

Field Dependence - Independence; Ambiguity Tolerance - Intolerance and Achievement of English as a Foreign Language

Dr. Ramadan Mohamed Ramadan*

Dr. Iman Mohamed Abdel Haq**

* Assistant Professor of Educational Psychology, Faculty of Education, Benha-Zagazig University.

** Assistant Professor of Curricula and Methods of TEFL, Faculty of Education, Benha-Zagazig University.

Abstract.

The present study aims at investigating field dependence-independence and ambiguity tolerance-intolerance as two cognitive styles that affect the achievement of English as a foreign language. It also aims at investigating the possibility of predicting student's GPA from these two styles.

The sample of the study includes (137) students (56 males and 81 females) in the third year at English Language Department, King Faisal University. Ambiguity Tolerance Scale (McLain, 1993) was applied on the study sample after translating and standardizing it by the present researchers. Group Embedded Figures Test was also applied on the study sample.

Using Analysis of Variance with factorial design 2 x 2, New-Mann Koles test and Step-wise regression analysis, the results show that:

- 1- There are significant differences at the level of 0.01 in achievement of English as a second language between the field independent students and the field dependent ones, in favor of the former.
- 2- There are significant differences at the level of 0.01 in achievement of English as a second language between the ambiguity tolerance students and the ambiguity intolerance ones, in favor of the former.
- 3- There are significant differences at the level of 0.05 in achievement of English as a second language in the interaction between field dependence-independence and ambiguity tolerance-intolerance.
- 4- It is possible to predict achievement of English as a second language "GPA" at university students from the two styles of field dependence-independence and ambiguity tolerance-intolerance.

الاعتماد - الاستقلال الإدراكي، تحمل - عدم تحمل الغموض وتحصيل اللغة الإنجليزية كلغة أجنبية

د. رمضان محمد رمضان

د. إيمان محمد عبدالحق عبدالغني

كلية التربية (بنها) - جامعة الزقازيق - مصر

الملخص

تهدف الدراسة الحالية إلى بحث أثر كل من أسلوب الاعتماد - الاستقلال الإدراكي، وتحمل - عدم تحمل الغموض كأساليب معرفية في تحصيل اللغة الإنجليزية كلغة أجنبية لدى عينة من طلاب الجامعة، وكذلك بحث إمكانية التنبؤ بالمعدل التراكمي للطلاب من خلال هذين الأسلوبين.

تكونت العينة من (١٣٧) طالبا وطالبة (منهم ٥٦ من الذكور، ٨١ من الإناث) بالمستوى الثالث بقسم اللغة الإنجليزية بكلية التربية جامعة الملك فيصل، طبق عليهم مقياس تحمل الغموض لمكلاين McLain (١٩٩٣) بعد قيام الباحثان بترجمته وتقنينه، واختبار الأشكال المتضمنة من إعداد أولتمان ورفاقه وترجمة الشرقاوي والشيخ. وباستخدام تحليل التباين وتحليل الانحدار المتعدد أشارت النتائج إلى:

- ١- وجود فروق ذات دلالة إحصائية عند مستوى ٠,٠١ في تحصيل اللغة الإنجليزية كلغة أجنبية بين مجموعتي الطلاب المعتمدين على المجال والمستقلين عنه، لصالح الطلاب المستقلين عن المجال.
- ٢- وجود فروق ذات دلالة إحصائية عند مستوى ٠,٠١ في تحصيل اللغة الإنجليزية كلغة أجنبية بين مجموعتي الطلاب متحملي الغموض وعديمي التحمل للغموض، لصالح الطلاب متحملي الغموض.
- ٣- وجود أثر دال إحصائيا عند مستوى ٠,٠٥ في تحصيل اللغة الإنجليزية كلغة أجنبية للتفاعل بين أسلوبي الاعتماد - الاستقلال الإدراكي، وتحمل - عدم تحمل الغموض.
- ٤- يمكن التنبؤ بتحصيل اللغة الإنجليزية كلغة أجنبية لدى طلاب الجامعة من خلال أسلوبي الاعتماد - الاستقلال الإدراكي، وتحمل - عدم تحمل الغموض.

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Introduction

In language learning, a lot of attempts have been made to improve foreign language learning process. Consequently, many researchers engage themselves with investigating how learners acquire foreign language. They mostly agree that those learners are different from each other in the level of competency and in the way they perform different tasks. So, researchers have attempted to isolate particular learner's characteristics and cognitive processes, which affect learning a foreign language. In spite of the many attempts that have been made to improve foreign language learning, some learners are still more successful than others. In the past, researchers used to interpret that in terms of teaching methods, intelligence, analytic language skills, attitude, cognitive variables and social factors (Chapelle & Roberts, 1986).

Although these perspectives are important variables in foreign language learning, much work remains to be done to understand how learners learn foreign language. To do that there should be continuous investigation of learners' characteristics required from students in learning foreign language. Given this concern researchers have attempted to isolate particular learner traits and cognitive processes to reveal important differences and indicate appropriate individualized educational techniques that can promote language learning success. One of these researchers is Neufield (1978) who states that the ultimate goal in foreign language learning research is to develop a model that explains how and why student performances vary in different language learning tasks. Thus, researchers began to investigate the factors that might enhance or hinder second language acquisition.

