Positive Affects of Second Language Learning On the Use of First Language : A case Study of Arab Students' Learning English

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Abstract

This study investigates how a Second Language (L2) affects the use of the First Language (L1) in an environment where the main source of the foreign language (FL) is classroom instruction in which the target language culture is not directly present. The present study tries to answer a number of questions to show the L2 → L1 influence: (1) How will the conceptual system of L1 change under the influence of the L2? (2) How can this change be demonstrated in L1 production? (3) What elements of language production will give information on the conceptual change?

Seventy-two Saudi university students (Ss) were randomly chosen as subjects for this research and were divided into two groups: (1) third and fourth year English major students and hence called bilingual (BILING) and (2) monolingual students with little English (henceforth MONO).

The results have revealed some interesting findings. Overall, BILING Ss displayed signs of increased level of conceptual fluency as compared to their MONO peers. This can be seen clearly in the use of subordinate clauses where BILING Ss used almost double the number as compared to MONO Ss. The same thing can be said about their performance in the number and types of conjunctions. This result demonstrates that the BILING Ss' group employs better use of the potential of the language and an increasing level of conceptual fluency in L1.

The results have also shown that the BILING Ss' group demonstrated the ability of use rich vocabulary and more freedom of conceptual use of the potential of the language. Thus, an increasing level of conceptual fluency was evident as compared to their MONO peers. In addition, English language has shown some positive effect on the performance of our BILING Ss' group. In fact, the results of this study have shown that BILING Ss used sophisticated word types twice the frequency as often as their MONO counterparts. These results help point the way forward for future research in the area of L2 → L1 transfer.

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Introduction

Knowing another language benefits the use of the first language (L1). For example, Hungarian children who know English use measurably more complex sentences in their L1 than those who do not (Kesckes & Papp, 2000). Extensive research into bilingual development shows overall that L2 user children have more precocious metalinguistic skills than their monolingual peers (Bialystok, 2001). English children who are taught Italian for an hour a week read English better than those who are not (Yelland, et. al., 1993).

There have been great efforts to demonstrate that the emerging foreign language (FL) influences the use of the first language (L1) in the FL environment[1], and that this process may lead the development of multi competence (Cook, 1991; 1992). It was argued (Cunningham & Graham, 2000; Kecskes & Papp, 1995; 2000a; 2000b; Kecskes, 1998; Papp, 1991) that not only bilingual development but also intensive FL learning may lead to the emergence of a Common Underlying Conceptual Base (CUCB) that is responsible for the operation of two language channels.

It is in the CUCB that the socio-cultural heritage and previous knowledge of the learner are confronted with the new information entering the CUCB through both language channels, and real-world knowledge mixes with academic knowledge to develop into something that is frequently referred to as 'socio-cultural background knowledge' (Adamson, 1993; Kecskes, 1994; Kecskes & Papp, 2000a). It is in the CUCB that thoughts originate, and then are mapped onto linguistic signs to reach to the surface through either of the language channels.

Factors shaping the L2 → L1 influence

Kecskes & Papp (2003) have specified the following two interacting factors in shaping the L2 → L1 influence: (1) the level of proficiency in the L2, and (2) the nature of transfer.

Level of proficiency in the L2

De Bot (1992) argued that the L1 is usually flexible enough to add the emerging FL as an additional register to those already in existence. As mentioned above, intensive exposure to and regular use of the foreign/second language may increase L2 proficiency to the point of a hypothetical threshold, which in turn leads to the emergence of a CUCB responsible for the operation of the two or more languages. The greater the fluency in the FL the less the learner has to rely on the L1 system. The growth of FL proficiency brings about changes in the conceptual system, which starts to accommodate knowledge and concepts gained through the FL (Kroll, 1993) and consequently, gradually ceases to be an L1 conceptual base. The result of this gradual process is the evolution of the CUCB.

Figure 1 below delineates the emergence of a CUCB. Please see, FIGURE 1]

One needs to look for signs in the L1 production that reveal conceptual change in order to demonstrate the L2 ➜ L1 influence.

