

## References

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Furthermore, teachers can ask their students to talk about their inner speech experience in the FL. This may help teachers know more about their students' inner speech in the process of FL learning and in the classroom.

The findings of this study can also have implications for materials development. Materials developers should attempt to make EFL learners familiar with the language learning strategies by different materials included in their books. For example, learners can become aware of inner speech as mental rehearsal and its functions in a developed passage. And, then, they can practice its useful functions through individual and group activities provided in the exercises.

Finally, researchers in the field of testing can benefit from the findings of the present study. For example, one of the ways to minimize the learners' anxiety during different tests is the use of positive inner speech. Learners can gain better results if they experience more positive inner speech.

The ultimate goal of this survey was to be as a step toward illuminating the nature of inner speech, as a frequent phenomenon, among EFL learners in the field of foreign language learning. Furthermore, it is hoped that the EFL teachers, materials developers, and researchers can employ the results of this research work to improve the present situation of EFL learning and teaching.

proficiency levels of EFL learners. For example, a significant relationship was found between the EFL learners' levels of language proficiency and the extent to which they had experienced inner speech as they mentally rehearsed in English (item 1), the meaningfulness of their inner speech (item 13), the extent to which inner speech was unrelated to their English class (item 24), and the affective function of their inner speech (item 34). Also, a significant relationship was found between the affective function of inner speech (items 33 – 39) and the subjects' levels of language proficiency. But, on the whole, the second null hypothesis of this study that there is no relationship between EFL learners' levels of language proficiency and different aspects of their inner speech used for mental rehearsal could not be rejected.

### **Pedagogical Implications**

The findings of this study proved that inner speech is a very frequent phenomenon among EFL learners with different levels of language proficiency. Therefore, EFL teachers can make their students conscious about this phenomenon. Also, they can make them aware of inner speech as a learning strategy that can be used in the process of foreign language acquisition. Moreover, EFL learners should know about the different functions of inner speech. Then, whenever necessary, these functions of inner speech can be used properly in their foreign language learning process. It can be claimed that EFL learners' knowledge about different learning strategies can enhance their process of FL learning.

than the established level of significance. Thus, the second null hypothesis could not be rejected. Table 5 demonstrates the Kruskal-Wallis test for total regarding the second null hypothesis.

**Table 5: Kruskal-Wallis test for total regarding the second null hypothesis**

Item	Chi-square	d.f.	s. v.	Sig.
Total	4.850	2	.088	□

d. f.= degree of freedom; s. v.= significance value; s.= significance; - = non-significant. P □ . . .

## Conclusions

The results of data analysis showed that EFL learners at different levels of language proficiency use inner speech to a large extent as they mentally rehearse in the foreign language. The frequency of inner speech was very high among the subjects of this study. 100% of the high group subjects, 89.9% of the intermediate group subjects, and 94.2% of the low level ones had experienced inner speech. And, still 96.2% of the high group ones, 84.1% of the intermediate level ones, and 90.4% of the low level ones experienced inner speech as they mentally rehearsed in the English language. Therefore, it can be concluded that this phenomenon, inner speech, is a highly frequent phenomenon among EFL learners with different levels of language proficiency.

Moreover, it was found that there is a significant relationship between some of the aspects and functions of inner speech and the language

and the subjects' levels of language proficiency in this study. The affective function of inner speech was surveyed by items (33 – 39). The observed value of Chi-square was 30.64 which was greater than the critical value at 12 degrees of freedom, i. e., 21.02. Therefore, there was a significant relationship between the subjects' levels of language proficiency and the affective function of inner speech. The mean ranks for the advanced, intermediate, and elementary groups were 92.01, 81.58, and 85.50, respectively. Table 4 shows different aspects and functions of inner speech. Moreover, it is necessary to mention that the results related to items 13, 16, 24, 25, 27, 28, and 40 are present in Table 3.

