

# The relationship of field dependence/independence to foreign language learning

Y. NOUAR

Institut des langues vivantes étrangères  
Université de Constantine.

## Abstract

*This study investigates the relationship between the cognitive style construct of field dependence/independence (FD/I) and the three components of language proficiency: linguistic competence, communicative competence and contextual competence. The subjects studied were 117 Algerian students learning English at the secondary level. A relationship was found between the cognitive style of field independence and the three areas of foreign language proficiency.*

*In recent years second language researchers examined particular learner factors that are thought to play an important role in second and foreign language learning. One learner factor that has received considerable attention is the cognitive style construct of field dependence/independence. Whereas the result of empirical research has shown that field independence is related, in a minor fashion, to second language proficiency, the aim of this paper is to show that both learning styles are associated with success in a foreign language depending upon the language tasks called forth. Initially, however, it is important to review, briefly, the literature on FD/I in general and its relationship to second and foreign language learning in particular.*

## ملخص

تهدف هذه الدراسة إلى البحث عن العلاقة التي يمكن أن تربط بين العوامل السيكولوجية في مجال الاعتماد و عدم الاعتماد على النفس و بين المجالات الثلاثة للقدرات اللغوية التي تتمثل في "القرة اللسانية"، قدرة الاتصال، القدرة البراغمية. الأشخاص الذين تتشكل منهم عينة البحث هم طلبة ثانويون (ثانوية أحمد باي بقسنطينة) يتعلمون اللغة الانجليزية (القسم النهائي) و هم يشكلون فوج يتكون من 117 طالب و طالبة.

لقد تم التأكد من وجود علاقة بين العامل السيكولوجي المتمثل في الاعتماد على النفس والمجالات الثلاثة لقدرات الاستيعاب في اللغة الأجنبية.

## **1. Field dependence/independence cognitive style**

The concept of fd/i has been defined as the consistent mode of approaching the environment in analytical as opposed to global terms. Those who experience their surroundings relatively analytically are described as FI and those who experience their surroundings in a relatively global manner are described as FD.

FD/I which is a central component of the theory of psychological differentiation proposed by Witkin, Faterson, Dyk, Goodenough and Karp (1962), has been continuously refined. Initially FD/I cognitive style was used to indicate the individual's tendency to "rely primarily on visual or gravitational cues in determining the upright in space". (Witkin and Goodenough 1977). Later research on FD/I. Linked performance on the space orientation task to the ability to separate an item from a complex organised design or "field". The item is a simple figure which has been hidden or embedded into a more complex one. FI was associated with the ability to separate or "disembed" the relevant information from the surrounding background. FD on the other hand is associated with a lack of competence in dealing with such tasks.

Differentiation theory has later been refined. In such a theory, the construct of FD/I plays an important role not only in the development of cognitive restructuring skills but also in the development of interpersonal competencies. The hypothesis which was put forward was that in a less differentiated system (more FD) there is a greater link between the self and others in both the social and intellectual fields. FD individuals are thought to develop more interpersonal competencies and social skill than FI individuals (Witkin et al. 1977). FD people are also more attentive to social cues provided by others, whereas FI people are not interested in other persons. They are more concerned with ideas and abstract principles. As such they are believed to have a greater degree of self-nonsel segregation, resulting in a greater autonomy from the external sources of information, when dealing with intellectual tasks or dealing with people.

## **2. field dependence/independence and second/foreign language learning**

It was Brown (1973) who drew the attention of researchers to the possible relevance of cognitive styles to L2. FD/I in particular was examined in an attempt to determine whether this construct was relevant in language learning (Cohen 1977, Brown 1978, Omaggio and Birckbihler 1978). In a study, Naiman et al. 1978, "the good language learner", it was found that FI was a significant predictor of L2 proficiency as assessed by an imitation and listening comprehension test; in another pilot study conducted by Tucker, et al. (1976) it was found that FI was a significant predictor of success for all students of high achievement on the test de rendement en Français. While these two studies offer some support for the relationship between the cognitive style construct of FD/I and performance in L2, another study conducted in Canada by Bialystock and Frohlich (1977) did not find FD/I to be an important learner factor. Considering the inconclusive results concerning the relationship of FD/I to language proficiency, some researchers have claimed that both the analytical precision associated with FI and the emphatic openness associated with FD are important for L2. In the study undertaken by Hansen and Stanfield (1981) a relationship was found between FI and the three areas of L2 competence: linguistic, communicative and contextual. The authors' conclusion was that the cognitive skills associated with FI play a positive albeit minor role in the development of overall language proficiency.



