gender and TOEFL, as well as gender and CELT were small and negative. However, probability levels were high so the null hypothesis was rejected. Therefore, there is a small negative correlation between English achievement and gender.

H₀12 There is no significant relationship between the subjects' overall English achievement and the subjects' major.

Table 4.19 compares the relationship, pretest and posttest, among study majors of the subjects on the overall TOEFL and the overall CELT.

Table 4.19 Comparison of English Achievement by Majors.

	All Students	Commerce	Economics	Liberal Arts
TOEFL Overall	25.62	19.14	26.29	29.14
CELT Overall	29.41	31.89	25.00	31.93

N = 113

A oneway analysis of variance (ANOVA) was conducted to show the contrast between English achievement and majors.

Table 4.20 ANOVA Table – TOEFL Overall Difference among Majors.

Source	df	Sum of Squares	Mean Squares	F	Significance
Between Groups	2	1737.29	868.65	1.04	ns
Within Groups	110	91879.10	835.26		
Total	112	93616.39			

N = 113

Table 4.21 ANOVA Table – CELT Overall Difference among Majors.

Source	df	Sum of Squares	Mean Squares	F	Significance
Between Groups	2	1249.80	624.90	2.52	ns
Within Groups	110	27243.47	247.67		
Total	112	28493.27			

N = 113

Table 4.19 shows the difference scores for the overall TOEFL and CELT, and the difference scores for each major. Each score showed an increase from pretest to posttest. Table 4.20 shows the tabulation of F ratio to compare the TOEFL scores, and Table 4.21 shows the tabulation of F ratio to compare the CELT scores. For both the TOEFL overall difference and CELT overall difference the F ratios are lower than the F table probability, so the null hypotheses are retained. There does not seem to be a statistically important difference between choice of major and ESL achievement.

Summary

In summary, there were twelve hypotheses in this study. Eight of these were concerned with the relationship between ESL achievement and field independence/dependence. Based on the tabulated data, three of the hypotheses were

retained, indicating no correlations between field independence/dependence and overall ESL achievement as measured by both the TOEFL and CELT (H_{01} , H_{02}), and no relationship between field independence/dependence and ESL achievement in listening comprehension as measured by the CELT (H_{04}). The other five null hypotheses were rejected, indicating relationships between field independence/dependence with structure (H_{05} and H_{06}), with listening as measured by the TOEFL (H_{03}), with reading (H_{07}), and with vocabulary (H_{08}).

Of the four hypotheses concerned with demographics, three were rejected, indicating that there may be a relationship between ESL achievement and gender, age, and previous experience in English. The hypothesis that there is no relationship between ESL achievement and major was retained based on tabulated data. However, TOEFL and CELT subtest scores were inconsistent with overall test scores and this issue will be addressed in the discussion of the findings presented in the next chapter.

Chapter 5

SUMMARY, CONCLUSIONS, RECOMMENDATIONS

The fifth and final chapter in this study is divided into four parts:

1. A summary of the research.
2. Conclusions of the study
3. Discussion of the findings.
4. Recommendations for action.
5. Recommendations for further study.

Summary

The following summary section capsulizes the design, objectives, hypotheses, and statistical treatment of the data.

The central purpose of this study was to analyze the relationship between the preferred cognitive learning style of field independence/field dependence (FI/FD) and achievement in learning English as a second language (ESL). One reason for pursuing this study was that preferred cognitive style has been receiving an increasing amount of attention among researchers as a possible factor in second language achievement. This study sought to examine the research on cognitive style and second language learning in order to see if the findings applied to ESL, which is more specific. Furthermore, as American colleges and universities are enrolling increasingly large numbers of international students, achievement in ESL seems to be an issue which will need to be addressed. Since a large percentage of those international students come from Japan, particularly on the west coast, this study was undertaken in an effort to gain further understanding and insight into some of the factors which contribute to success in ESL learning among Japanese post-secondary students. Previous research has found field independence/dependence to be a factor in ESL success, so this study focused on students from one language group and the relationship between

achievement in ESL and field independence/dependence, as well as the relationship between achievement in ESL and selected demographic factors.