Since its emergence, the field of foreign language acquisition research has focused on two areas: the nature of the language acquisition process and the factors that affect language learners. Recently, researchers have been attempting to explain how foreign language

acquisition occurs and how learner factors lead to differential success among learners. Such focus has alternately broadened, as researchers become more aware of the complexity of the issues, and narrowed, as greater depth of analysis was required. Freeman (1991) believed that before the emergence of second language acquisition as a field, researchers conducted contrastive analysis between the learners' first language and foreign language to anticipate areas of divergence which were likely to cause the learner's difficulty in learning foreign language. In recent years there has been an upsurge in language learning experiments by those involved in searching for the most facilitative input conditions for language learning. Although the linguistic structures to be learned are given attention, they are in fact of secondary interest. More important factors as conceived by many researchers are those related to the cognitive styles learners adopt in acquiring a second language (Freeman, 1991; Elliott, 1995-b; Kitamura & Miyamoto, 1996). It is clear that studying individual facets of cognitive style and learning preferences can yield important insights into language learning and acquisition especially when researchers can determine how learner variables interrelate with instruction methods. Elliott (1995-b) thinks that teaching students in a way that appeals to all learning styles and preferences could possibly neutralize the differences in language learning or acquisition ability as these differences and abilities relate to cognitive styles such as field independence and field dependence.

Brown (1994, 104) states that the way we learn things in general and the particular technique we apply on dealing with the problem seem to hinge on a rather amorphous link between personality and cognition; this link is referred to as cognitive style. When cognitive styles are specifically related to an educational context, where affective and psychological factors are intermingled, they are usually more generally referred to as learning styles. Previous research also revealed that cognitive styles are essential components that affect foreign language learning (e.g. Kitamura & Miyamoto, 1996).

As mentioned above, second language researchers have attempted to isolate particular learner characteristics and cognitive strategies that may enhance or hinder progress in learning foreign language. A lot of research has been conducted to investigate such relationship and to promote more successful learning process. One of the cognitive styles

that has received a great deal of attention is field dependence-independence which has been shown to play a helpful role in understanding the development of foreign language proficiency (Hansen & Stansfield, 1982; Standsfield & Hansen, 1983; Chapelle & Roberts, 1986; Elliott, 1995-a).

Field dependence-independence means different things to different people. According to Witkin et al. (1979), field dependence - independence signifies contrasting tendencies to rely either on external or on internal frames of reference, respectively, in processing information. These style preferences are thought to consistently influence behavior in cognitive, personal and interpersonal functioning.

Hansen & Stansfield (1981) state that field dependence-independence is believed to affect patterns of thinking, personality and social interaction in a consistent manner. It has been discussed as an educational factor that influences classroom behavior and subsequent achievement. In these discussions field dependent-independent is seen as a process variable linked to how students learn a foreign language. They add that field independence is an individual learner trait that plays a positive role in the development of overall foreign language proficiency. They suggest that a relatively greater degree of field independence is associated with a higher level of achievement. The literature on field dependence-independence has also shown that persons tend to be dominant in one mode of field dependence-independence is relatively stable trait, and the field independence increases as a child matures to adulthood (Brown, 1994, 106).

Chapelle and Roberts (1986) define field dependence as a cognitive style which affects how individuals perceive and process information and how they interact with environment. According to Chapelle and Roberts a field independent person is analytic, confident and self reliant, where as the field dependent person is holistic, uncertain and dependent upon others. They also define field independence and field dependence as two contrasting tendencies to rely primarily on either external or internal frames of reference in processing information. Theoretically, field dependence fosters greater skill in interpersonal relations, while field independence nurtures greater cognitive restructuring ability on various perceptual and intellectual tasks. They believe that field dependence persons develop a greater degree of connection

between the self and external stimuli than do field dependence individuals. This leads to an interpersonal orientation among field dependence persons, which allows them to focus on other people for information, and in turn, to develop competence in understanding or dealing with others. In contrast, field independence persons are considered to develop a more definite boundary between the inner self and the outer world, leading to a greater degree of autonomy when interacting with others or executing certain cognitive tasks than is exhibited by their field dependence counterparts.

Thompson (1988) thinks that the variations in cognitive style (field dependence-independence) among learners are effective in the learning process and should be investigated. Consequently, he concludes that field dependence-independence might affect learners' acquisition of second language and strategies of learning it.

Caneles et al. (1988) go far and state that one major factor influencing effective learning may be that of field dependence-independence. They suggest that learners who demonstrate field independence may be better able to abstract information more readily from learning materials and require fewer visual and verbal cues in order to learn effectively. Conversely the field dependent learner may need a more structured presentation with more visual and verbal cues and more reinforcement. Elliot (1995-b) states that language learners can benefit from both second language learning and acquisition situations when they are able to take advantage of both of field dependence-independence styles. Tinajero & Paramo (1997) agree with Eliott (1995-b) and concluded that field dependence-independence is related to overall academic achievement.

Witkin and Goodenough (1981) postulate that field independent learners trust internal cues, and this is associated with a greater aptitude for restructuring i.e., for imposing organization on received information. Field dependent subjects, on the other hand, place their trust in external cues and tend to accept percepts or symbolic representation at face value.

Brown (1994, 105) also thinks that a field independent style enables the learner to distinguish parts from a whole, to analyze separate variables without the contamination of neighboring variables. He added that some degree of both field independence and field dependence is

necessary for most of the cognitive and affective problems we face. Moreover, Horn (1999) mentioned that field independence learners easily separate key details from a complex or confusing background, while their field dependent peers have trouble doing this. Field-independent learners show significant advantages over field-dependent learners in analytical tasks.