**Table 4: Summary of the analyses for different aspects and functions of inner speech**

Items	Function	M. R. H. G.	M. R. I. G.	M. R. L. G.	Chi-square	d. f.	s.
3 – 6	Structural complexity	87.88	86.92	86.21	8.60	6	
7, 14, 15	Phonology	93.73	82.01	85	8.12	4	
8, 11, 12	Mnemonic	87.05	84.73	88.96	4.54	4	
9, 10, 22	Instructional	91.25	83.37	88.06	4.05	4	
20,21, 23, 26	Evaluative	92.67	86.03	82.40	9.03	6	
17, 18, 19	Textual	86.39	90.11	83.42	4.95	4	
29 – 32	Playful	88.89	81.01	89.8	9.97	6	
33 – 39	Affective	92.01	81.58	85.50	30.64	12	*

M. R.= Mean Rank; H. G.= High Group; I. G.= Intermediate Group; L. G.= Low Group; d. f.= degree of freedom; s.= significance;

\* = significant; - = non-significant

Based on the Kruskal-Wallis test performed for the total, the observed Chi-square (4.85) was lower than the critical value at 2 degrees of freedom (5.99). Moreover, the obtained significance value is larger

Table 3: Kruskal-Wallis test for each of the 40 items of part II of the questionnaire

Item	M. R. H. G.	M. R. I. G.	M. R. L. G.	Chi-square	d. f.	s. v.	s.
1	103.7	76.99	79.44	12.19	2	.002	*
2	98.60	81.43	82.47	4.919	2	.085	□
3	83.57	82.61	98.00	3.725	2	.155	□
4	91.08	84.46	82.78	.951	2	.622	□
5	92.50	90.56	76.78	3.510	2	.173	□
6	84.39	90.05	87.29	.420	2	.811	□
7	97.00	84.04	79.13	3.860	2	.145	□
8	83.62	86.31	89.70	.457	2	.796	□
9	90.94	83.80	88.90	.758	2	.685	□
10	87.03	83.59	91.43	.786	2	.675	□
11	90.94	77.72	92.32	3.695	2	.158	□
12	86.59	90.17	84.88	.403	2	.818	□
13	106.6	79.51	74.92	13.997	2	.001	*
14	95.84	78.84	86.85	3.719	2	.156	□
15	88.35	83.16	89.03	.552	2	.759	□
16	88.43	87.39	85.05	.137	2	.934	□
17	93.23	86.68	79.12	2.432	2	.296	□
18	82.35	92.81	84.14	1.838	2	.399	□
19	83.61	90.86	87.00	.694	2	.707	□
20	95.28	82.26	86.52	2.328	2	.312	□
21	93.34	84.06	86.12	1.172	2	.556	□
22	95.80	82.73	83.87	2.521	2	.284	□
23	94.80	87.52	76.51	4.277	2	.118	□
24	103.9	82.54	69.65	14.347	2	.001	*
25	78.57	90.46	91.07	2.426	2	.297	□
26	87.26	90.28	80.47	1.279	2	.528	□
27	93.03	83.43	83.99	1.410	2	.494	□
28	94.25	83.41	81.09	2.362	2	.307	□
29	94.89	81.51	84.50	2.531	2	.282	□
30	89.34	79.07	93.74	3.057	2	.217	□
31	80.72	86.04	91.66	1.373	2	.503	□
32	90.61	77.44	89.30	3.029	2	.220	□
33	95.73	84.29	78.24	3.629	2	.163	□
34	76.59	83.80	100.7	7.106	2	.029	*
35	98.49	82.84	78.84	5.006	2	.082	□
36	96.52	78.19	84.35	4.514	2	.105	□
37	99.41	81.20	80.16	5.937	2	.051	□
38	82.81	82.58	90.53	1.016	2	.602	□
39	94.56	78.20	85.68	3.478	2	.176	□
40	76.90	86.58	95.03	3.985	2	.136	□

M. R.= Mean Rank; H. G.= High Group; I. G.= Intermediate Group; L. G.= Low Group; d. f.= degree of freedom; s. v.= significance value; s.= significance;

\* = significant; □ = non-significant.

P □ . . . .