Another issue which this study sought to address was that of the possibility of test bias. The Test of English as a Foreign Language (TOEFL) is by far the most widely used test to assess English proficiency. However, some researchers (Stansfield and J. Hansen, 1983; Brown, 1980) have suggested that the TOEFL is biased in favor of students who are more field independent. Both the TOEFL and the Comprehensive English Language Test (CELT) were used as measures of achievement in ESL. Since they are strongly correlated (Harris and Palmer, 1970), it was hoped that there would be a clearer understanding of the relationship between FI/FD and ESL achievement.

Design

The sample for this study was drawn from the entire student body of Tokyo International University of America, located in Salem, Oregon. Of the 117 students enrolled, statistics were compiled for 113. The other four were missing scores for one or more of the tests. Of the 113, there were 72 men and 41 women, all of whom had arrived for study in the U.S. at the same time. Students were enrolled in the three majors of commerce, economics, or liberal arts.

The instruments used to measure achievement in English were the Test of English as a Foreign Language (TOEFL) and the Comprehensive English Language Test (CELT). Both tests were administered as pretest on the students' arrival and post test on their departure after one year of study in the U.S., and differences in scores were tabulated. The Group Embedded Figures Test (GEFT) was administered to measure field independence/field dependence.

Objectives

The major objectives of this study were:

1. To review existing research about FI/FD as it relates to achievement in

ESL students.

2. To determine if that existing research can be generalized to Japanese post-secondary students of English as a second language.
3. To develop a methodology including the identification of instruments to study the relationship between FI/FD and achievement in ESL among post-secondary Japanese students.
4. To determine if ESL achievement among post-secondary Japanese students is significantly related to FI/FD.
5. To determine if ESL achievement among post-secondary Japanese students is significantly related to the demographic factors of age, gender, prior language experience, and choice of major.
6. To utilize the findings of this study to make recommendations concerning FI/FD as it affects post-secondary Japanese ESL students.

Hypotheses

The following hypotheses were offered in this study:

- H₀1: There is no significant correlation between a subject's overall English achievement as measured by the TOEFL and the subject's level of field independence/dependence (FI/FD), as measured by the GEFT.
- H₀2: There is no significant correlation between a subject's overall English achievement as measured by the CELT and the subject's level of FI/FD, as measured by the GEFT.
- H₀3: There is no significant correlation between a subject's achievement in listening comprehension as measured by the TOEFL and the subject's level of FI/FD, as measured by the GEFT.
- H₀4: There is no significant correlation between a subject's achievement in listening comprehension as measured by the CELT and the subject's level of FI/FD, as measured by the GEFT.
- H₀5: There is no significant correlation between a subject's achievement in

structure, as measured by the TOEFL and the subject's level of FI/FD as measured by the GEFT.

- H₀6: There is no significant correlation between a subject's achievement in structure as measured by the CELT and the subject's level of FI/FD as measured by the GEFT.
- H₀7: There is no significant correlation between a subject's achievement in reading as measured by the TOEFL and the subject's level of FI/FD, as measured by the GEFT.
- H₀8: There is no significant correlation between a subject's achievement in vocabulary, as measured by the CELT and the subject's level of FI/FD as measured by the GEFT.
- H₀9: There is no significant correlation between a subject's overall English achievement and the subject's previous experience in English learning.
- H₀10: There is no significant correlation between a subject's overall English achievement and the subject's age.
- H₀11: There is no significant correlation between a subject's overall English achievement and the subject's gender.
- H₀12: There is no significant relationship between a subject's overall English achievement and the subject's major.