In a learning situation, for instance, field-independence learners are likely to employ a hypothesis-testing approach to problem solving. This strategy is currently thought to operate in foreign language acquisition process (Elliott, 1995-b; Brown, 1995 & Horn, 1999). Conversely, field dependence learners tend to display passive, spectator-like strategies to acquire information (Hansen & Stanfield, 1981). On the other hand Hansen and Stanfield (1982) found out that field dependence-independence was also found to be associated with linguistic competence and overall achievement. It was also linked to the attainment of communicative competence in the second language.

Elliott (1995-a) states that field independence is statically significant predictor of subject performance on imitation and listening comprehension tasks. Chapelle and Roberts (1986) also found a statistically significant relationship between field independence and adult learners' acquisition of English as a second language. They concluded that field independent individuals might be good at language skills such as those employed in a classroom in which an analytic-type method is used. On the other hand field dependent individuals may be better in acquiring the language through communicative language use such as interaction with native speakers in social situations.

Profiles of field independent learners generally coincide with strategies frequently reported to be used by good language learners (Hansen & Stanfield, 1981; Chapelle & Roberts, 1986; Elliott, 1995-b) especially when the learning task centers around mastery of grammar structures, linguistic detail and performance on written and discrete-item test. On the other hand, field dependent learners show significant advantage over their field independent counterparts in studies claiming that empathy, socialization, and open personalities lead to more effective communicative skills in the target language.

The relationship of foreign language acquisition and field dependence-independence continued to be discussed and included in research

by many researchers (Hansen & Stansfield, 1981; Chapelle & Roberts, 1986; Chapelle & Green, 1992). Interpretation of research on the relationship of field dependence-independence varies. Chapelle and Roberts (1986) concluded that field dependence-independence should be considered a component of foreign language learning aptitude. Similarly Hansen and Stansfield found out that field dependence-independence plays a noticeable role in the proficiency of the English language, Chapelle and Green also had the same result.

There is another style that is usually related to foreign language learning, namely, ambiguity tolerance-intolerance. This conception of ambiguity tolerance has attracted research from various branches of psychology for over 40 years. So, Many authors attempted to define it and relate it to the learning process. Furnham (1993), for example, sees it as a personality variable as well as a characteristic of both organizations and cultures. Tolerance of ambiguity refers to the way an individual (or group) perceives and processes information about ambiguous situations when they are confronted by an array of unfamiliar, complex or incongruent cues. Headed that the person with low tolerance of ambiguity supposedly experiences stress, reacts prematurely, and avoids ambiguous stimuli. At the other extreme of the continuum, however, a person with high tolerance for ambiguity perceives ambiguous situations / stimuli as desirable, challenging and interesting.

In a later study, Horn (1999) state that learning a language can be a difficult and at times an ambiguous endeavor and students who can more readily tolerate ambiguity often show best language learning performance.

Tolerance of ambiguity is defined by many authors as the ability to live in a universe where there are no right or wrong answers, where ideas or thoughts are vague and yet unformed. It is the term we apply to perceived insufficiency of information regarding a particular stimulus or context (McLain, 1993). It is also defined as a person's ability to function rationally and calmly in a situation in which interpretation of all stimuli is not clear (Chapelle & Roberts, 1986). People with little ambiguity tolerance may try to avoid ambiguous situations, while people who have a great deal of ambiguity tolerance, on the other hand, enjoy being in ambiguous situations and, in fact, seek them out. They

are believed to excel in the performance of ambiguous tasks. there are four types of ambiguous situations: novel situations in which there are not or insufficient familiar cues; complex situation, in which there are too many cues to take into account; in soluble situations in which the cues suggest different structures; and unstructured situations, in which the cues cannot be interpreted (Chapelle & Roberts, 1986).

Budner (1962) defines intolerance of ambiguity as "the tendency to perceive ambiguous situations as sources of threat". Chen (no date) agrees with them and describes intolerant learners as those who tend to interpret differences, disagreements and conflicts as threatening and, as a result, suffer anxiety and discomfort. The person with high ambiguity intolerance fails to be flexible in the transition, mediation and communication between different and conflicting aspects of an object or situation.

Tolerance of ambiguity is usually related to foreign language learning process because this process itself is a process of uncertainty. Language learning process is full of situations in which learners find themselves uncertain about many things as the meaning of a word, the pronunciation of a sound or expressing themselves in a definite situation. In such cases the learners encounter a certain problem which needs to be solved. Field dependence, as will, is considered an important component in foreign language learning. It is referred to as a cognitive style that affects how learners perceive and process information and how they interact with their environment (Chapelle & Green, 1992).

As shown before field dependence-independence and ambiguity tolerance-intolerance are two important cognitive styles in second language learning. So, the problem of the present study lies in investigating these two styles and their effect on learning English as a foreign language.

Questions of the study:

- 1 - Are there significant differences in English as a foreign language achievement at the university students as measured by GPA between field independent-and field-dependent students?
- 2 - Are there significant differences in English as a foreign language achievement at the university students as measured by GPA between ambiguity tolerance and ambiguity-intolerance students?