Furthermore, among different aspects and functions of inner speech, there was just a significant relationship between the affective function

about the affective function of inner speech. Moreover, the observed value of Chi-square for items 1, 13, 24, and 34 are 12.19, 13.99, 14.34, and 7.10, respectively at 2 degrees of freedom which are much greater than the critical value of Chi-square, i.e., 5.99. Thus, it can be concluded that there is a significant relationship between the levels of language proficiency and these four aspects of inner speech (items 1, 13, 24, and 34).

**Table 2: Frequency of inner speech as mental rehearsal across proficiency levels**

Item	Proficiency levels	Frequency	Percent
1. Have you had inner speech in English?	High	53	100
	Intermediate	62	89.9
	Low	49	94.2
2. Do you still experience inner speech in English?	High	51	96.2
	Intermediate	58	84.1
	Low	47	90.4

Thus, the first null hypothesis of the present study stating “there is no inner speech among EFL learners at different levels of language proficiency as they mentally rehearse in the foreign language” was rejected.

In order to investigate the relationship between the subjects’ levels of language proficiency and different aspects of their inner speech used for mental rehearsal, first of all, Kruskal-Wallis test was done for each of the 40 items in Part II of the questionnaire. The results are shown in Table 3. If the obtained significance value (s.v.) is less than the established level of significance in this study, i.e., 0.05, the null hypothesis is rejected for that item. The results of these analyses show that for four items (items 1, 13, 24, and 34), the null hypothesis is rejected. Item 1 refers to the extent to which EFL learners at different levels of language proficiency had experienced inner speech as they had mentally rehearsed in English. Item 13 is related to the meaningfulness of their inner speech. Item 24 considers the extent to which inner speech is unrelated to the English class. And, item 34 is



by 100% of the subjects in the high group, 89.9% of the subjects in the intermediate group, and 94.2% of the subjects in the low group. This would confirm that inner speech as it occurs during mental rehearsal is a very widespread phenomenon, not only among EFL learners with low level of language proficiency but also among those with high level of language proficiency.

Item 2 (Do you still experience inner speech in English?) had a smaller percentage of Yes responses than item 1, and the difference was non-significant. 96.2% of the high group, 84.1% of the intermediate group, and 90.4% of the low group answered affirmatively to this question.

What these results indicate is that still at the present moment of taking the questionnaire the students' frequency of inner speech was very high, although not as high as the total frequency of inner speech experienced. This question was introduced to ascertain that the students were not merely reporting the frequency of a past experience (as item 1 could be interpreted). Responses to item 2 confirm that inner speech was still a very frequent phenomenon for the students.

Finally, it should be mentioned that item 7 in Part I of the questionnaire asked the subjects whether they had attended any private English institutes up to the present time. The researchers were interested to find out whether there was a relationship between the subjects' language proficiency level and their attendance in any private English institutes. Therefore, an independent samples t-test was done. The significance level in this study was 0.05. As Table 1 indicates, the significance level equals 0.37 which is greater than 0.05. Moreover, the t observed value equals 2.48 at 171 degrees of freedom which is greater than the t critical value (1.96). Therefore, it can be concluded that there was a significant difference between the language proficiency level of the two groups. In other words, the mere attendance at a private English language institute had a significant influence on the subjects' language proficiency level.

**Table 1: Independent samples t-test for the two groups (those who have attended private English institutes and those who haven't.)**

	F	Sig.	t	d.f.	Sig.(2-tailed)
TOEFL Equal variances assumed	.787	.376	2.482	171	.014

P < 0.05

Items (1-2) in Part II of the questionnaire elicited information whether the subjects ever experienced inner speech. Table 2 summarizes the frequency and percent of inner speech as mental rehearsal across language proficiency levels. Item 1 in Part II of the questionnaire (Have you had inner speech in English?) was answered affirmatively

was 150. On the basis of the data obtained from TOEFL, the mean score was 82.33, and the sd was 19.78. Considering the mean score of the TOEFL (82.33), from  $\frac{1}{2}$  sd lower than the mean score to  $\frac{1}{2}$  sd higher than the mean score were considered the intermediate level. Also, the scores beyond the  $\frac{1}{2}$  sd higher than the mean score were considered high level scores, and the scores less than  $\frac{1}{2}$  sd lower than the mean score were considered low level scores.