Treatment of Data

The first eight hypotheses of this study were concerned with the relationship between the dependent variable of FI/FD and the independent variable of achievement in ESL. A correlation design, utilizing the Pearson Product-Moment Correlation, was used to analyze this relationship. Hypotheses nine through eleven were concerned with the relationship of ESL and demographics. A Pearson Product-Moment Correlation was used to determine correlations. A one way analysis of variance (ANOVA) was conducted to show the contrast between the relationship of English

achievement and the majors of the students on hypothesis number twelve.

Findings

There were twelve hypotheses in this study. The first eight had to do with the relationship between success in ESL and FI/FD. Of those eight, five were rejected and three were retained. The main conclusions related to these hypotheses were:

1. As to overall success in ESL, there doesn't seem to be a relationship between FI/FD and overall success in ESL.
2. However, on specific skills, measured by the subtests, there may be a relationship.
3. Results on the TOEFL and CELT were consistent except for the subtest listening. The tests do measure much the same thing.

The final four hypotheses were concerned with finding out if there was a relationship between ESL and the demographic factors of age, gender, previous experience with English language learning, and choice of major. Only one of these hypotheses was retained. The main conclusions for these findings were:

4. There does not appear to be a significant relationship between ESL success and a student's choice of major.
5. There may be a relationship with the demographic factors of age, gender, and previous experience with English.

Discussion of Findings

The following discussion is presented according to the objectives originally outlined in the research:

There were six objectives in this study. The first objective was to review existing research about field independence/field dependence as it relates to achievement in ESL students.

There is a considerable body of research about the preferred cognitive learning style of field independence/field dependence and ESL achievement. Research indicates that there is a consistent, although often modest, relationship, with the strongest correlations being between field independence/dependence and measures of achievement in structure. There is some concern that a possible test bias may be operating since people who tend to be field independent tend to do better at analyzing and restructuring and those are skills usually called for on measure of ESL performance.

The second objective was to determine if existing research is applicable to Japanese post-secondary students of English as a second language. While some research has been done on the relationship of FI/FD to ESL achievement, there is little available research focusing specifically on Japanese students. Lynne Hansen investigated FI/FD and ESL achievement in a group of 209 Asian students which included 26 Japanese (L. Hansen, 1984) but the numbers of Japanese students included in other studies of this type have been small (Jamieson and Chapelle, 1987). FI/FD has been shown to be applicable across cultures (Witkin and Goodenough, 1981). From the literature it might be expected that the Japanese would be more field dependent since that culture stresses cooperation as opposed to competition, and achievement for the group as opposed to the achievement for the individual. These are practices thought to foster field dependence. However, in this study the mean score for field independence was 14.93, which is actually somewhat higher than studies done in western cultures (Sherman, 1974; Witkin, 1981). Several factors could account for this. One possible explanation is that while Japanese culture does emphasize the importance of harmonious relationships which might encourage field dependency, Japanese mothers tend to be neither too indulgent nor too authoritarian and to encourage their children to achieve which would encourage field independence. Although there is little one-to-one competition, there is competition between groups. The findings of this study fit in with the fact that people in industrialized societies tend to be more field independent than people in non-industrialized societies (Dyk and Witkin, 1965; Rush, 1984; Witkin and Goodenough, 1981). In addition, with the

current emphasis on internationalization, young people are being encouraged to be more independent and self-reliant than ever before. And finally, the issue of self-selection should be considered. This group of students may be atypical of other Japanese post-secondary students in that they have chosen to study abroad for a year.

Research has shown that men tend to be more field independent than women and results in this study were consistent with previous findings. The mean field independent score for men in this study was 15.33 and for women it was 14.22.

The third objective was to develop a methodology including the identification of instruments to study the relationship between FI/FD and achievement in ESL among post-secondary Japanese students. The Group Embedded Figures Test (GEFT) was chosen to measure FI/FD. According to all available evidence, it is reliable, valid, and clearly normed so it proved to be an acceptable choice. The Test of English as a Foreign Language (TOEFL) and Comprehensive English Language Test (CELT) were chosen to assess ESL achievement.