Nature of Transfer

It has been argued (Noor, 1994; 2007b; Kecskes, 1998; Francis, 2000; Kecskes & Papp, 2000a; Jesper, 2002; Pavlenko & Jarvis, 2002; Jarvis, 2003) that 'transfer is any kind of movement and/or influence of concepts, knowledge, skills or linguistic elements (structure, forms), in either direction (L1 L2) between the L1 and the subsequent language(s). Transfer in the first phase of multilingual development could be unidirectional (L1➜L2). This transfer is not significant in terms of CUCB development. Nevertheless, the more proficient the learner becomes in the L2, and the more firmly the CUCB is established in the mind, the more positive the content of transfer may become. This positive transfer is predominantly neither structural nor lexical but pragmatic. In this case, knowledge and skill transfer bidirectionally. This can be reflected in the learner's language behaviour and discourse organization because it is a phenomenon of the CUCB, rather than one language channel (Kecskes & Papp, 2000; 2003). Proficiency and relatively rare use of the FL result in linguistic transfer from the L1 to L2. High proficiency in the FL, however, results in conceptual rather than linguistic transfer, and the strengthening of the L2 ➜ L1 influence. In the following I will review some studies which demonstrate such influence that shape the CUCB:

Phonetics

Learning an L2 may affect the way an individual pronounces L1. For example, Fledge (1987) found that when someone from an L1 (e.g., Arabic) with short-lag voice onset time (i.e., unaspirated voiceless consonants) acquires a language (e.g., English) with long-lag voice onset time (i.e., aspirated voiceless consonants) the individual may begin to produce Arabic consonants with longer-lag voice onset time than monolingual Arabic speakers. Mackay and Fledge (2004) carried out a study to show the effect of the age of second language learning on the duration of first and second language sentences found that subjects whose L2 was acquired later in life produced significantly shorter L1 sentences than the subjects who acquired the L2 early in life.

Both studies have shown that the L2 will only affect the phonetic production of the L1 when the users are highly proficient in both languages and spend considerable time interacting in the L2. This is not a concern for students who are exposed to 95 hours of instruction in an L2 per year (cf. Archibald et al., 2006).

Structure

Jarvis (2003) carried out a case study of an individual who grew up in Finland and moved to USA at age 23. She had studied English in school from grades 3 to 12 and spent a year abroad at age 15. At the time of the study, she was 34, lived in USA and continued to use Finnish on a daily basis. She was a highly-advanced, near-native speaker of English. During the study, she made some morphological and phrasal errors that could be attributed to English influence; however, there was still variation and she also used the "correct" L1 forms. The deviant forms were only produced in casual, natural speech and not in a more formal elicitation session.

In another study which sought to prove that "intensive and successful foreign language learning can have a strong and beneficial influence on the development of L1 skills", Kecskes (1998) looked at speakers of Hungarian as an L1 who were studying English and French or Russian as an L2 in classroom. Three types of classes were studied: (1) immersion class; students studied certain content areas in French, (2) specialized class; students studied English in 7 or 8 FL classes per week, and (3) control class; students had 2 or 3 hours of L2 instruction in either English or Russian each week. A modified version of the Bernstein-Lawton-Loban method was used to measure the qualitative level of L1 development. This is a measure of frequency of subordinate clause use, which is taken to be a measure of complexity. The study found that by the end of the experiment, the L1 level of specialized class exceeded of the control class. (p. 335.)

Pavlenko and Jarvis (2002) investigated the narrative abilities of 22 Russians who learned English as teenagers or adults after arriving in the USA. They were very proficient in English. They watched various films with no dialogue and had to retell the story in both English and Russian. The authors report instances of L2 influence on the L1 in (1) semantic extension-words like 'kamera' and 'film' have restricted meaning in Russian than English, and this was transferred back to Russian; (2) framing-English tends to use adjectival constructions, such as "She was sad," where Russian would use a verbal construction, such as "She was being sad," and this English construction was occasionally found in the Russian narratives. The authors' conclusion is that:

> "Second language users who have been exposed to the second language for three years or longer through intensive interaction in the target language context may start exhibiting bidirectional transfer effects in their two languages… (p.209)"

This conclusion consents with many studies reported on the general cognitive advantages that bilinguals have over monolinguals. For example, Bialystok (2001) argues that bilinguals have advantages over monolinguals in performing certain metalinguistic tasks. She states that

bilingual children perform better than their monolingual peers in tasks that demand high levels of control, but there is no bilingual advantage in tasks for which the solution relies primarily on high levels of analysis of representational structures. The author contends that the distinction between "control" and "representation" is crucial. Control refers to the person's ability to use his or her linguistic or metalinguistic knowledge. It does not refer to the nature of the knowledge itself. Bialystok suggests that bilinguals have the ability to transfer skills between the L1 and the L2, and that certain skills arise as a result of being bilingual. She cites advantages in such areas as metalinguistic ability, divergent thinking and attitudes. This conclusion is consistent with many of the studies reviewed up.