Then, in the second phase of the study, the subjects were required to answer the questionnaire on inner speech as mental rehearsal based on a Likert scale.

### **Data Analyses and Discussions**

Part I of the questionnaire elicited demographic information from the subjects of the study. In this part, the subjects were asked about their place of birth, their level of academic studies, their attendance at any private English institutes up to now, their length of residence in an English speaking country, their first language, and the language spoken at home. One hundred thirty-four of the subjects were born in Tehran. One hundred eighteen of the subjects had attended private English institutes and 55 had not. Only twelve subjects had experienced living in an English speaking country. The first language of one hundred sixty-one of the subjects was Farsi. And, one hundred sixty of the subjects had chosen Farsi as the language spoken at home.

aiming to discover: 1) the extent to which the subjects at different levels of language proficiency experience inner speech as they mentally rehearse in the foreign language (items 1 and 2) and 2) the difference between the subjects at different levels of language proficiency in various aspects of their inner speech, in particular, the structural complexity of inner speech (items 3-6), its phonology (items 7, 14, and 15) and meaningfulness (item 13), the extent to which learners look up unfamiliar words that come to their minds (item 16), the extent to which inner speech is related (item 25) or unrelated (item 24) to the English class, the extent to which the subjects' inner speech in the foreign language is mixed with their first language (item 40), and its various functions such as mnemonic (items 8, 11, and 12), instructional (items 9, 10, and 22), evaluative (items 20, 21, 23, and 26), textual (items 17, 18, and 19), interpersonal (item 27), intrapersonal (item 28), playful (items 29-32), and affective (items 33-39) functions.

## **Procedure**

In order to carry out the investigation, the researchers randomly selected one hundred seventy-four Iranian female students majoring in English translation at Islamic Azad University, Tehran Central Branch. Out of one hundred seventy-four subjects, there were 128 senior students and 46 junior students. In the first phase of the study, a TOEFL was administered. Then, the subjects were divided into three levels of language proficiency -- low, intermediate, and high -- based upon their scores on the TOEFL. The total score of the TOEFL test

## Instruments

In order to collect the necessary data for this study, a TOEFL test and a questionnaire were used. For determining the language proficiency level of the subjects, a TOEFL whose validity and reliability were guaranteed was administered. Then, the same questionnaire used by Guerrero (1999) was utilized as the data collection instrument (see Appendix). Of course, the questionnaire underwent some minor modifications in order to make it appropriate for the EFL setting in Iran. First of all, some of the words in the questionnaire were changed. For example, ESL and SL were changed to EFL and FL, respectively. Moreover, the ESL students' first language in Guerrero's study was Spanish. Spanish was changed into Farsi as the first language of the EFL students under investigation. Furthermore, in Part I of the questionnaire, the students were asked about the name of their elementary, intermediate, and high schools which they had attended. These questions were omitted because they were not deemed important for the researchers in the present study. Instead of these questions, the subjects were asked whether they had attended any private English institutes or not.

The questionnaire included three sections: The introduction that explained the purpose of the questionnaire and provided the subjects with the definition of inner speech and mental rehearsal, Part I that elicited biographical information from the participants, and Part II that made up the content of the questionnaire. It consisted of forty items,

1. To what extent is there inner speech among EFL learners at different levels of language proficiency as they mentally rehearse in the foreign language?
2. Is there a relationship between EFL learners' levels of language proficiency and different aspects of their inner speech used for mental rehearsal?

Based on the above-mentioned research questions, two null hypotheses were formulated.

### **Subjects**

One hundred and seventy-four Iranian female students majoring in English translation at Islamic Azad University, Tehran Central Branch, took part in this study. One hundred and twenty-eight of the participants were seniors and forty-six of them were juniors. They were divided into three levels of language proficiency -- low, intermediate, and high -- based on their TOEFL scores. Considering the mean score of the TOEFL test, from  $\frac{1}{2}$  standard deviation (sd) lower than the mean score to  $\frac{1}{2}$  sd higher than the mean score was considered the intermediate level. Also, the scores beyond the  $\frac{1}{2}$  sd higher than the mean score made up the high level subjects, while the scores less than  $\frac{1}{2}$  sd lower than the mean score were low level ones. There were fifty-two low, sixty-nine intermediate, and fifty-three high level subjects. Moreover, it should be mentioned that the participants' age range was between 19 to 39, with the mean 24.43.