- 3 - Are there significant differences in English as a foreign language achievement at the university students as measured by GPA between the groups of interaction between field independent-dependent and ambiguity tolerance-intolerance variables?
- 4 - Is it possible to predict the students' achievement in English as a foreign language at the university level as measured by GPA through field independent-dependent and ambiguity tolerance-intolerance?

Aims of the study:

The present study aims at pointing out the importance and the role of some cognitive styles (field dependence-independence and ambiguity tolerance-intolerance) in learning English as a foreign language among university students. It also aims at reaching a formula for predicting achievement of English as a foreign language through the cognitive styles mentioned above.

Significance of the study:

The significance of the present study lies in the following:

- 1 - Investigating the importance of field dependence-independence and ambiguity tolerance-intolerance in learning languages.
- 2 - Preparing and standardizing an ambiguity tolerance-intolerance scale for university students in Saudi Arabia.
- 3 - Making use of the results of the present study in selecting students to join English language department.

Main variables:*Cognitive style:*

A cognitive style is a preferred way in which individuals process information or approach a task (Freeman, 1991).

Field dependence - independence:

Field dependence-independence as a cognitive style, a bipolar, stable trait, affects how one thinks, feels and behaves (Chapelle & Green, 1992). It is also defined as the extent to which the organization

of the prevailing field determines the perception of its components; or to put it in everyday terminology, the extent to which a person perceives analytically (Witkin et al., 1977).

The present researchers define field dependence-independence as the score the student gets on the Group Embedded Figures Test used in the study.

Ambiguity tolerance-intolerance:

Chapelle and Roberts (1986), Kitamura and Miyamoto (1996) defined it as a person's ability to function rationally and calmly in a situation in which interpretation of all stimuli is not clear.

Norton conceived intolerance of ambiguity as "a tendency to perceive or interpret information marked by vague, incomplete, fragmented, multiple, problem, unstructured, uncertain, inconsistent, contrary, contradictory, or unclear meanings as actual or potential sources of psychological discomfort or threat (Norton, 1975).

The present researchers defined ambiguity tolerance-intolerance as the mark the student gets on the ambiguity tolerance-intolerance test used in the study.

Related studies:

Naiman et al. (1978) found in a study of English speaking eighth, tenth and twelfth graders who were learning French that field independence correlated positively and significantly with language success in the classroom.

Hansen and Stansfield (1981) conducted a study to investigate the relationship of field dependence-independence to foreign language achievement. 300 students enrolled were administered the Group Embedded Figures Test (GEFT) of field dependence-independence. Those scores were then correlated with scores on tests of linguistic, communicative and integrative competence. Student sex and scholastic aptitude were included in the design as moderator variables. The results indicate that field independence plays a role in second language learning. This role was particularly noticeable in the acquisition of linguistic competence and integrative competence. It was only barely noticeable in the acquisition of communicative competence.

In another study, Hansen and Stanfield (1982) explored the

relationship between student teacher cognitive style "field dependence-independence" and foreign language achievement. The study sample consists of 263 student enrolled in an introductory Spanish course at the university of Colorado. The field dependence-independence proclivity of the student and teachers was assessed by mean of the GEFT. General proficiency was separated into three aspects of language ability: (1) linguistic competence, (2) communicative competence and (3) integrative competence. The cloze test was used to assess these three levels. The results showed a statistically significant difference between field dependence and field independence students on the three types of Spanish proficiency: linguistic, communicative and integrative in favor of field independence students. Students cognitive style was found to be statistically and educationally significant factor in second language achievement.

Stansfield and Hansen (1983) conducted a third study involving 250 college students enrolled in first semester Spanish course formed the sample group for this correlational study. Students were administrated the GEFT along with several measures of linguistic, communicative and integrative competence. The results showed student field independence to be related consistently in a positive albeit modest fashion to second language test performance. The correlation between student field independence and cloze test performance was the most notable. The relationship was less marked on other measures such as final course grade. This suggests that there may be a cognitive style bias operating in conjunction with cloze test performance.

Hansen (1984) analyzed the relationship between field sensitivity and cloze test performance for 286 subjects between the ages of 15 and 19 in six Pacific Island cultures. Hawaiian students were found to be significantly more field independent than Samoan, Tongan, Fijian, Indian-Fijian, and Tahitian students. In the south Pacific samples, males were significantly more field independence than females, whereas in Hawaii there was no significant relationship between sex and cognitive style. When the sample was taken as a whole, a significant relationship was found between field dependence-independence and cloze scores. Sizable group differences for subgroups within the sample, however, indicate that the relationship may not be significant for all

cultures. With cultures, the subgroups having lower scholastic achievement showed a significant relationship between cognitive style and close test score, while the high achievers did not.

Chapelle and Roberts (1986) investigated the relationship between two learners' cognitive styles "ambiguity tolerance and field independence" and adult learners' acquisition of English as a second language in the United States. The subjects were 61 adult international students at the University of Illinois, representing three linguistic groups: Japanese (n=13), Spanish (n=28) and Arabic (n=20). All of them were asked to participate in the study through a letter that had been translated into their native languages. The Group Embedded Figures Test was used as a measure of field independence. The MAT-50, a 62 items Likert-type scale was used to measure ambiguity tolerance. Results revealed that ambiguity tolerance and field independence accounted for a significant amount of variance on several end-of-semester language measures beyond that which could be accounted for by beginning-of-semester performance. The results indicate that ambiguity tolerance and field independence should be considered components of second language aptitude.