Conceptual fluency in bilinguals

Conceptual fluency refers to the extent that bilingual speakers are able to understand and use concepts, knowledge and skills acquired through the channel of either language and means a level of free access to vocabulary in both languages. Conceptual fluency presupposes that the conceptual-semantic interface works properly and as a result, depending on the level of conceptual fluency, the bilingual person has greater or lesser difficulty finding the right words to express his/her ideas through the channel of either language.

Concepts in the CUCB are either relatively neutral or culture-specific in their content, and language-specific through the lexical items that denote them (Kecskes & Papp, 2000a). Conceptual fluency in SLA is a collective phenomenon. In multilingual studies, the conceptual system is responsible for the operation of both L1 and L2.

Focusing on the change in conceptual fluency may demonstrate the L2 → L1 influence.

Study Questions

This study will attempt to answer a number of questions in order to show the L2 → L1 influence: (1) How will the L1 conceptual system positively change under the influence of the L2? (2) How can this change be demonstrated in the L1 production? (3) What elements of language production will signify the conceptual change?

In formulating the above questions, we were guided, amongst other things, by findings in earlier researches, that L2 effect will not necessary result in errors in L1 use, rather, the L2 effect will influence the way in which L1 is used. The L2 may result in a more sophisticated use of L1, which may occur in the form of a positive change in literacy skills, text developing and manipulating skills, sentence-construction, and a more selective use of vocabulary (Kecskes & Papp, 2003).

Study Design

A direct effect of the L2 on the L1 is difficult to trace. What we looked for in this study is a positive qualitative change in the use of L1 that is quantifiable.

In order to demonstrate differences in the quality of the L1 use of various types of FL learners in comparison to that of monolingual L1 users, two variables were investigated: (1) structural well-formedness and (2) the lexical quality of texts.

1. Structural Well-Formedness

A sign of positive change in conceptual fluency can be demonstrated by an elaborated use of subordinations and the process of a variety of conjunctions. The following indices were used to reveal this change:

Sentence complexity ratio

In order to derive the sentence complexity ratio, we needed to divide the total number of sentences by the number of subordinate clauses (Wolfe-Quintero *et al.*, 1998). Using sentences as a production unit captures the ways that learners subordinate and reduce their thoughts within a single unit that has psychological reality for them. A positive change is when the gap between the numerator and the denominator is small. The small gap is a sign of an increasing level of an conceptual fluency.

Conjunction index

In this index, the number of types of conjunction is divided by the total number of conjunctions. A high ratio here demonstrates the proper use of the potential of the language and an increasing level of conceptual fluency. The learning of a foreign language requires the conceptualization of new conjunctions and the reconceptualization of the existing ones in the L1. This process may have a positive effect on the use of conjunctions in the L1 because it requires rethinking of the functions of the existing conjunctions that may clarify conceptual mechanisms responsible for subordinations. The conjunction index will help identify a real positive tendency in the L1 production.

2. Lexical Quality of Texts

Lexical quality is concerned with how varied and sophisticated the words or word types employed by the learner. Lexical variation and sophistication are related to language development. Learners who have more productive vocabulary items available to them are able to vary their word choices more freely. Consequently, a larger ratio on variation and sophistication measures should reveal greater lexical proficiency, which is one possible indicator of conceptual fluency. Confidence in vocabulary use is directly connected to conceptual development because fully developed concepts result in proper use of their labels (Corson, 1997; Kecskes & Papp, 2000a).

Variation ratio

The number of lexical word types (LWT) is divided by the total number of words. LWT refers to the number of content words represented in the text. All possible morphological representations of the same word are counted only once. This ratio may demonstrate how rich a student's vocabulary is, and what concepts the student feels comfortable with.

Sophistication ratio

The number of sophisticated word types (SWT) is divided by the number of lexical word types. In this study, SWT refers to lexical word types that generally reflective, sophisticated or more scientific topics and also denote abstract concepts and are less frequently used words.

Subjects

Arab university EFL students were randomly chosen as subjects for this research. Seventy-two (72) Saudi university students (male and female), native speakers of Arabic volunteered to participate as study subjects (Ss); all were full time students at the College of Education and Humanities, Taibah University, Saudi Arabia. The Ss belong either to a 'mono-lingual university group with little English (henceforth MONO) or to a 'bilingual' university group studying or majoring in English (henceforth BILING).