Correlations were made for overall English achievement, listening, and structure on the TOEFL and CELT. Correlations were statistically significant indicating a marked relationship. The conclusion drawn is that the tests measured what they purported to measure and that assessment of Japanese students' English proficiency could be made with equal accuracy on either test. Other measures of English could be chosen which would measure other aspects of English proficiency. For instance, a test to measure speaking performance could be included since neither the TOEFL or CELT measures this. One such example is the SPEAK Test, which is a test of spoken proficiency presently used primarily to test graduate teaching assistants. Neither the TOEFL nor the CELT specifically measures sociolinguistic or paralinguistic awareness, and the inclusion of instruments to measure those aspects of English achievement may yield different results. While there is a correlation between the TOEFL and CELT indicating that they measure much the same thing, and findings in this study supported that, both require a certain level of analysis which would seem to favor those who tend to be more field independent. However, on both tests there was no significant difference in ESL achievement between those tending to be field

independent or field dependent, with the exception of the structure subtests. On the structure subtest of both tests, field independent students had higher scores.

The fourth objective was to determine if ESL achievement among post-secondary Japanese students is significantly related to FI/FD. The first eight hypotheses relate to this objective. Of those eight, three were retained and five were rejected. H_{01} and H_{02} were both retained due to the fact that the data indicated that for overall ESL achievement, the level of field independence did not seem to be significantly correlated. While this appears to run counter to other research (Stansfield and J. Hansen, 1983; Chapelle and Roberts, 1986), there are several possible interpretations of this result. First, while studies have indicated a relationship between ESL achievement and field independence, most of those correlations were quite modest. Second, there are many factors which interact to influence the testing process. Such factors as mental flexibility, attitude toward target language, willingness to risk, and sociolinguistic and paralinguistic awareness were not measured in this study. And third, there may not have been adequate variation in the sample, which would make the assessment inaccurate.

H_{03} and H_{04} were concerned with the relationship of FI/FD to ESL achievement in listening. H_{03} was retained due to data indicating that there does seem to be a relationship between field independence and ESL listening achievement as measured by the TOEFL. However, H_{04} was rejected due to data indicating that there was not a significant relationship between field independence and the listening subtest score of the CELT. While there does appear to be a relationship between field independence and the listening subtest score of the TOEFL, it is a negative score and very small (-.05). The correlation coefficient of field independence/dependence to the CELT listening subtest score is higher (.13) but not statistically significant according to the t -test. Therefore, while there are mixed results here, neither of the coefficients is high enough to indicate a substantial relationship. This suggests that ESL listening achievement is not substantially affected by the level of field independence.

H_{05} and H_{06} were both rejected, indicating that there is indeed evidence of a relationship between FI/FD and achievement in structure. This study supports the

findings of Brown (1973), Abraham (1985), and J. Hansen and Stansfield (1981), whose studies have indicated that field independence rated consistently in a positive, though modest way to performance on ESL tests of grammar. The findings of this study would suggest that previous research done on a wide sample of international students can be applied to a more narrowly limited sample of Japanese post-secondary students.

H₀7, which concerned the relationship between field independence and achievement in reading as measured by the TOEFL, was rejected. The rejection was based on statistical evidence that there was some correlation between field independence and reading achievement. The correlation coefficient was negative and very low (-.04), so the correlation does not appear to be very strong. Those who tend to be more field independent may have an advantage on this type of test since tasks include detecting main idea, making inferences, and drawing conclusions, all of which require fairly strong analytical skills. The findings of this study are consistent with other research (McLeod and McLaughlin, 1986).

Based on tabulated data, H₀8 which states that there is no relationship between field independence and ESL achievement in vocabulary was rejected. There does seem to be a small negative (-.08) correlation. It would be difficult to say students who tend to be field independent have much advantage on this test over those who tend to be field dependent. There may, however, be a difference in the way the vocabulary is acquired. That process was not addressed in this study and should be examined in future research.

