

## **The Role of Assisting Texts in Mother Tongue in Understanding Texts in a Foreign Language**

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### **Abstract**

*The purpose of the present interdisciplinary research is to study the influence of assisting texts on the comprehension of texts written in a foreign language. In this way, the eye movements of two groups of sophomores major in French language (for Bachelor degree) on reading texts were recorded and assessed using eye tracking device. The first group of students read a story written in Persian and then reread its equivalence in French. The second group just read the French text. Then, questionnaires containing comprehension questions from the French text were distributed among students. The results of both the tests carried out by eye tracking device and the questionnaires prove that Persian assisting text has facilitated the comprehension of text in foreign language.*

**Keywords:** comprehending a text's content, eye tracking device, foreign language, mother tongue,

### **1. Introduction**

Language should not be considered just as a way of communication; in fact, it represents also the culture, customs and intellectual background of a nation. A language forms the ideology of its speakers, so learning foreign languages paves the way for people to better understand different languages and cultures. In recent decades, the methods and models for teaching living languages of the world have frequently changed which is due to the growth of migrations, the expansion of political and economic relationships between different nations, development of communication and the emergence and domination of modern communicative technologies. In other words, the changes are influenced by the phenomenon of globalization which despite its positive effects in many aspects, is the reason for neglecting our native language and culture. It is evident that cultural environment of a learner is the starting point of the social- psychological process that leads to the acquisition of a foreign language proficiency. This environment will influence personality characteristics like intelligence, motivation, behavior and the level of emotions in language learners. On the other hand, in any society, the general aim of education is to provide every individual with a type of education which is in accordance with his/her cultural beliefs ; therefore bringing up meritorious and helpful people. Every society has its own conception for an ideal man and considers a specific goal and meaning for education. Therefore it tries to educate people based on its conception, thus in teaching languages, especially studying a culture, it is necessary to consider both native language and the nature of the culture to be able to understand other languages and cultures identities.

The purpose of the present article is to study the facilitating role of reading a text in mother tongue for understanding its equivalence in another language. This will be done through a scientific method relying on modern cognitive sciences. The research is an interdisciplinary study in which cognitive science has been used to study the role of Persian language and literature in teaching the skill of reading foreign texts. Also it tries to answer questions like: can existing Persian texts be used to reinforce the skill of reading a text written in another language? How Persian language can be applied for reinforcing the skill of reading in a foreign language? What information can be obtained from an eye tracking device?

Are the results of the tests done by the device are in accordance with data obtained from language learners' questionnaire? For answering these questions, we first study valid theories presented through cognitive science for comprehending text and examine the mechanism of eye tracking device.

Then in the practical part, the results of the test (carried out in psychology laboratory of Shahid Beheshti University of Tehran) will be presented. It seems that applying mother tongue plays a major role in teaching the skill of reading texts in another language. Also, data obtained by eye tracking device is helpful for both identifying and solving cognitive problems of language learners during the process of comprehending a text. So far numerous researches have been conducted both in Iran and abroad to investigate the importance and effect of teaching/ acquisition of culture when teaching/ learning foreign language. What is notable here is that in most of these studies, teaching/ learning or acquisition of foreign language and culture is of considerable importance, so neglecting the positive effect of native language and culture, especially Persian, in learning a foreign language. In other articles, mother tongue has been mentioned as a deleterious factor in learning a foreign language.

During 1978-1988, Walter Kintsch, who is a psychology professor at Colorado University (USA), and Dutch linguist, Teun A. van Dijk, presented three models for the comprehension of a text. These cognitive models, has considerably changed the methods used for studying the effective cognitive mechanisms of text comprehension. In all these models, the role of native language and culture in comprehending the same text in another language has been emphasized (1978, 1983&1988). The results of studies on language teaching and cognitive psychology show that language learners' inability to create coherence between different parts of a text and understanding its meaning is one of their major problems for comprehending texts in other languages. (Legros, 2007, p. 33)Based on the construction- integration model (Kintsch, 1983), for comprehending a text, the reader not only should employ his linguistic knowledge of the foreign language, but also activate his/her ideology and cognitive knowledge to be able to infer the underlying structure of the text's meaning. The individual's ideology and cognitive knowledge is undoubtedly more influenced by his native culture and language. Here our hypothesis is that using Persian texts could facilitate comprehending a text written in another language. For confirming the hypothesis in Iranian language learners, we conducted a test in which the eye movements of ten sophomores major in French during reading a text was recorded and evaluated. This was done by an eye tracking device. The results of the test will be given in the practical part of the article.