Elicitation technique

Subjects in each group were instructed to write *a composition* titled *"My plan for the future"* in their L1. Each group was given 30 minutes to perform this task. They were asked to focus on the task and avoid talking to each other. The subjects were tested in groups in a quiet classroom environment.

Statistical analysis

We calculated the performances of each of the 72 Ss of the study on the 7 factors investigated in the study. These factors are as follows: (1) sentences, (2) subordinating clauses, (3) types of conjunctions, (4) number of conjunctions, (5) words, (6) lexical word type (LWT), and (7) sophisticated word type (SWT). Then we summed up the total number of each factor for each group of the Ss (36 MONO and 36 BILING). In the third step, we carried out some statistical operations of these sums within each Ss' group and between the two Ss' groups. We compared the result of each factor in each group with the same factor of the other Ss' group. These divisions were as follows: (a) in order to get *the sentence complexity ratio*, we divided the total number of sentences (factor 1) by the number of subordinate clauses (factor 2), (b) to get *the conjunction index*, the number of types of conjunction (factor 3) was divided by the total number of conjunctions (factor 4), (c) to show the lexical quality of

the texts, we got *the word variation ratio* - this was accomplished by dividing the number of lexical word types (LWT) (factor 6) by the total number of words (factor 5) and *the sophistication ratio* was derived by dividing the number of sophisticated word types (SWT) (factor 7) by the number of lexical word types (LWT) (factor 6). In the forth step of the analysis, *t-tests* were used to compare the performance of the Ss' groups in these 7 factors. Both Ss' groups (MONO & BILING) were compared for each factor. Although it was initially decided to apply a 1% level of significance to the results of this research, it was calculated up to a 5% level of significance. The SPSS package for MS Windows was used to calculate the degree of significance while testing the study questions. *T-tests* were employed and a probability of higher than 5% was considered as not significant.

DISCUSSION OF RESULTS

The statistical results showed some interesting findings and observations. It was found that, overall, the BILING Ss performed better than the MONO Ss throughout the seven factors of the study (please see Table 1).

We compiled these results in the performance of the students, whether in the structural well-formedness or lexical quality of texts. The following are what we have observed across these parameters.

Structural Well-formedness

It was mentioned earlier that a sign of positive change in conceptual fluency of BILING Ss can be an elaborated use of subordinations and variety of conjunctions.

Sentence complexity ratio

In order to derive the sentence complexity ratio, we divided the total number of sentences (factor 1) by the number of subordinate clauses (factor 2) in both Ss' groups. A positive change is when the gap between the numerator and the denominator is small. The small gap is a sign of an increasing level of conceptual fluency. (Please see, Table 2)

Figure 2 reveals Ss' performance in factors 1 and 2. (Please see, Figure 2).

The results of the study show that BILING Ss have demonstrated an increasing level of conceptual fluency. A smaller gap in the BILING Ss' performance is evidenced between factors 1 and 2 (1.09) and that of MONO Ss (2.12), see Table 2. This result was statistically significant ($t=3.146$, $p<.001$).

Conjunction index

In this index, the number of types of conjunction (factor 3) was divided by the total number of conjunctions (factor 4) in both Ss groups' performance. A high ratio here demonstrates the proper use of the

potential of the language and an increasing level of conceptual fluency. The conjunction index will help identify a real positive tendency in L1 production. (Please see,Table 3).

Figure 3 shows Ss' performance in factors 3 and 4. (Please see, Figure 3).

Table 3 shows that the BILING Ss' group demonstrated a higher ratio (0.526) than the MONO group (0.424) when comparing the result between the division of conjunction type by the number of conjunctions. This result was statistically significant (t=2.607, p<.01). This result reveals that the BILING Ss' group demonstrated a more complete use of the potential of the language and an increasing level of conceptual fluency.

2. Lexical Quality of Texts

It was mentioned earlier that learners who have more productive vocabulary items available to them are able to vary their word choices more freely. Consequently, a larger ratio on variation and sophistication measures should reveal greater lexical proficiency, which is one possible indicator of conceptual fluency.

Word variation ratio (LWT/NW)

In order to get the word variation ratio, we divided the total number of words (NW) (factor 5) by the number of lexical word types (LWT) (factor 6) in both Ss' groups. A high ratio here gives a measure of how rich student's vocabulary is, and what concepts the student feels comfortable with. (Please see, Table 4).