Ely (1989) conducted a similar study for two purposes: the first is to design a scale of tolerance of ambiguity related to second language learning. The second purpose is to investigate the relationship between tolerance of ambiguity and strategy use. The study was carried out with students of Spanish at the university level. Multiple regression analysis provided partial confirmation of several specific hypotheses regarding tolerance of ambiguity. The study found that it is possible to develop an instrument, which can measure the construct of tolerance of ambiguity in the specific context of second language learning. The predictions regarding tolerance of ambiguity received support from the finding for some, but not all, of the strategies. In the case of strategies involving reliance on the first language, tolerance of ambiguity was indeed significant negative predictor of: looking for similarities between new words and first language words and looking up words in English right away when reading. There was no predictive relationship between tolerance of ambiguity and guessing the meaning in English right away. Tolerance of ambiguity was bound to be a significant negative predictor of thinking carefully about grammar when writing, looking up words in

English right away when reading and asking teacher for the right words when speaking. From strategies involving overall meaning, tolerance of ambiguity did in fact prove to be a significant positive predictor of looking for overall meaning in reading.

Sasaki (1993) investigated the relationship among measures of second language proficiency, foreign language aptitude and two types of intelligence (verbal and reasoning). The research had two objectives: a) to examine the factor structure of several different of second language proficiency test scores; b) to investigate the relationship between general second language proficiency factor and the hypothetical general cognitive factor that was assumed to influence foreign language aptitude, verbal intelligence, and reasoning. Participants were 160 Japanese college students studying English as a foreign language. The results supported two models of second language proficiency: one in which several specific trait factors were highly correlated with each other, and another in which these specific trait factors were connected to a higher order general second language proficiency factor. Because there were only three first order specific factors these two models could not be distinguished from each other. Further investigation suggested that general second language proficiency and general cognitive factor were not identical, but mutually correlated. The relationship implies that students' second language proficiency and cognitive abilities were influenced by two distinct, but mutually correlated factors.

Shouxin and Guangwen (1994) conducted a study to examine the cognitive styles of 254 senior middle school students. They used the Group Embedded Figure Test to measure the field dependence-independence among the study sample. The results indicated that there was no significant relation between the students' field dependence-independence and their Chinese language achievement and mathematics achievement.

Elliott (1995-a) conducted a study on 66 intermediate school students studying Spanish at Indiana University who were measured on 12 variables believed to be related to pronunciation accuracy. Variables that related most to pronunciation accuracy were: a) attitude or individual concern for pronunciation; b) subject's degree of field independence as measured by the Group Embedded Figures Test; and c) subject's degree of right hemispheric specialization in relation to accurate pronunciation on a free-speech exercise. The relationship

between pronunciation accuracy and subjects' total number of years of formal instruction in Spanish approached significance; however, this relationship was lost in a multiple regression analysis when factors such as attitude and field independence were taken into consideration. The results suggest that although field independence and right hemispheric specialization relate to accurate target language pronunciation in certain tasks, attitude or concern for pronunciation accuracy proved to be the most significant factor. Field independence was the second most significant predictor of pronunciation accuracy. However, when subject attention was focused on communication, field independence accounted for subject accuracy in pronunciation.

Al-Abdal (1996) conducted a study to find out the relationship between ambiguity tolerance and the English reading skill at a study sample containing 37 students at department of English. He applied Norton Scale for Ambiguity tolerance (MAT-50) after translating it into Arabic. He also applied a test in reading English as a foreign language. The results of the study showed that there is no significant relationship between the students' ambiguity tolerance and their grades in reading. The students' grades in ambiguity tolerance generally were low.

Kitamura and Miyamoto (1996) conducted two experiments to explore the relationship between the subjects' degree of ambiguity tolerance and their listening competence of English as a foreign language. The subjects involved 108 Japanese college students, their ambiguity tolerance was measured by using Imagawa's ATS-IV, and their listening competence by Comprehensive English Language test, and the listening comprehension strategies by a strategy questionnaire prepared by the researchers. Experiment (1) was designed to investigate whether or not the subjects listening competence correlates with their degree of ambiguity tolerance; the experiment (2) was designed to examine how ambiguity tolerance is related to subjects' use of listening comprehension strategies. The results obtained in experiment (1) showed no significant correlation between ambiguity tolerance and listening competence in EFL. In experiment (2), however factor analysis indicated that the use of listening comprehension strategies varies according to the subjects' degree of ambiguity tolerance.

Tinajero and Paramo (1997) also examined the relationship between academic achievement and field dependence-independence cognitive style. The study sample consisted of 408 students aged between 13 and 16. They used a test of perception of the upright (the Rod and Frame Test) and a test of restructuring ability (The Embedded Figures Test). Results indicated that field independent students performed better than field dependent ones in all of the subjects considered. they concluded that field dependence-independence is related to overall academic achievement.

Lee (1999) conducted a study to explore the degree of tolerance of ambiguity of Korean Naval Academy midshipmen. the study also sought to find out the relationships among motivation, attitude and tolerance of ambiguity. The subjects were divided into three groups according to class major, proficiency, and the result was compared with groups. He found out that tolerance of ambiguity is an important factor in second language learning. He also concluded that tolerance of ambiguity is closely related to important variables as motivation and attitude.

It is obvious from the previous studies that field dependence-independence and ambiguity tolerance-intolerance are two important learning styles that affect foreign language learning in general and achievement in particular.