## **2. Method**

For studying the effects of reading a text in mother tongue on comprehending its meaning in another language, a system for tracking eye movements was used. The reason for choosing this device is that based on scientific researches (Becker, 2015, p.5), the visual perception only has occupied half of the brain cortex. Also 70 percent of our sensory perception is through visual perception; therefore, the study of eye movements is really helpful for better understanding the students' mental activities during the reading of texts and also recognizing and solving their cognitive problems. For studying eye movements during the reading and by the device mentioned above, different elements should be considered and evaluated including the time of reading the text-measured by the device, the frequency and the duration of fixations, the frequency, duration and amplitude of saccades, the diameter of pupil during reading, eyes track changes that all express the cognitive mechanisms for comprehending a text.

In this research, what is important for studying cognitive mechanisms of text comprehension which will be examined here is the amount of time a person expends for reading a text, the number of fixations and saccades and some other related factors. Reading a text, the eyes may be fixed on some word; these hesitations or in other words fixations are suggestive of two subjects: the difficulty of the word and the inability of the reader to understand it or his attention to the said word. The saccadic movements are usually forwarding movements of the eyes that occur along the progression line of the passage. The regressions occur when the reader cannot understand the cohesion and coherence of the text well (Sharifi, Ahmadi & Mansouri sepehr, 2013, p.63). The eye tracking device is capable of recording all the above events.

### **2.1 Participant (Subject) Characteristics**

The statistical universe of the study includes 10 sophomores of Shahid Beheshti University of Tehran majoring in French language .These students announced their readiness through a call for cooperation. The reason for choosing sophomores is that language learners at this level have achieved the necessary skills for reading a short story in French. The students were randomly divided in two groups.

The first group read a story in Persian and then read the same story in French. The second group read the same story just in French; their eye movements were recorded by the device. Here what is important is measuring the amount of time expended by both groups for reading the French passage, the number of eye fixations on each one and also the number of saccades observed in both groups. The test was conducted in a cognitive psychology laboratory using eye tracking device. Following this, the performance of both groups was compared. The students sat individually in front of the device screen. Then the screen was adjusted based on physical characteristics of the language learners. Prior to reading the texts, the validity of texts were assessed and the rate of errors of the device was determined for each participant. After that, the first group of language learners was told that they will see two texts on the screen, the first in Persian and the second in French or for the second group, they will see a text in French and their task is to read the text(s) in accordance with their speed and with the purpose of understanding it. After reading each page, by pressing the space key, the reader could move on to the next page. The dependent variables of this research were the amount of time spender for studying French text, number of saccades and the number of fixations for each group of language learner. For comparing the results of the test with learners' previous performance in reading, they were asked to state their scores in "reading simple texts in French" a course from their previous semester. This score was registered in the questionnaire of each learner. The average of scores for "reading simple texts in French" for the first group (the group that read both texts) and second group were 14.5 and 17.6 respectively.

## 2.2. Research tools

### 2.2.1. Eye tracking device

In order to track the eye movements of language learners and examine their fixations and saccades during the reading of the text, an eye tracking device was used. The device was designed for remote measuring and included a 22 inches screen for displaying the stimulus, i.e. Persian and French texts, infrared waves receiver for recording eye movements, a soft-ware for recording movements and changes of the eye, a test designing soft ware for the way stimuli is presented and data analysis soft-ware. The eye tracking device is also capable of measuring the errors (of measurement) of eye fixations.

### 2-2-2. Stimuli

For studying the effect of reading a text in mother tongue on its comprehension in French language, a short story in Persian and its French equivalence were used. The texts were matched in terms of length, manner of narration, font size and the space between lines and words (see Appendices A and B).

It is worth mentioning that although the Persian story is the same as its French equivalence, but it is not word for word translation of French text. In fact, we only convey the contents of The French story to our language learners.

### 2.2.3. The test

For more accuracy and comparing the results of the device with the traditional evaluation method, we distributed an identical questionnaire among both groups; containing 14 multiple choice items in French relating to the content of the text. Then the results of these two methods were compared.

## 3. Results

For each individual, the average of time for reading the text and the standard deviation are given in table 1.

