
The Relationship Between Field Sensitivity and Second Language Proficiency of Japanese Learners of English

Marina Greene*

Psychologists often distinguish learners by their unique psychological differences and cognitive styles. One such distinction is field sensitivity where learners are characterized as either field dependent (FD) or field independent (FI).

Field dependent (FD) learners rely greatly on context and are more likely to have difficulty distinguishing discreet points within a context. They are considered instead to foster ample skill in interpersonal or social behaviors. At the other end of the spectrum, field independent (FI) learners perceive more analytically than FD learners. They are more able to pick out a particular point within a context as well as distinguish the parts from the whole.

Research shows that people tend to be either dominantly FD or FI. This field sensitivity can change from an individual's childhood to adulthood. According to Brown (1987), field independence typically increases as a child becomes older. Research has also found that males in Western cultures tend to be more FI than females who tend to be more social. (The trait of being analytical is in fact often positively related in Western culture to the degree of intelligence, that is scores on IQ tests, that one has). As a whole, democratic industrialized countries with competitive societies tend to produce more FI people. Cross-culturally, Berry (1991) found that in agrarian societies field dependence is dominant among the population.

Within the field of education, research has found that FI students tend to structure and compose their own learning strategies while FD students tend to require more explicit instruction. That is, FD students learn better from social context and perform better on structured tasks than FI students, according to Witkin, Moore, Goodenough, and Cox (1977). This observation exhibits a significant relationship between a student's tendencies of cognitive perception and his/her proficiency within a particular subject.

In the educational field of foreign language teaching, there is a strong research trend showing that field sensitivity, in particular field independence, is a component of the development of overall language proficiency. The intention of this study is to look at the second language learner within his/her unique society and determine if the learner's degree of field sensitivity has some relationship to his/her proficiency in a second language, English. Specifically, this study looks at whether 54 Japanese sophomore students at a small Japanese business college, with the assumption that these students have had at least six years of English before college and two semesters of English instruction in college, are either FD or FI and whether this data has any relationship to their language proficiency in learning English as a second language.

On the basis of the information obtained so far, it is difficult to hypothesize whether Japanese learners tend to be more FD or FI in learning. On the one hand, Japanese education has had a reputation for emphasizing the learning of discrete facts that are usually memorized by rote, which is FI, over a more global understanding of the context of a particular subject, which is FD. In addition, Japan is a major democratic and industrialized country where one would expect, based on previous studies, that FI learners would dominate. On the other hand, one should also consider that Japanese culture is a very tight and socially oriented society, and so this could cause a lean towards dominance of field dependence.

The two research questions to be answered in this paper, therefore, are as follows: (a) Is there any dominate field sensitivity of Japanese male and Japanese female learners? and (b) Is there any significant correlation between the field sensitivity of these Japanese learners of English and their proficiency on a standardized English exam?

REVIEW OF LITERATURE

The study of field sensitivity has both a wide range and scope of research. Much work has been accomplished in determining what field dependence and field independence is and what relationship field sensitivity has with other variables, such as age, sex, and culture. These traits have also been discussed within the field of education, in particular second language learning and instruction.

Field dependence and field independence are cognitive variables defined by Herman Witkin (1977), the leading scholar on field sensitivity, as “the extent to which a person perceives part of a field as discrete from the surrounding field as a whole, rather than embedded, or...the extent to which a person perceives analytically.” In other words, a FI person is more able than a FD person to perceive a specific, relevant item or factor in a “field” of unrelated matter. This ability may be focused on being able to visually pick out relevant figures or to understand discreet relevant ideas from abstract ideas and thoughts. Brown (1987) found that at the extreme end of the spectrum, too much FI can be a hindrance: “cognitive ‘tunnel vision’ forces you to see only the parts and fail to see their relationship as a whole.”

Conversely, the FD person tends to be more “dependent” on the “field” and is less likely to be able to pick out the parts from the whole. However, the FD person can see a total field as a whole. Although perception, in Brown’s (1987) opinion, is not as analytically oriented as field independence, the cognitive style of field dependence can be beneficial for this reason. FD people are more sensitive to social cues and often possess greater interpersonal skills than FI people, according to J. Hansen & Stansfield (1981).