Figure 4 shows Ss' performance in factors 5 and 6. (Please see, Figure 4).

The results of the study have shown that BILING Ss demonstrated a higher ratio (0.407) than MONO Ss' (0.311) when comparing the divided result between NW (factor 5) and LWT (factor 6). This result was statistically significant (t=2.007, p<.01). This result illustrates that the BILING Ss' group demonstrated a richer vocabulary ability and more freedom of conceptual use of the potential of the language and an increasing level of conceptual fluency as compared with their MONO Ss counterparts.

Sophistication ratio

The number of sophisticated word types (SWT) (factor 7) was divided by the number of lexical word types (LWT) (factor 6) in order to arrive at the sophistication ratio. SWT refers in this study to lexical word types that generally reflect sophisticated or more scientific topics, denote abstract concepts, and are less frequently used words. A high ratio here may be a good indicator of the effect of English on the L1 of students because the occurrence of these words in languages other than English may not be as frequent as they occur in English due to the fact that

English is the dominant language for science and technology. (Please see, Table 5).

Figure 5 demonstrates Ss' performance in factors 6 and 7. (Please see, Figure 5).

Figure 5 shows that the BILING Ss' group demonstrated a higher ratio (0.067) than the MONO Ss (0.045) in the division result between LWT and SWT. This result was statistically significant ($t=2.003$, $p<.01$). This result shows the effect of English on the performance of the BILING Ss' L1 (Arabic). In fact, the results show that BILING Ss used more than double the amount of sophisticated word types compared the MONO Ss (135 for the former and 58 for the later).

Conclusions

Results from this research have revealed some interesting findings. Overall, BILING Ss displayed a sign of an increasing level of conceptual fluency as compared to their MONO peers. This can be seen clearly in the use of subordinate clauses where BILING Ss used almost double the number as compared to MONO Ss. The same thing can be said about their performance in the number and types of conjunctions. This result reveals that the BILING Ss' group employed better use of the potential of the language and an increasing level of conceptual fluency.

The results have also shown that the BILING Ss' group demonstrated richer vocabulary ability and more freedom of conceptual use of the potential of the language, and hence, an increasing level of conceptual fluency as compared to their MONO peers.

In addition, the English language has shown some effect on the performance of our BILING Ss' L1 (Arabic). In fact, the results of this study have shown that BILING Ss used sophisticated word types more than the amount of MONO counterparts (135 for the former and 58 for the later). These results help point the way forward for future research in the area of L2 → L1 transfer.

Further researches are suggested to show the L2 effect on enhancing L1 vocabulary or lexicon of the L2/FL learners.

Implications for Language Instructions

The results of this study have confirmed the positive effect of the L2 on using and producing L1 by L2 users. This was demonstrated clearly in the performance of the bilingual subjects' group of this study. Pedagogically speaking, this effect has positive signs for the importance of presenting the FL or L2 to the learners in an intensive way. Two or three hours a week of FL exposure would not be enough to trigger the use of the FL by FL/L2 learners and henceforth, the common underlying conceptual base will not accommodate knowledge and concepts gained through the FL.

It has been mentioned earlier that 'the greater the fluency in the FL the less the learner has to rely on the L1 system. The growth of FL proficiency brings about changes in the conceptual system, which starts to accommodate knowledge and concepts gained through the FL (Kroll, 1993) and consequently, gradually ceases to be an L1 conceptual base. The result of this gradual process is the evolution of the CUCB.' This fluency will not take place unless there is an intensive exposure and use of the FL. I suggest a minimum of 5 hours of English exposure and use a week may help the brain of an FL learner to reach to the point of a hypothetical threshold, which in turn leads to the emergence of a CUCB responsible for the operation of the two or more languages.

Notes

[1] The foreign language is learned through instruction in a classroom setting, and students usually do not have direct access to the target language culture.