The hypothesis put forward in this study is that both the cognitive restructuring abilities linked with FD/I success in another language depending on the particular language task or the particular activities called upon be they linguistic or communicative in nature.

### **3. Method**

#### **3.1. Subjects**

Students learning English as a foreign language (advanced level i.e. Niveau Terminale) at the Lycee Ahmed Bey in Constantine, formed the sample group for this investigation. The total was 117 students 34 males and 83 females, who belonged to four different classes (two science stream and two Arts stream). These students, aged 16-20, were assumed to constitute a representative sample of students at the secondary level in Algeria. Moreover, since these students have all been learning English for five years and they are all fluent speakers of dialectal Arabic; they represent a fairly homogeneous sample.

#### **3.2. Instruments and procedure**

#### **3.3. Description of independent and dependent variables**

##### **3.4. Independent variables**

Field dependence/independence is the independent variable used in this study. The cognitive measure used in this study to distinguish between FD and FI learners is the Group Embedded Figure Test (GEFT, Witkin et al. 1977). The GEFT was designed to provide an adaptation of the original individually administered EFT. The GEFT involves locating a previously seen simple geometric figure within a more complex one.

FI individuals are better able to perceive parts of the field as distinct from the background. FD people perceive all parts of the organised field as a total experience. The testing procedure lasted twenty minutes for each group.

##### **3.5. Moderator variables**

The moderating factor of "stream" and gender are included for their possible influence on the foreign language process.

##### **3.6. Dependent variables**

Foreign language proficiency is the dependent variable used in this study. Overall proficiency is analyzed in terms of three components:

- linguistic competence defined as the foreign language students developing knowledge of the rules and the structures of the language and their operations in concrete language samples.
- communicative competence defined as the ability of the foreign language student to convey and receive mutually comprehensible messages in the foreign language.
- contextual competence defined as the combination of the linguistic and contextual proficiency of the foreign language student. It is the ability of the foreign language learner to comprehend written utterances in connected discourse.
- linguistic competence was assessed by student's performance on a 40 item standardised multiple-choice test adapted from the Royal Society of Arts examination Board (1982).

- communicative competence was assessed by a standardised English test adapted from the Association for Recognised English Schools. (ARELS 1982). The test describes six major skills of speaking ability that are tested in situations encountered in everyday life.

- contextual competence was assessed by students' performance on a 31 item cloze test, since it has been suggested (Oller 1976) that cloze technique is a useful measure of overall proficiency. In filling in blanks, the testee is required to use, as Hansen and Stanfield (1983) put it "the totality of interrelated skills that comprise a language: lexical, grammatical, contextual (p.31). As such, a cloze test provides a good measure of both linguistic and contextual proficiency.

#### 4. Results and discussion

Correlational procedures (Pearson Product-Moment) were obtained between the independent and dependent variables in order to determine the relationship between students' field dependence/independence and the three components of language proficiency. 'T' tests were also used in order to compare the means of science students and Arts students and the means of males females on FD/I.

#### 5. Large sample :correlational findings

As demonstrated in Table I, all three correlations are positive and significant beyond the 0.05 level.

- field independence and linguistic competence  $r = 0.45$ ,
- field independence and contextual competence  $r = 0.38$ ,
- field independence and communicative competence  $r = 0.21$ .

The largest correlations were found between FI and multiple-choice (a measure of linguistic competence) and FI and cloze test (a measure of contextual competence). It seems that a higher degree of cognitive restructuring ability is associated with achievement in these two areas of language proficiency: linguistic and contextual.

This suggests that the competencies such as disembodiment, analysing and restructuring usually associated with FI learners are used when learning the formal aspect of another language. A similar restructuring process is also thought to be present when filling in gaps in a cloze test (a measure of contextual competence). although the relationship between FI and communicative competence was the lowest of the three, it still appears that the characteristics associated with this cognitive style are involved to a certain degree with the ability to communicate in a foreign language.