The literature written by Brown (1987) and Witkin et al. (1981) on field sensitivity has shown that people tend to be either dominant in one mode of field sensitivity or the other. Often this trait is dependent on such unalterable factors as age and sex. Tendencies towards field independence begin at an early age. As written by Witkin et al. (1981), “It is clear that individual differences in field dependence-independence and in cognitive restructuring ability are to be found at every age beginning as early as kindergarten and preschool periods.” Generally, as a child becomes older,

he/she becomes more FI according to Brown (1987) and Witkin et al. (1981). This finding is intuitively understandable because as a child grows he/she is less reliant on interpersonal relationships with his/her parents, for example, and more interested in rationalizing the particulars of the world around.

Also discussed by Witkin (1977, 1981) are tendencies of men and women in several Western societies toward field sensitivity. Several conclusions have been made about this topic. Men tend to be more analytical at restructuring processes, that is FI, than women. Women tend to be more oriented toward social-interpersonal skills, that is FD, than men.

There is some relationship between field sensitivity and culture that has been addressed by some research. Members of societies that strongly emphasize conformity are relatively more FD and, in contrast, members of societies in which there is a greater tolerance of autonomy and more emphasis on individual independence are relatively FI as found by Witkin, et al. (1981). These societies tend to be democratic, loose societies.

In many cross-cultural studies L. Hansen (1984) and Witkin (1977) found evidence showing that those societies where there is a tight societal rule and conformity inside and outside the home tend to have more field dependent people. These societies also tend to be agrarian. Berry (1991) found that the agrarian society of the African village of Bangandu provided support for this generalization. According to Berry (1991), these people “tend to socialize their children with a strong control, and more towards interdependence.” This finding in Berry’s research was compared to another African village, the Biaka. These people, living in the same region of the Central African Republic as the Bangandu, are in comparison more of a hunting and gathering society. Berry (1991) found that the Biaka people “socialize their children for independence and self-reliance.”

Considering the broad relationship that field sensitivity has with such human conditions as age, sex, and culture, field sensitivity has logically been mentioned by J. Hansen & Stansfield (1981) as a potentially important variable in education. Research suggests that the traits associated with field sensitivity may have some relevance to the different aspects of second language learning. Although there appears to be more support in favor of FI students being more astute in organizing and analyzing information and thus better language learners, there is some controversy among research conclusions as to the degree of influence field sensitivity has on different language learning aspects. Some research as performed by Brown (1987) supports the hypothesis that because FD people tend to be more skilled in interpersonal interaction, FD learners would have better conversational skills.

A large amount of the research conducted by such people as Chapelle & Roberts (1986), J. Hansen & Stansfield (1981), L. Hansen (1984), and Readence, Baldwin, Bean, and Dishner (1980) focuses on the relationship between field sensitivity and student performance on a widely used exercise in second language learning, the cloze test. The cloze test is essentially a fill-in-the-blank exercise where the student is asked to write in the proper word or form of a word to complete a text passage. In each of these studies, field independence is highly correlated with success on the cloze test. This conclusion is reasonable because field independence is associated with discreet item learning and the cloze exercise tests this type of skill. Also in support, Abraham (1985) has found that FI learners

studying a second language perform better on deductive lessons than those with FD styles, who are more successful with inductively designed lessons.

To continue the support in second language learning, J. Hansen and Stansfield (1981) have found that field sensitivity does play a positive role in the development of language learning skills of first year college students studying Spanish. These skills are identified as organizational and analytical skills and are in turn correlated with exam averages (achievement). This research study also looks at the correlation between field sensitivity and the communicative competence of these students studying Spanish in the form of oral test grades. The results show that FI students scored slightly above FD students on the exams, making the correlation between the field independence and superior oral skills rather weak.

Research by Carter (1988) also supports the superior performance of FI students on language learning skills due to “their high cognitive restructuring skills.” She has found in correlating the field tendencies with scores on an Oral Proficiency Interview taken by an advanced Spanish as a second language class that FD subjects did not use interpersonal cues and strategies as one may hypothesize. In fact, “FD subjects attributed less importance to focusing on meaning than did FI students.” In contrast, Bialstock and Frohlich (1978) have concluded that field sensitivity is not directly correlated with either a learner’s learning strategies or language achievement.

The majority of research, for the most part, supports the general statement that second language learners who are FI tend to do better at organization and cognitive restructuring skills, which in turn result in greater achievement. Very little of this research, however, takes into account the cultural variable and its influence on field sensitivity. Each of the above mentioned research studies about second language learning were performed in the United States, a country that on the whole tends to support FI behavior over FD behavior, especially in education. The influence of another culture, Japan in this study’s case, on field sensitivity may provide new insight in the debate of whether field sensitivity is related to language proficiency.