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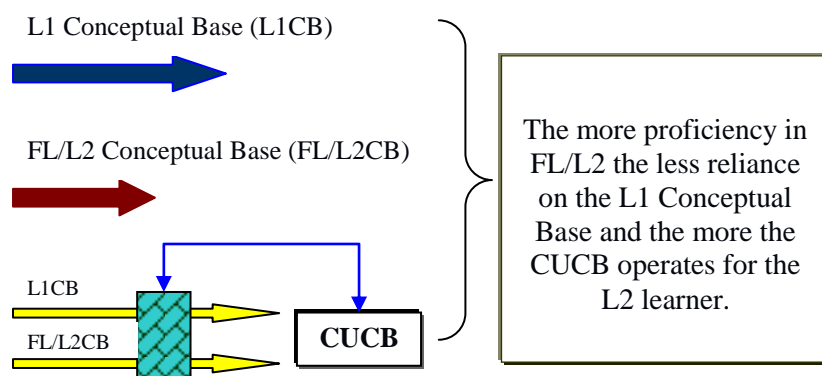
Figure 1: The emergence of a Common Underlying Conceptual Base (CUCB)

Table 1 : Overall Ss' Results in the Study's Factors

Ss' Group	Factor 1 Sentences	Factor 2 Subordinate Clauses	Factor 3 Conj. Type	Factor 4 No. of Conj.	Factor 5 No. of Words	Factor 6 LWT	Factor 7 SWT
MONO	**212**	**100**	**42**	**99**	**4100**	**1276**	**58**
BILING	**232**	**211**	**110**	**211**	**5080**	**2018**	**135**
Difference	20+ for BILING	112+ for BILING	69+ for BILING	113+ for BILING	980+ for BILING	789+ for BILING	77+ for BILING

Table 2 : Sentence Complexity Ratio

Ss' Groups	Factor 1 Sentences	Factor 2 Sub-Clauses	Division Result
MONO	212	100	2.12
BILING	232	212	1.09**

p<.001

Figure 2: Ss' Performance in Factors 1 and 2
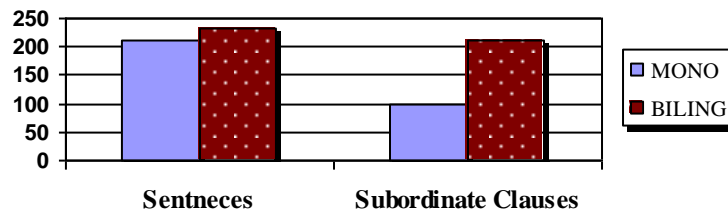
Table 3 : Conjunction Index

Ss' Groups	Factor 3 Conj. Type	Factor 4 No. of Conj.	Division Result
MONO	42	99	0.424
BILING	110	211	0.526*

p<.01

Figure 3: Ss' Performance in Factors 3 and 4

A case Study of Arab Students' Learning English
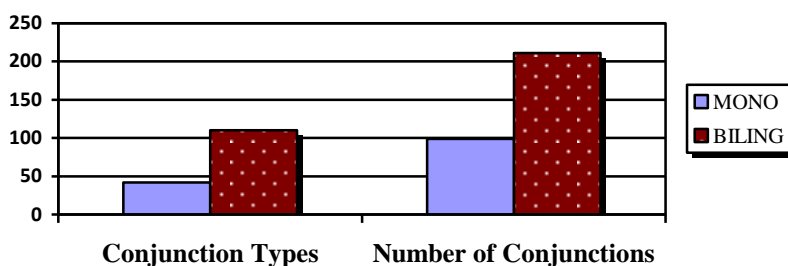
Table 4 : Word Variation Ratio

Ss' Groups	Factor 5 Total No. of words (NW)	Factor 6 Lexical word Type (LWT)	Division Result
MONO	4100	1276	0.311
BILING	5080	2018	0.407*

* *p<.01*

Figure 4: Ss' Performance in Factors 5 and 6
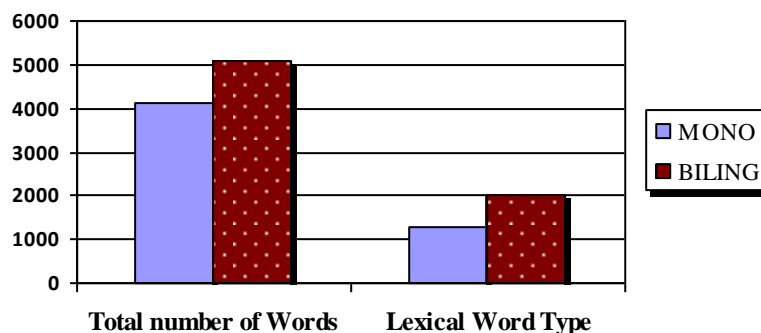
Table 5 : Conjunction Index

Ss' Groups	Factor 6 LWT	Factor 7 SWT	Division Result
MONO	1276	58	0.045
BILING	2018	135	0.067*

* *p<.01*

Figure 5: Ss' Performance in Factors 6 and 7