**Table 1: The average and standard deviation of time for the first group when reading French text (milliseconds)**

Participant	Average	Standard deviation
individual 1	147 828	10 962.5
individual 2	285 766	16 162.5
individual 3	215 871	12 938.1
individual 4	222 935	13 816.5
individual 5	252 617	18 012.1
total	225 003	14 378.3

**Table 2: The average and standard deviation of time for the second group when reading French text (milliseconds)**

Participant	Average	Standard deviation
individual 1	191 532	25 007.92
individual 2	227 102	15 922.02
individual 3	313 070	23 042.64
individual 4	248 489	17 862.81
individual 5	209 394	13 876.49
total	237 914.4	19 142.37

For the first group, (the group that read Persian assisting text), the average time and standard deviation for reading the text were 225 003 (ms) and 14 378.3 respectively. These values for the second group, i.e. the group that just read French text were 237 914(ms) and 19 142.37 respectively. Regarding the results, there is a significant difference between these two groups in terms of the time they expended for reading French text, because it takes 12914, 4 milliseconds more for the second group to read French text, while the second group had a better average in the “reading simple texts in French” course.

**Table 3: Number of saccades and fixations of the first group while reading French text**

Participant	Number of saccades	Number of fixations
individual 1	93	105
individual 2	82	88
individual 3	91	99
individual 4	102	105
individual 5	150	149
total	103. 6	109. 2

**Table 4: Number of saccades and fixations of the second group while reading French text**

Participant	Number of saccades	Number of fixations
individual 1	154	171
individual 2	160	179
individual 3	221	235
individual 4	149	162
individual 5	176	189
total	172	187. 2

The total averages of eye fixations for reading the French text was 109 for the first group and 187 for the second group. In addition, the average number of saccades for the two groups was 103 and 172 respectively. The comparison of the data obtained from these two groups show that there is a significant difference between the number of fixations and saccades of two groups; the first group that read Persian text had a better performance in reading the French text, although their average in “reading simple text in French” was lower. As it was mentioned before, after the text were read and their eye movements were tracked, an identical questionnaire containing 14 multiple choice items was distributed between participants. Then they were given scores (the top score being 20). The averages of questionnaire scores were 13.71 for the first group and 12.28 for second group. The results of the research also show that reading Persian text as an assisting text prior to the French text has considerably improved the learners’ performance in understanding the content of French text.

#### **4. Conclusion and Discussion**

Based on the results of the research and as expected, it took more time for the second group to read the French text; also, they got lower marks. The study of number of fixations and saccades in both groups prove the positive effects of native language and culture in better understanding of texts in other languages; as reading the assisting Persian text has significantly improved learners’ performance in terms of their reading speed, the ability to create coherence between different parts of the text and the ability of inferring from the French text. It should be noted that native language and culture are not used for word for word or literal translation of the foreign text, but to use the equivalent text in the mother tongue of the learner and comparing them with foreign text in order to better understand its meaning.

Persian language is full of valuable texts, using them for teaching foreign texts not only helps the learners to learn the foreign text more effectively, but also gives them the opportunity to increase their knowledge of the mother tongue. In other words, the acquisition of communicative capabilities in the foreign language should make it possible for the learners to not only understand the culture of the language they are learning, but the language should act as a bridge for the expansion and valuation of mother tongue and culture. Hereby we suggest that comparative literature courses or in the expanded form, comparative studies could be included in the curriculum of students majoring in foreign language and literature from the beginning, because as we mentioned before and as confirmed by the results of the present study, to use cultural, literal and even scientific texts written in the mother tongue of the learners both facilitate their comprehension of texts in the foreign language and improve their knowledge and culture of their mother tongue.