Moreover, the question of L2 inner speech and its related manifestations is worth pursuing by SLA researchers. There is no denying, however, that embracing the issue entails acknowledging the social-to-the-individual ideological premises of sociocultural theory. Such a view not only makes justice to the social dimension of language learning but also enriches our perspective of the inner workings of the L2 mind.

## **Method**

To determine the role of the inner speech, the investigators carried out a study. The purpose of the study was to find out to what extent EFL learners at different levels of language proficiency experience inner speech as mental rehearsal. Furthermore, the study aimed to identify some of the characteristics and functions of the subjects' inner speech, in particular, the structural complexity of inner speech, its phonology and meaningfulness, the extent to which learners look up unfamiliar words that come to their minds, the extent to which inner speech is related or unrelated to the English class, the extent to which the learners' inner speech in English is mixed with Farsi, as well as the various functions of inner speech -- mnemonic, instructional, evaluative, textual, interpersonal, intrapersonal, playful, and affective.

In order to study inner speech among EFL learners, the following research questions were posed:

use of language is to represent our thoughts and goals internally. Both inner speech and external written expression allow us to talk to ourselves in ways that help foster creativity, invention, and memory. (p. 402)

According to Guerrero (1999), the L2 inner speech functions in its early stages as a very active analyzer of language, chewing on unknown or not fully understood language (words, sounds, structures) in the input, resolving conflicts between internal and external models of the L2, and carefully, though covertly, monitoring production. As proficiency and confidence in the L2 grow, inner speech acts less and less as analyzer, planner, and monitor, and more and more as a swift mechanism for conducting verbal tasks and for thinking in general. Gradually, inner speech in the L2 becomes the flexible instrument that it is in the L1, an effective means for thinking in words and a mediator of consciousness.

As SLA research has become more open to nontraditional theoretical and methodological approaches, topics like inner speech rooted in sociocultural theory yields fresh new insights into second language learning. In fact, the study of inner speech can help reconceptualize many L2 learning processes and issues. Memory, learning strategies, input-output processing, and language development are just a few of the fundamental issues in which inner speech plays an important part.



in L2 is a developmental phenomenon associated with spontaneous mental rehearsal in the early stages of L2 acquisition and with verbal thinking in the more advanced stages. Therefore, she claimed that “inner speech is the mind-language mechanism that underlies mental rehearsal, an L2 learning strategy that involves the covert practice of the L2, which has also been associated with the phenomenon first identified by Krashen as *din in the head* and defined as an involuntary rehearsal of second language words, sounds, and phrases” (p. 33).

Moreover, inner speech was found to serve eight functional roles: ideational (to clarify thought), mnemonic (to store and retrieve information in memory), textual (to create, organize, and experiment with the form of oral or written texts), instructional (to self-teach the language), evaluative (to self- or other-evaluate language use), affective (to derive self-satisfaction and acquire self-confidence), interpersonal (to imagine conversations with others), and intrapersonal (to talk to oneself).

In this regard, Macwhinney (1999) pointed out that:

No one would deny the importance of functions in human language. We constantly use language to communicate intentions between one person and the next. We can also use language to foster social solidarity by greeting and acknowledging other people with salutations and standardized phrases. Yet another

speech, inner speech appears disconnected and incomplete. The only way to investigate such speech is to trace its development from its very origin as a social function to its mature form, which is as an instrument of individual thought. Inner speech is not the interior aspect of external speech; it is a function in itself. It still remains speech, i.e., thought connected with words. But while in external speech thought is embodied in words, in inner speech words fade away as they bring forth thought. Inner speech is, to a large extent, thinking in pure meanings. It is a dynamic, shifting, unstable thing, fluttering between word and thought, the two more or less stable, more or less firmly delineated components of verbal thought. The true nature and place of inner speech can be understood only after examining the next plane of verbal thought, the one still more inward than inner speech. That plane is thought itself (Vygotsky, 1986).