PROCEDURE OF STUDY

Restated, the primary hypothesis for this study is whether there exists a significant correlation between a measure of the field sensitivity and the Japanese learner’s performance scores on an English proficiency test.

The randomly selected subjects for the study were 54 Japanese sophomore level students studying English at a small business college located in Japan. The students, who have received at least six years of instruction in English from junior and senior high schools in Japan and two semesters of English instruction at this college, are taking this required English class with the primary intentions of understanding the business and economics textbooks used in English at this college and obtaining future employment. It should be noted that a total of 78 students were randomly placed in the researcher’s classes. Of this number, only 54 students completed the entire study.

These 54 participants were asked to take two tests: the Group Embedded Figures Test (GEFT) and the Test of English as a Foreign Language (TOEFL). The GEFT was administered in July 1994. The

first TOEFL was given in November 1993, while the second TOEFL was given in June 1994. Approximately six months passed between the first and second administration of the TOEFL.

For this study, The Group Embedded Figures Test (GEFT), developed by Witkin, Ottman, Raskin and Karp, is used as the measure of field sensitivity. This test is a frequently used measure of field sensitivity. Essentially, it is a pencil and paper test made up of three sections. To reduce unwanted interference in this study, the directions for the test were translated from English to Japanese. The first section of the test is given for practice and is not scored. The second and third sections consist of nine items each and are both five minutes long. The task of this test is to outline a specified geometric shape within an embedded and complex design. The scores range from 0 to 18, with a low score showing strong field dependence and a high score showing strong field independence. Although administered primarily in the United States, the GEFT has been used in a reasonable amount of application across some non-Western cultures such as Berry's (1991) research of Biaka and Bangandu of Africa, L. Hansen's (1984) research of Fiji and Tahitian people, and Witkin's (1977) work with other cultures.

The Test of English as a Foreign Language (TOEFL) is the test used to show proficiency in English listening comprehension, grammar, vocabulary, and reading comprehension. The TOEFL has been used extensively in showing proficiency in the English language for those whose native language is not English, as well as in predicting success in American universities for students whose native language is not English, according to Cervenka (1978). As mentioned before, the TOEFL was given to the students twice: once in November 1993 and once in June 1994. An increase in TOEFL score is used in this study as a measure of proficiency in a second language, that is English.

RESULTS AND ANALYSIS

The following discussion presents a description of the study's resulting data of the GEFT, the two TOEFL's, the TOEFL score differences, and the relation between GEFT and TOEFL.

As presented in Table 1, the mean score of the Group Embedded Figures Test (GEFT) for all students is 14.54. 76% of these students proved to be field independent (FI). FI is defined as being able to solve 14 or more of the 18 problems of GEFT (Witkin et al., 1971). The male students' mean score, 14.91, is only slightly higher than the women's mean score of 13.90.

Table 1: GEFT Analysis

	N	Mean	S.D.	%FI	%FD
Women	20	13.90	3.60	70%	30%
Men	34	14.91	3.28	79%	21%
All Students	54	14.54	3.40	76%	24%

Figure 1 shows the histogram of the GEFT scores, that is the GEFT score and its frequency. It is clear from simply looking at this histogram that the distribution of GEFT is not normal. This

observation is clarified by the normal distribution goodness-of-fit test. The results of this test state that the hypothesis that the population is normal of mean 14.54 and standard deviation 3.40 can be rejected at the 95% confidence level.