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## Appendix A

## Persian Text: سوپ سنگ

<p>-پیرزن با خود گفت: "فکر نکنم اگر کمی آب به او بدهم، اشکالی پیش بیاید."</p> <p>-سریاز: "خانم از شما ممنونم. اشکالی ندارد اگر ظرف آب را روی آتش بگذارم؟"</p> <p>-پیرزن: "اوه، اگر لازم است، اشکالی ندارد." و سریاز را به آشپزخانه برد و ظرف را روی اجاق گذاشت.</p> <p>-سریاز: "بسیار خوب. حالا یک تکه سنگ را در ظرف می‌گذارم و صبر می‌کنم تا خوب بپزد."</p> <p>پیرزن که کنجکاو شده بود، نزد سریاز ماند تا از کار او سر در بیاورد. بعد از مدتی سریاز در ظرف را برداشت و کمی از سوپ را چشید و گفت: "اوه، بد نیست. اما به مقداری نمک احتیاج داریم."</p> <p>-پیرزن: "صبر کن، الان نمک می‌آورم." آشپز نمک را درون ظرف ریخت.</p> <p>-سریاز: "بگذارید تا دوباره مزه اش را امتحان کنم. باور نکردنی است!"</p> <p>-پیرزن با بی‌قراری گفت: "باید خوشمزه باشد. نه؟"</p>	<p style="text-align: center;"><b>سوپ سنگ</b></p> <p>روزی روزگاری سربازی فقیر که از جنگ باز می‌گشت در حال گذر از روستایی کوچک بود. او به شدت احساس گرسنگی می‌کرد و همین‌طور که با ناامیدی به دنبال خوراکی می‌گشت. ناگهان سوسوی نوری که از کلبه‌ای کوچک به بیرون می‌تابید را مشاهده کرد. با خوشحالی در کلبه را زد. صاحبخانه که پیرزنی فقیر بود، در را گشود.</p> <p>-سریاز: خانم محترم من بسیار گرسنه هستم. آیا می‌توانید کمی غذا به من بدهید؟"</p> <p>-پیرزن: آه! سرباز شجاع! اگر چیزی برای خوردن داشتیم تقدیم می‌کردم ولی من خودم بسیار فقیر هستم."</p> <p>-سریاز: لطفاً یک لحظه صبر کنید آیا ممکن است کمی آب و یک ظرف به من بدهید؟"</p> <p>-پیرزن: آب را برای چه می‌خواهی؟"</p> <p>-سریاز: می‌خواهم برای خودم یک سوپ خوشمزه درست کنم، آن هم از سنگ."</p>
<p>-سریاز گفت: "بسیار خوب، لطفاً دو کاسه بیاورید تا از خوردن این سوپ خوشمزه در کنار هم لذت ببریم."</p> <p>پیرزن: "با کمی نان سفره‌مان کامل می‌شود."</p> <p>-پیرزن: "اوه چه سوپ لذیذی! باور نکردنی است، چطور آن را درست کردی؟"</p> <p>-سریاز: "این غذا را مدیون سنگی هستیم که به همراه داشتم."</p> <p>-پیرزن: "ممکن است لطفی به من بکنی و این سنگ را به من بفروشی؟"</p> <p>-سریاز: "اوه! چرا که نه! در ازای ده فرانک سنگ برای شما خواهد بود. سریاز پول را در جیب خود گذاشت و در حالی که در دل خود به پیرزن می‌خندید خداحافظی کرد و به راه افتاد.</p>	<p>-سریاز: "بله، اما با مقداری سبزیجات می‌توانیم مزه اش را بهتر کنیم."</p> <p>-پیرزن با خود گفت: "بهتر است زود بروم و چند هویج بیاورم و گرنه مجبورم تمام شب او را تحمل کنم"، آشپز هویج‌ها را از زن گرفت و به سوپ افزود.</p> <p>-سریاز: "به نظر می‌رسد که همه چیز روبراه است. اما اگر کمی برنج و سیب‌زمینی هم به آن اضافه کنیم عالی می‌شود."</p> <p>-پیرزن: صبر کن، الان می‌آورم." آشپز برنج و سیب‌زمینی را به سوپ اضافه کرد و بعد از مدتی سوپ به جوش آمد.</p> <p>-پیرزن: "به نظرت نباید دوباره از آن بچشی؟"</p> <p>-سریاز: "البته، اما شما هم باید در خوردن سوپ با من سهیم شوید. اجازه بدهید تا کمی ادویه و سبزی هم به آن اضافه کنیم."</p>
<p>4</p>	<p>-پیرزن: "بله حتماً این کار را بکن." بوی غذا فضای کلبه را پر کرده بود. سوپ آماده شد.</p> <p>3</p>

## Appendix B

## French Text: La soupe au caillou

## La soupe au caillou

Il était une fois un jeune soldat qui venait de rentrer de la guerre. Affamé, il allait de village en village. Mais bien sûr, il n'y avait personne pour lui offrir une bouchée de pain ou un peu de soupe chaude. Ainsi, il a décidé: « dans la prochaine maison où j'entrerai, c'est moi qui ferai une soupe. »

Devant une porte, il a trouvé un caillou, il l'a ramassé et a entré dans la première maison qui était sur son chemin. Elle appartenait à une vieille dame.

-Bonjour la vieille!

-Bonjour mon brave!

-J'ai faim, je voudrais manger si vous aviez quelque chose à me donner.

1

«J'ai des carottes, je vais en chercher», a répondu la vieille.»

«J'arrive, j'arrive!» dit la vieille.

Elle est revenue avec deux carottes. Le soldat les mit dans la marmite, a remué et a goûté la soupe.

«Vous savez, si vous aviez quelques pommes de terre, nous pourrions les ajouter!»

«J'ai des pommes de terre, je vais en chercher», a dit fièrement la vieille .

Ils laissèrent mijoter la soupe encore quelques minutes, puis le soldat a dit:

«Si par hasard vous aviez quelques grains de riz, ce serait bien».

«J'en ai», dit elle.