Study hypotheses:

- 1 - There are significant differences in achievement of English as a foreign language at the university students as measured by GPA between field independent-dependent students, in favor of the former.
- 2 - There are significant differences in achievement of English as a foreign language at the university students as measured by GPA between ambiguity tolerance-intolerance students, in favor of the former.
- 3 - There are significant differences in achievement of English as a foreign language at the university students as measured by GPA between the groups of interaction between field independent-dependent and ambiguity tolerance-intolerance.

- 4 - It is possible to predict the students' achievement in English as a foreign language at the university level as measured by GPA through fiend independent-dependent and ambiguity tolerance-intolerance.

Study Instruments

1- Tolerance of Ambiguity Scale (MSTAT-1):

David L. McLain (1993) prepared this scale. It consists of twenty-two items, some of them are positive and some others are negative. These items were selected from 40 items designed to assess ambiguity tolerance. This scale was designed according to Likert responses; the seven response anchors ranged from (1) strongly disagree, to (7) strongly agree.

McLain measured the validity of the scale using two ways: a) Criterion validity, which showed that the correlation coefficients between MSTAT-1 and other ambiguity tolerance scales* are statistically significant. b) Factor analysis validity, which showed that all the scale items are loaded with statistically significant loading on one factor only, called general tolerance for ambiguity. Concerning the scale-reliability, it was measured using Alpha formula that showed that the value of Alpha coefficient is 0.86, which is considered high.

The present researchers translated MSTAT-1 into Arabic and submitted it to a jury of some specialists in Education and Psychology. The jury had to decide how the items of the scale are appropriate to the definition of tolerance of ambiguity. They also had to decide how the items are appropriate to saudi Arabian University students. Based on their responses, the researchers have modified the structure of some items. Then, the scale was applied on a sample of King Faisal University students (76 boys and girls) to test the following:

- 1 - The scale validity: the researchers translated Budner's scale of ambiguity tolerance, which contains sixteen items (8 positive and 8 negative). Then it was submitted to a jury and applied on a pilot

* These scales are: Budner's (1962) 16-items scale, Storey and Aldag's (1983) 8-items scale and Macdonald's (1970) 20-items scale.

study. Correlation coefficient was measured between the two scales and proved to be 0.712, which is considered high and reveals the validity of the MSTAT-1 to measure what it is supposed to measure.

- 2 - The scale reliability: the reliability of the scale was measured using Alpha coefficient and proved to be 0.799. The Alpha coefficient of item reliability ranged from 0.776 for the item number 12, to 0.811 for the item number 14, which are considered also high.
- 3 - The internal consistency: the correlation coefficients between each item and the total degree of the scale table (1) shows the item total score correlation coefficients and their level of significance.

Table (1): Correlation coefficients between the degree of each item and the total degree of the scale, and their significance.

Item No.	Correlation coefficient	Item No.	Correlation coefficient	Item No.	Correlation coefficient	Item No.	Correlation coefficient
1	0.615**	7	0.641**	13	0.361**	19	0.597**
2	0.562**	8	0.294**	14	0.255*	20	0.476**
3	0.238*	9	0.481**	15	0.261*	21	0.265**
4	0.191	10	0.652**	16	0.425**	22	0.485
5	0.483**	11	0.497**	17	0.541**		
6	0.512**	12	0.672**	18	0.497**		

* Significant at 0.05 level.

** Significant at 0.01 level.

It is obvious from table (1) that all the correlation coefficients among the degree of the items and the scale total degree are statistically significant except one items (N0:4). Therefore the researchers have modified that item. Thus the scale has proved to be valid and reliable.

2- The Group Embedded Figures Test (GEFT):

This test was prepared in its original form by Oltman et al. It was translated and standardized on the Arabic environment by Al-Sharkawi and Al-Sheikh (1989). It is one of the three tests included in the Group

Embedded Figures Battery. It is also one of the speed tests and it could be applied to both the children and the adults. This test consists of three parts as follows:

The first part: It is intended for training and it consists of seven easy and simple items and their degrees are not considered in rating the subject (time allotted is 2 minutes).

The second part: It consists of nine items grading in their difficulty (time allotted is 5 minutes).

The third part: It consists also of nine items grading in their difficulty (time allotted is 5 minutes).

Each one of the test items is a complicated figure that includes a simple figure inside. The subject has to define the simple figure. Meanwhile, the simple figures, which the subject should define, were put at the last page of the test so as not to help the subject to see the complicated and the simple figures at the same time. The subject is given one degree for each figure defined, then all degrees are collected for each subject. When the subject gets a high degree in the test, this means that he/she is more field independence; while getting low degree means that he/she is more field dependence.

Test validity: This test is the most common test in assessing field dependence-independence in different ages starting from the intermediate stage to the university level. It is also used in different foreign and Arab cultures. Some studies have measured the validity of the test in its original form. It was measured by using other tests that were designed to assess field dependence-independence as external criteria. The validity was also measured by using the Individual Embedded Figures Test as a criterion to the test in its "group" form. The correlation coefficient between the two tests was proved to be 0.82 (for boys) and 0.63 (for girls).

Aly (1987) has also measured the test validity using the paralleled figure test after assuring its validity by applying it on a sample of university students. The correlation coefficient between the two tests proved to be 0.563, which is considered statistically significant.