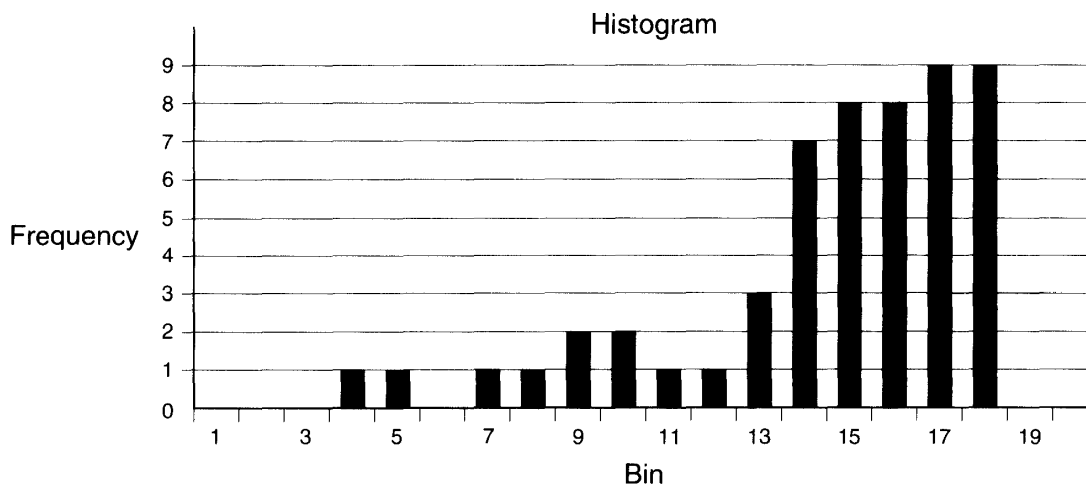


Figure 1: Histogram of GEFT scores

In Tables 2 and 3 are the data for the two TOEFL's, showing achievement in English. The scores of the Test of English as a Foreign Language (TOEFL) show a mean of 389.56 for the sample of all 54 students who took this test in November 1993 and a mean of 399.26 in June 1994. In both instances the women scored slightly more than men. Educational Testing Services (1989) have noted that the total reported scores on the TOEFL for all test takers worldwide range from a low score of 200 to a perfect score of 677.

Table 2: November 1993 TOEFL Score Analysis

	N	Mean	S.D.
Women	20	391.60	36.43
Men	34	388.35	32.61
All Students	54	389.56	33.77

Table 3: June 1994 TOEFL Score Analysis

	N	Mean	S.D.
Women	20	400.65	45.61
Men	34	398.44	39.40
All Students	54	399.26	41.39

In order to show proficiency in TOEFL, the difference in the scores from June 1994 and November 1994 is found. These results are shown in Table 4. The mean of the score differences for

all students shows a positive increase. The male students showed a slightly higher positive increase of 10.09 as compared to the increase of the women's mean, 9.05.

Table 4: TOEFL Score Difference (TOEFL 1994-TOEFL 1993)

	N	Mean	S.D.
Women	20	9.05	30.87
Men	34	10.09	29.89
All Students	54	9.70	29.97

Figure 2 shows the histogram of the TOEFL score differences. The data follows a normal distribution pattern. Through the normal distribution goodness-of-fit test, the hypothesis that the population is normal of mean 9.70 and standard deviation 29.97 cannot be rejected at the 95% confidence level.

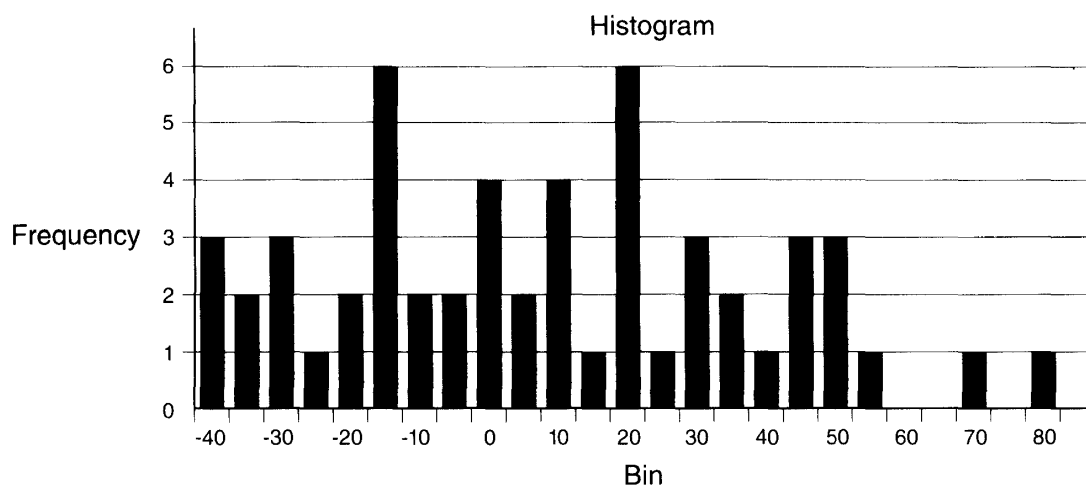


Figure 2: Histogram of TOEFL Score Differences

Figure 3 shows a scatter diagram between the scores of GEFT and the differences of TOEFL scores. As the GEFT scores increase, the difference in TOEFL scores become more scattered in almost a fan-like shape. This is an example of heteroscedasticity.