A relationship still exists between FI and foreign language proficiency when "stream" is included as a moderator variable. FI correlates significantly with all criterion measures except one, FI does not correlate significantly with contextual competence with regard to Arts students. The largest correlations are found among Arts students TABLE II FI and linguistic competence  $r = 0.80$ .

FI and communicative competence  $r = 0.40$

The lowest correlations are found among science students:

FI and linguistic competence  $r = 0.37$

FI and communicative competence  $r = 0.29$

FI and contextual competence  $r = 0.29$

Although the correlations between FI and the three criterion measures are lower for science students, they are positive and significant. This might indicate that FI is related to better achievement for this group.



### Results of the 't' tests (table III & IV)

when science students and Arts students were compared on the measure of FD/I, it was found that there is no statistically significant difference between these two groups on this measure of cognitive style ( $t = 0.50$ ,  $P = 0.05$ ).

This result is in contradiction with Witkin et al. (1977) findings which indicate that choice of specialism is related to cognitive style i.e. students who choose scientific subjects which clearly require restructuring skills and which are not social in content would be more FI. On the other hand students who favour Arts subjects which are more social in content and which emphasise interpersonal relations, would be more FD. This differentiation failed to occur, probably because as Witkin (1962) claims, the cognitive style of learners vary considerably across different dimensions.

In fact, these findings are hardly surprising considering the fact that certain subjects such as engineering, medicine, maths, computer science are highly regarded by students and their parents alike. Moreover, the Algerian government, in an effort to industrialise the country, tends to promote the study of science and technology. So, it is not surprising that Algerian students would elect to choose these subjects at school and at University whether they match their cognitive style or not and this irrespective of sex. In order to investigate the role of sex stereotypes considered to be important in the educational field, males and females were compared on the measure of FD/I. The result of the 't' test did not show any statistically significant difference between males and females on this measure of cognitive style ( $t = 0.670$ ,  $P = 0.05$ ). This result is in contradiction with Witkin and Goodenough (1977) findings which show a tendency for women to be more field dependent than men.

The second assumption we wanted to test is the commonplace observation that, men in their educational choices, strongly favour scientific subjects whereas women tend to favour Arts subjects. In our case, this assumption, was not confirmed: 59% of our students in the Arts stream were female, they also represented 75% of the students in the science stream.

## 6. The central hypothesis

The central hypothesis in this study was that characteristics associated with FI, FD would enhance achievement in a foreign language depending on the language task called forth: linguistic or communicative. The result shows that for this sample of students, FI as opposed to FD, is related to better performance in a formal advanced English language course. One of the predictions was that FI would explain achievement in formal tasks (i.e. linguistic competence and contextual competence) and FD would be more effective for functional tasks (i.e. communicative competence). This differentiation did not occur. FI was an important factor of success on all three language tasks (formal as well as informal). Probably, our language tasks were too formal and therefore, the characteristics associated with FD learners were not fully displayed. Brown (1977) suggested that "FD may be a crucial factor leading to success in a more communicative, natural, non-educational setting" (P.359). It may also be the case that the CEFT used to measure the cognitive style construct of FD/I might in fact be measuring only one learning style: FI. In the CEFT, individuals are in fact displaying their FI skills to find the simple figure hidden in the more complex background. However, they are not required to display their FD skills such as social and interpersonal skills to any degree. As Chapelle and Roberts (1986) put it "it is thus inappropriate to label a lack of FI as FD" (P.42).

## 7. Instructional implications

Although we cannot make any claim concerning the relationship of FD to foreign language learning, we still feel that educators and teachers should take this learning style into consideration. In fact, instructional strategies and teaching materials should be adapted to accommodate both learning styles. The teacher's procedure for dealing with the two types of students (FI and FD) should naturally differ.

There are many ways in which teachers can respond to the learning needs of individual students. Birckbichler and Omaggio (1978) suggest that the structure of the learning environment be altered to benefit the learning preferences or styles of the two types of learners. For example, FD learners would function better in a structured environment (e.g. formal drilling), while FI learners would prefer an unstructured one (e.g. communicative competence).