Test reliability: The reliability of the test in its original form was measured by applying it to 177 university students (80 males and 97 females). Using Spearman-Brown, the reliability coefficient proved to

be 0.82. Al-Sharkawi and Al-Sheikh who translated the test have applied it on fourth year Zagazig University students (113 males and 52 females). The reliability was measured by two ways: a) Spearman-Brown, in which it was proved to be 0.76 for males and 0.78 for females. b) Guttman in which it was proved to be 0.75 for males and 0.78 for females.

Many other studies have also tested the Group Embedded Figures Test reliability as Abdul Galil (1983; 1985); Agwa (1986) and Aly (1987). It was generally proved to be high reliable test.

The present researchers also have applied the test on 62 students from King Faisal University, faculty of Education. They used Spearman-Brown to measure the test reliability, which proved to be 0.724 which is considered high and reliable.

Sample:

The final sample for the present study involved 137 students (56 males and 81 females) in third year English Department at King Faisal University, Faculty of Education. They were chosen out of 251 students on whom the Group Embedded Figures Test was applied representing the field dependence and field independence.

Procedures:

- 1 - Applying the GEFT on a sample of 251 students (males and females) at English department.
- 2 - Scoring students' responses, classifying them from the highest to the lowest and choosing the highest 27% to represent the field independent and the lowest 27% to represent the field dependent.
- 3 - Applying the MSTAT-1 scale on the final study sample.
- 4 - Getting the GPA of the final sample students in English language courses from their records and analyzing the data statistically.

Results:

To test the first hypothesis of the study, the researchers conducted the analysis of variance with factorial design 2 x 2 (2 field dependence-independence X 2 ambiguity tolerance-intolerance) of the students' GPA.

**Table (2): Results of the analysis of variance
with factorial design 2x2.**

Source of Variance	Sum. of Squares	D.F.	Mean Square	F. Ratio	Sig.
Field dependence-independence	9.425	1	49.425	15.272	0.001
Ambiguity tolerance-intolerance	7.702	1	7.702	12.480	0.001
2 way interaction	2.476	1	2.476	4.013	0.05
Residual	82.075	133	0.617		
Total	100.985	136	0.743		

As shown in table (2), there are significant differences at the level of 0.001 in English language achievement between the field independent students ($M = 3.621$, $SD = 0.852$) and the field dependent students ($M = 3.122$, $SD = 0.862$), in favor of the former. Thus the first hypothesis has come true.

This result agrees with some previous studies' results such as Hansen and Stansfield (1981) which indicated that field independence plays an important role in second language learning. Another study of Hansen and Stansfield (1982) showed also significant differences between field independent and field dependent students on Spanish proficiency in favor of field independent ones; and Chapelle and Roberts (1986) which showed that field independence is accounted for significant amount of variance on language tests.

It also agrees with a recent study conducted by Elliott (1995-a) which revealed that field independence is the second most significant predictor of pronunciation accuracy. Tinajero and Paramo's study (1997) also indicated that field independent students performed better than field dependent students in all school subjects.

Yet this result differs from other studies' results such as Abouser, et al. (1992) and Shouxin and Guanmgwen (1994) which revealed that there were no significant differences between field independent and field dependent students in school achievement.

This result refers the possibility that field independent students are distinguished by high level of aspiration (El-Sharkawi, 1995, 23). They have also more ability to analyze situation and recognize the field isolation or in an independent way.

To test the second hypothesis, the researchers conducted the analysis of variance. Which revealed that, there are significant differences at the level of 0.001 in achievement of English language at the university students as measured by GPA between ambiguity tolerance ($M = 3.591$, $SD = 0.848$) and ambiguity intolerance ($M = 3.137$, $SD = 0.820$), in favor of the former. Thus the second hypothesis has come true (table 2).

This result is consistent with Chapelle and Roberts' (1986) which indicates that the ambiguity tolerance is accounted for significant amount of variance on the language learning measures. It is also consistent with Ely's (1989) study that indicates that tolerance of ambiguity proved to be a significant predictor of looking in overall meaning in reading. Another study by Kitamura and Miyamoto (1996) reveals that the use of listening comprehension strategies varies according to the subjects' degree of ambiguity tolerance. Lee's (1999) as well, found that tolerance of ambiguity is an important factor in second language learning.

However, this result is not consistent with El-Obidan's (1996) study that found no relationship between ambiguity tolerance and English reading skill.

This result may be due to that the second language learner always faces some ambiguity and confusion in understanding the texts and the information which he learns. He might also find difficulty in acquiring some grammar rules that are different from his native language. Moreover the second language rules are also full of irregulars which cause ambiguity and uncertainty for the learner (Brown, 1994, 11).

This ambiguity may become a source of the psychological anxiety and threat for learners who are ambiguity intolerant. Thus learner's performance decreases (Budner, 1962) comparing to the ambiguity tolerant learners who look for ambiguity and enjoy it. Consequently, ambiguity tolerant learners' performance and achievement of English as a second language increase.

To test the third hypothesis, table (2) shows significant differences at the level of 0.05 in achieving English language among the interaction groups between field dependence-independence and ambiguity toler-

ance-intolerance. To investigate the direction and the significance of the differences among the interaction groups, the researchers used New-Mann Koles test. Table (3) shows its results as follows:

Table (3): Direction and the significance of the differences in GPA in the interaction groups.