The fifth objective was to determine if ESL achievement among post-secondary Japanese students is significantly related to the demographic factors of age, gender, prior language experience, and choice of major. The last four hypotheses relate to this objective.

Based on the findings of this study, H₀9, H₀10 and H₀11 were rejected. The demographic factors of age, gender and prior language experience all seem to be correlated with ESL achievement, although all are negative correlations and all correlations are low. There was not much difference in age (minimum age was 19 and

maximum 24, with a mean age of 20.06), so this demographic factor may not have had enough variation to be significant. The demographic of prior experience was very broadly defined so that even though the length of prior experience ranged from 6 to 18 years, the intensity and depth of that experience was not clearly defined. This factor needs to be more definitive to be useful. Gender also seemed to be a relatively insignificant factor with a mean score of differences for men of 25.24 on the TOEFL and 27.42 on the CELT. Mean score of difference for women on the TOEFL was 26.32 and 32.90 on the CELT. While these differences are not statistically significant, they do show trends and support the findings of previous research.

H₀12, the final demographic, was related to ESL achievement and major. According to data in this study, there is no significant relationship between ESL achievement and major. This is actually quite an important finding in that, while commerce majors have the highest level of field independence (mean 15.32) and the highest percentage of men (89%), their ESL achievement scores are quite comparable to economics and liberal arts majors. This suggests a consistency with other demographic data.

The sixth objective was to utilize the findings of this study to make recommendations concerning FI/FD as it affects post-secondary Japanese ESL students. The final sections of this chapter provide recommendations for action as well as recommendations for further study.

Recommendations for Action

The following are offered for consideration:

1. Help students to become aware of their own cognitive learning style, and how to compensate when necessary. If students are knowledgeable about their own styles, they can judge better which settings and opportunities are the most compatible with the way in which they learn best, and make necessary adjustments.
2. Help teachers to become aware of the role cognitive learning style

plays in student learning. Teachers can learn through classes and workshops; then, they will be better able to facilitate the learning process.

3. Match teacher and student cognitive learning styles when possible, since research indicates that matching styles facilitates achievement.
4. Provide instruction to students in a variety of teaching styles. Since classes will likely continue to contain students with a variety of learning styles, there must be flexibility in methods of presentation and processing to better meet student needs.
5. Provide support staff (counselors, advisors, resident life people) with workshops to understand the role of cognitive learning style as it relates to the general approach to studies.
6. Get feedback from students as to which approaches they feel are most effective and why.

Recommendations for Further Study

Based on the findings from this research the following recommendations for study are offered:

1. Expand the size and scope of the population to include Japanese students at other U.S. universities. This would provide a wider sample and also provide a less homogeneous population.
2. Include Japanese students at community colleges as well as universities to see if there are similar patterns in those choosing two year programs and four year programs.
3. In order to further test the validity of the research on achievement on second language learning, it might be useful to compare American students studying a foreign language with Japanese students studying ESL.
4. Since this sample included students who were in a fairly narrow age

range, the scope of the population should be expanded to include a broader range of age groups.

5. Do this study in Japan at Tokyo International University and/or other Japanese universities.
6. Replicate the study with groups of students at three year intervals to measure shifts in results over time.
7. Expand demographic information requested to investigate the possibility of self-selection which would skew findings.
8. Re-evaluate the instrumentation. Identify other ways to measure achievement in ESL that may not be as limited as paper and pencil tests like the TOEFL and CELT.
9. Identify additional factors related to ESL success, such as sociolinguistic or paralinguistic factors.
10. Use grade point average as a dependent variable.
11. Compare those who spend vacation traveling and those who are less adventuresome. Assess how the students adapt field independence/field dependence to the situation.
12. Do further study in cross cultural learning styles.
13. Determine the distribution of field independence/field dependence in a normal population (of university students in Japan, and of the general population in Japan).
14. Examine FI/FD, ESL success, and choice of major to begin to develop a predictive measure for use in student support programs.

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