Ils ont ajouté une poignée de riz dans l'eau et d'un air satisfait, le soldat s'est frotté le ventre.

3

-Ah, mon brave, si j'avais quelque chose à donner, je vous le donnerais. Mais moi même, je suis gueuse comme un rat d'église.

-«Alors je ne suis pas comme toi parce que j'ai un beau caillou dans ma poche. Je pourrais en faire une soupe mais j'ai besoin pour cela d'une marmite » dit le soldat.

« Je peux t'en prêter une. »

Le soldat a mis le caillou dans la marmite. La vieille a fait du feu.

Le soldat a versé de l'eau sur le caillou. Il remuait plusieurs fois avec une longue cuillère en bois. La vieille dame le regardait du coin de l'œil. Le soldat a goûté la soupe.

« Elle est bonne, dit le soldat en claquant la langue. Si vous aviez un peu de sel à mettre dedans, elle serait encore meilleure.»

«J'ai du sel», dit la vieille.

«Vous savez, je sais bien préparer la soupe mais toujours avec des légumes. Comme c'est bon!» dit le soldat.

2

«Maintenant elle est aussi bonne que celle que je prépare d'habitude», dit il.

Ils attendaient que la soupe soit entièrement cuite. Ensuite, Ils la mangèrent, tous les deux.

Puis, la vieille s'est tournée vers le soldat.

«Dites moi, mon brave, auriez-vous la gentillesse de me vendre ce caillou? Je n'ai souvent rien à cuisiner et avec ce caillou je pourrais préparer une bonne soupe» .

-Bien sûr que si, a répondu le soldat en riant dans sa barbe. Pour dix francs, le caillou est à vous.

Dix francs dans la poche, le soldat dit très vite au revoir à la vieille dame et en riant dans sa barbe , il est parti.

4

## Appendix C

### Questionnaire

#### La soupe au caillou

\*Est-ce que vous avez lu la version persane « de la soupe au caillou » ?

Oui  Non

\*La note de la matière de « la lecture des textes simples en français » :

**1- Qui est le héros du conte ?**

- un paysan  un vieil homme  
 un soldat  une vieille femme

**2- Où cette personne s'est-elle rendue ?**

- de la guerre  chez sa famille  
 chez lui  chez sa voisine

**3- Que lui arrive-t-il sur le chemin ?**

- il est fatigué  il a mal aux pieds  
 il a froid  il a faim

**4- Où s'arrête-t-il ?**

- dans une auberge  devant une maison  
 au bord d'un village  devant une église

**5- Qui habite-là ?**

- une jeune femme  une vieille femme  
 un vieil homme  un jeune homme

**10- Quel ingrédient lui manque-t-il pour cette opération ?**

- du sucre, des pommes de terre, de l'oignon, du riz  
 du sel, des carottes, des pommes de terre, du riz  
 de la farine, du sel, du beurre, des carottes  
 des carottes, des pommes de terre, du sucre, du riz

**15- Que propose le soldat à la vieille femme ?**

- d'aller chercher du pain.  
 de partager son repas avec lui.  
 de partager son repas avec les habitants du village.  
 de le laisser tranquille pour manger de la soupe.

**16- Qu'arrive-t-il à la vieille dame ?**

- Elle prie d'acheter le caillou.  
 Elle n'accepte pas d'en manger.  
 Elle quitte sa maison pour le laisser tranquille.  
 Elle meurt.

**17- Quelle est la définition de « rire dans sa barbe » ?**

- Rire contre sa volonté.  
 Rire bruyamment, la bouche largement ouverte.  
 Rire bêtement.  
 Rire de manière discrète en se moquant.

**6- Pourquoi la vieille refuse-t-elle de l'aider ?**

- parce qu'elle n'a pas assez à manger.  
 parce qu'elle a peur de lui.  
 parce qu'elle n'aime pas les soldats.  
 parce qu'elle déteste les hommes.

**7- Que lui propose-t-elle de manger ?**

.....

**8- Que demande le soldat à la vieille femme ?**

- une marmite et du bois pour faire du feu.  
 une marmite, de l'eau et une place sur le feu.  
 un peu d'eau pour faire cuire son caillou.  
 un bol et du feu

**9- Que doit faire l'eau avec le caillou ?**

- L'eau doit danser avec le caillou.  
 L'eau doit tourner autour du caillou.  
 L'eau doit accueillir le caillou.  
 L'eau doit cuire le caillou.

**18- Quelle est la définition de « Etre guceux comme un rat d'église » ?**

- Etre malin  
 Etre gros  
 Etre très pauvre  
 Etre très mignon