## 8. Conclusion

Because of the effect of social, cultural and linguistic variables on second/foreign language learning, conclusions drawn from findings involving different language situations and different language learners must be approached with care. In this context, conclusions drawn from this study may only be applicable to Algerian students learning English at an advanced level.

Bearing in mind these limitations, we addressed in this study, the issue of the relationship between the cognitive style construct of FD/I and achievement in a foreign language learning. A relationship was found between FI and the three areas of foreign language learning: linguistic competence, communicative competence and contextual competence. This is but one answer to the question of what factor(s) influence second/foreign language learning. More research is needed in order to better understand the complexities of learners' characteristics and the language learning process.

VARIABLE	LINGUISTIC COMPETENCE	COMMUNICATIVE COMPETENCE	CONTEXTUAL COMPETENCE
FD/I*	0.45*** (n = 117)	0.21** (n = 100)	0.38*** (n = 99)

\* A higher positive score on the CEFT indicates a relatively greater degree of FI

\*\* p. < 0.05

\*\*\* p. < 0.0005

Table 1 : Correlation matrix for the whole sample (number of cases is shown in parentheses)

VARIABLE	LINGUISTIC COMPETENCE	COMMUNICATIVE COMPETENCE	CONTEXTUAL COMPETENCE
FD/I	0.37*** (n = 70)	0.29** (n = 58)	0.29* (n = 64)
Science students			
Arts students	0.80*** (n = 47)	0.40*** (n = 38)	0.07 (n = 31)

\* p. < 0.05

\*\* p. < 0.01

\*\*\* p. < 0.005



\*\*\*\* p. <0.0005

**Table II :** Correlation matrix for science students and arts students

VARI- ABLE	nr of cases	Mean	SD	F value	P	T value	DF	P
FD/I								
Sciences students	62	8.03	4.49	1.06	> 0.05	- 0.50	106	> 0.05
Arts students	46	8.43	4.49	1.06	> 0.05	- 0.50	106	> 0.05

**Table III :** 't' Test between science students and arts students

VARI- ABLE	nr of cases	Mean	SD	F value	P	T value	DF	P
FD/I								
Male	35	8.75	4.32	1.11	> 0.05	0.70	100	> 0.05
Female	67	7.97	4.55	1.11	> 0.05	0.70	100	> 0.05

**Table IV:** 't' Test between male and female on fd/i

## Bibliography

- [1] - **Brown, H.D.** "Affective variables in second language acquisition". Language learning vol.23 231-244. 1973.
- [2] - **Brown, H.D.** "Cognitive and affective characteristics of good language learners". Paper present at Los Angeles second language acquisition research forum. UCLA. 1977.
- [3] - **Brown, H.D.** "The good language teacher.Coping with the effect of affect". CA-TESOL occasional papers. n 4. 1978.
- [4] - **Bialystok, E.& Frolich, M.** "Aspects of second language learning in classroom settings". Working papers on bilingualism vol. 62 327-336. 1977.
- [5] - **Chapelle, C. & Roberts, C.** "Ambiguity tolerance and field independence as predictors of proficiency in English as a second language". Language learning vol.36 n 1 27-45. 1986.
- [6] - **Cohen, A.** "Successful second language speakers.A Review of Research literature". The journal of the Israel Association for applied linguistics.vol.I 3-21. 1977.

- [7] - Hansen, N. Frolich, N. Stern, H.H. & Todesco, A. "The good language learner". Toronto, Ontario institute for studies in education. 1978.
- [8] - Oller, J.W. Jr. "A program for language testing". Language learning special issue n 4, 141-166. 1976.
- [9] - Omaccio, A.C. & Birekbichler, D.W. "Diagnosing and responding to individual needs". Modern language journal. Vol. 62, 336-345. 1978.
- [10] -Tucker, G.E. Hamayan, E. & Genesee, F. "Affective, cognitive and social factors in second language acquisition". Canadian Modern language Review 32 214-226. 1976.
- [11] -Witkin, H., Dyk, R., Faterson, H. Goodenough, D. & Karp,S. "Psychological differentiation". John willey and sons. 1962.
- [12] -Witkin, H. & Goodenough, D. "Field dependence revisited". Princeton N.J. Educational testing service. Research Bulletin. vol. 17 1-35. 1977.