Groups/Mean	2.728	3.472	3.523	3.728
Dependence/intolerance group (2.728)	-	0.744**	0.795**	1.00**
Dependence/tolerance group (3.472)		-	0.051	0.256
Independence/intolerance group (3.523)			-	0.205
Independence/tolerance group (3.728)				-
Critical Value 0.05	-	0.372	0.445	0.488
0.01	-	0.489	0.554	0.591

Thus table (3) shows that:

- There are significant differences at the level of 0.01 in achieving English language as measured by GPA between the group of field independent/ambiguity tolerant individuals and the group of field dependent/ambiguity intolerant ones in favor of the former.
- There are significant differences at the level of 0.01 in achieving English language as measured by GPA between the group of field independent/ambiguity intolerant individuals and the group of field dependent/ambiguity intolerant ones in favor of the former.
- There are significant differences at the level of 0.05 in achieving English language as measured by GPA between the group of field dependent/ambiguity tolerant individuals and the group of field dependent/ambiguity intolerant ones in favor of the former.
- There are no significant differences among the other interaction groups in achieving English as measured by GPA.

The following figure shows the interaction among the study variables.

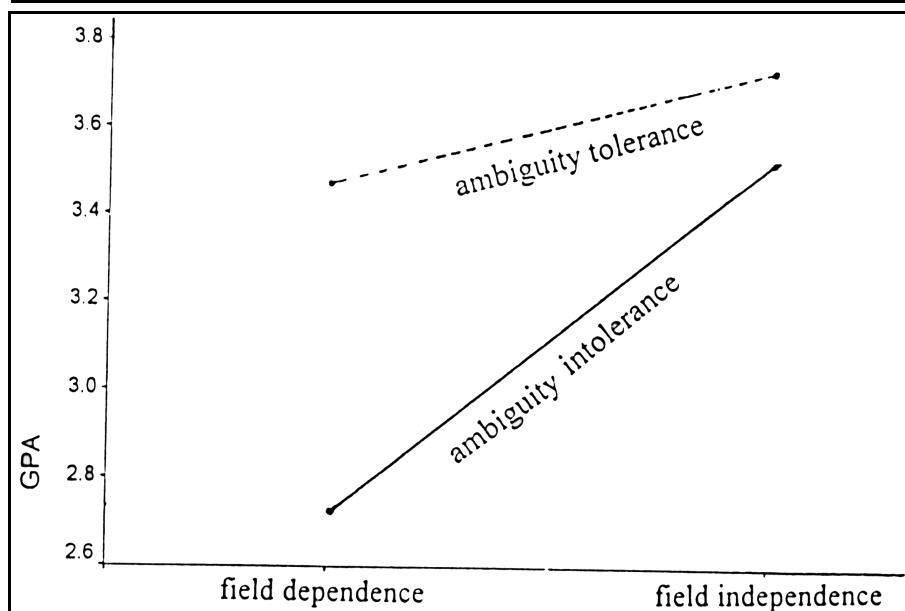


Figure (1) The interaction between field dependence-independence and ambiguity tolerance-intolerance concerning the GPA.

It is obvious from figure (1) that the interaction among the variables of the study is ordinal one. It is also obvious that the best group in achieving English is the field independence/ambiguity tolerance group, while the least one is the field dependence/ambiguity intolerance group.

These results are consistent with the results of the first and second hypotheses which prove the excellency of the field independent-comparing with the field dependent-students, and ambiguity tolerance-comparing with ambiguity intolerance-ones. So, we can conclude that students who have the two styles (field independence and ambiguity tolerance) are much better in learning and achieving in English as a second language. On the other hand, the group of students who are field dependent and ambiguity intolerant are the weakest group among the interaction groups. This result agrees completely with Chapelle and Roberts' (1986) which revealed that the combination of the two styles (field independence and ambiguity tolerance) together helps in second language learning.

To test the fourth hypothesis, the researchers have conducted step-wise regression analysis for the study variables concerning the GPA. Table (4) shows its results.

Table (4): Results of stepwise regression analysis to predict the GPA.

Variables	Beta	"T"Value	Sig.
Field dependence-independence	0.313	3.988	0.001
Ambiguity tolerance-intolerance	0.269	3.423	0.001

Table (4) shows that "T" value for the field dependence-independence and ambiguity tolerance-intolerance is significant at the level of 0.01 concerning GPA. This indicates the possibility of predicting students' achievement in English as a foreign language through these two variables. The two variables shared 58.2% in interpreting the variance in achieving English among the study sample.

This is considered to some extent a high ratio that indicates the significance of the two variables of the present study concerning achievement. Thus the formula of predicting English as a second language can be stated as follows: (Abo Hattab & Sadek, 1996, 541-542).

$$GPA = 0.417 + 0.078 \times \text{"field dependence-independence score"} + 0.018 \times \text{"ambiguity tolerance-intolerance score"}.$$

From this formula, we can conclude that it is possible to predict achievement of English as a second language from field dependence-independence and ambiguity tolerance-intolerance.

Conclusion:

Based on the previous findings the researchers conclude that field dependence-independence and ambiguity tolerance-intolerance are two important variables that affect foreign language learning. The results of the study also revealed that these two variables may predict foreign language achievement. Despite these implications, some other research remains to be conducted on dealing with other cognitive styles as reflectivity - impulsivity, category width, and cognitive simplicity - complexity and their relation with foreign language learning.

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