According to Wertsch and Tulviste (1996), Vygotsky claims that “inner speech enables humans to plan and regulate their action and derives from previous participation in verbal social interaction” (p. 57). Furthermore, Kozulin (1996) asserted that “in inner speech, two important processes are interwoven: the transition from external communication to inner dialogue and the translation of intimate thoughts into a linguistic and thus a communicative form” (p. 109).

The role of inner speech in information processing can be considered as rehearsal and storage. Guerrero (1999) suggested that inner speech

his strongest claims was that higher mental processes are mediated by signs, that is, tools of a psychological nature, and it is the inner speech that serves this instrumental function. Inner speech mediates thinking, and as such it is, as Frawley (1997) stated, language for thought, not language of thought, is a “vehicle for thinking” (p. 182). Without inner speech, it would be impossible for the mind to engage in high order psychological processes, such as concept formation, voluntary attention, and logical memory (Vygotsky, 1986). As an “instrument of individual thought”(Vygotsky, 1986, p. 236), inner speech serves mental orientation, conscious reflection, and problem-solving. Inner speech not only organizes conscious thought and guides actions but it is also instrumental in planning future behavior. Vygotsky assigned a rehearsal role to inner speech when he acknowledged that inner speech “serves as preparation for external speech -- for instance, in thinking over a lecture to be given” (1986, p. 88). He considered inner speech a “mental draft,” (p. 243), for example, when one plans to write or say something. Succinctly, Vygotsky saw inner speech as an ideational tool with strong social, communicative roots. In fact, inner speech has been identified as a concomitant of all four modes of communication: speaking, listening, reading, and writing (Guerrero, 1999).

In this sense, inner speech must be regarded not as speech minus sound, but as an entirely separate speech function whose main characteristic trait is its peculiar syntax. Compared with external

meaningfulness of their inner speech, the extent to which inner speech was unrelated to their English class, and the affective function of their inner speech. The findings of this investigation might have implications for teachers, materials developers, and researchers in the field of EFL learning.

## **Introduction**

Much human thought, especially abstract thought, thought about the past and future, planning and theorizing, takes place in inner speech. This inner speech is imagistic. Cole (1997) supports the view that “this speech imaging consists of auditory images of spoken natural language, as well as subvocalization, which includes kinesthetic imaging of speech production. The former involves processes used in speech comprehension, and the latter in speech production” (p. 1).

The question of inner speech is central in Vygotsky’s (1986) theory. As the ideas presented by Vygotsky and his followers have become globally recognized, inner speech has been acknowledged as a major phenomenon associated primarily with the first language (L1). In the field of second language acquisition (SLA), however, inner speech continues to be practically an uncharted territory. For Vygotsky, understanding inner speech as the link between thought and word was the key to comprehending a deeper problem, that of the origin and nature of human consciousness.

Elucidating the nature and function of inner speech (in a monolingual context) was a major concern throughout Vygotsky’s career. One of

## Inner Speech as Mental Rehearsal: The Case of EFL Learners

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### Abstract

This study was an attempt to find out to what extent EFL learners at different levels of language proficiency experience inner speech as mental rehearsal and to identify some of the characteristics and functions of their inner speech. For this purpose, one hundred seventy-four Iranian female students majoring in English translation at Islamic Azad University, Tehran Central Branch, took part in the study. One hundred twenty-eight of the subjects were seniors and forty-six of them were juniors. They were divided into three levels of language proficiency (low, intermediate, and high) based on their TOEFL scores. Then, the subjects responded to a questionnaire on inner speech as mental rehearsal. The results of the data analysis showed that EFL learners at different levels of language proficiency use inner speech to a large extent as they mentally rehearse in the foreign language. Moreover, it was found that there is a significant relationship between some aspects and functions of inner speech and the language proficiency levels of the subjects. Still, a significant relationship was found between the subjects' levels of language proficiency and the extent they had experienced inner speech as they mentally rehearsed in English, the

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