The correlation coefficient between the GEFT scores and the TOEFL scores for all 54 students is 0.1919. Since the data for the GEFT is not normal, a test on the confidence interval of the correlation coefficient is not conducted.

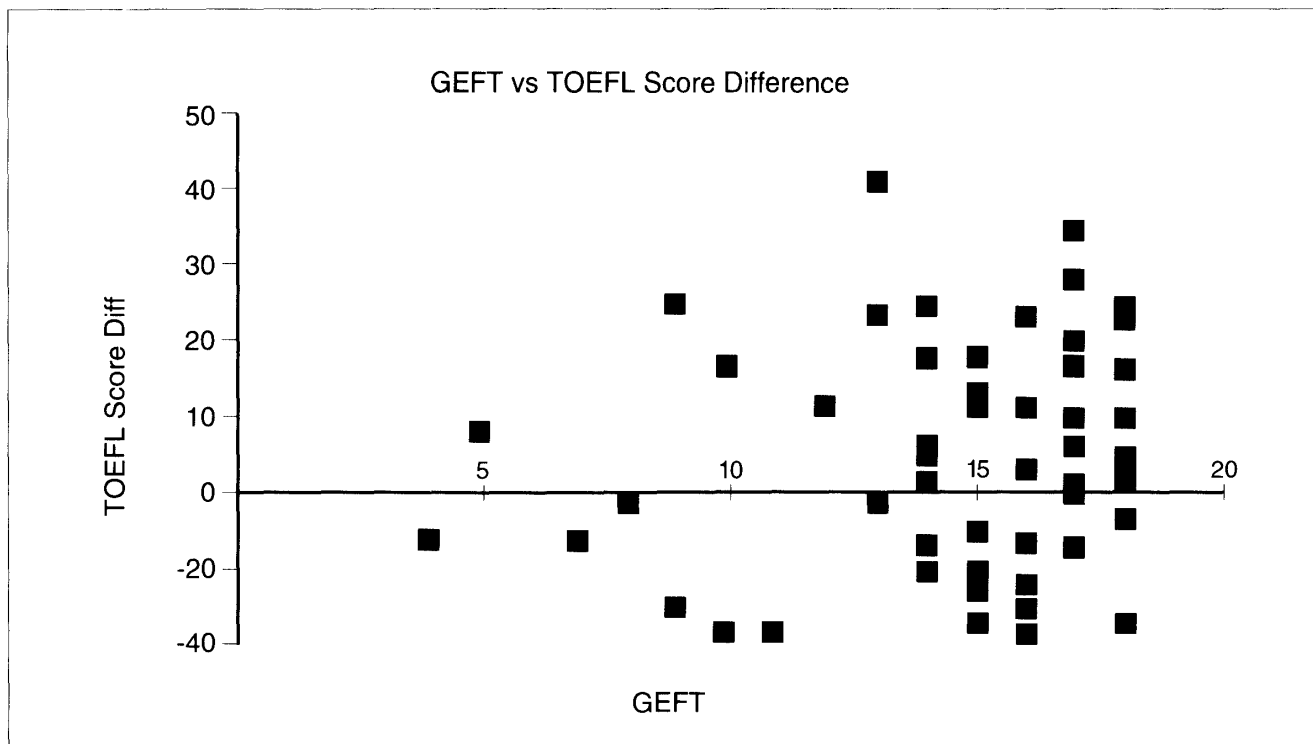


Figure 3: Plot of GIFT and TOEFL Score Difference for All Students

CONCLUSION

This study has presented two questions that should be confronted at this time. The first question to be considered: Is there any dominate field sensitivity of Japanese male and Japanese female learners? The data does show that all students as a single group exhibit a tendency towards field independence. Therefore, the assumption is that many of these students have some leaning towards analytical thinking. Based upon the body of research regarding field sensitivity, discreet learning opportunities and deductive lessons in second language learning may prove successful for these learners. A more valid conclusion, however, cannot be made for each of the two sexes because the sample size for each of these two groups is so small: 20 for women and 34 for men. Therefore, more research needs to be conducted to find a more reliable conclusion to this first question.

The second question of this study deals with the relationship between language proficiency and field sensitivity. The question to be considered: Is there any significant correlation between the field sensitivity of these Japanese learners of English and their proficiency on a standardized English exam? As with the question before, it is difficult to answer this question based on the data found and its lack of any sort of linear relation. Perhaps with more data, the relationship between field sensitivity and proficiency in a second language will become more obvious. At this point, however, the relationship between proficiency in a second language and field sensitivity is simply inconclusive.

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