

SELF-REGULATING FUNCTIONS OF L1 PRIVATE SPEECH DURING PRE-UNIVERSITY COLLABORATIVE L2 READING

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ABSTRACT

This article reports on a study of how L1 was used by Persian speaking Pre-university learners of English in their private speech while interacting as they were engaged in L2 reading. The study was conducted in a real classroom setting in an Iranian school with the objective of better understand the mediating and regulatory role of L1 private speech in L2 reading. The analysis reveals that learners produced L1 private speech while interacting collaboratively with peers in social context. It presents evidence that L1 was utilized in learners' self-talk as repetitions, affective utterances, pause fillers, self-directed questions and explanations, self-addressed negations, and self-addressed directives. This served learners cognitive and affective functions and assisted them to focus on the challenging part of the task and to maintain self-regulation. This study provided support for the theoretical orientation that views language not only as a means of communication but as a cognitive tool used to control one's mental activity. It is hoped to contribute to the body of knowledge on SLA and sociocultural perspective

of language learning by illustrating evidence for a shift from being other-mediated or object mediated to guiding oneself and being self-mediated in the process of L2 classroom learning.

Keywords: *private speech, sociocultural theory, L1 use, classroom research, cognitive tool*

INTRODUCTION

Studies on private speech have been done within the framework of a Vygotskyan sociocultural approach (e.g. Abadikhah & Khorshidi, 2013; de Guerrero, 2004; DiCamilla & Anton, 2004; Jimenez Jimenez, 2015). Sociocultural theory (SCT) assigns a main role to self-directed speech in the child's development and organization of mental functioning, and thus analysis of private speech plays a crucial role in understanding how the mind functions. It is argued that speech provides the mediational link between the social and mental worlds (DiCamilla & Anton, 2004). Private speech is social in form but cognitive in function. It is used by speakers to organize and regulate their own mental activities. Private speech has been studied in different contexts, i.e. while L2 learners were engaged solving problems individually (Anani Sarab & Gordani, 2014) in collaborative interaction of L2 learners (Alegria de la Colina & del Pilar Garcia Mayo, 2009; Anton & DiCamilla, 1999; DiCamilla & Anton, 2004; Donato, 1994; Villamil & de Guerrero, 1996); private speech of bilingual speakers (Jimenez Jimenez, 2015; Sawyer, 2016); and in immersion programmes (Swain & Lapkin, 2013). These studies all suggest an important mediating role for private speech when a learner needs to take control of own mental processes.

Research done so far notes the need to study L2 learners' private speech either in L1 or in L2 in a variety of language contexts and in more detail while performing different tasks. Previous research call for more studies to substantiate their findings. According to the SCT, one's L1 is the most powerful tool to mediate an individual's cognitively complex thinking. It is not very well known how EFL learners' L1 private speech assists them to organize and control their thinking in the process of L2 learning. Most studies cited above investigated L2 learners' private speech during problem solving or writing tasks, but not on reading. Studies reported the

existence of L1 self-talk in learners' speech; however, they do not further investigate learners' own comments and reflections on it, which this study intended to do.

THE STUDY

Above mentioned studies highlight the crucial role of learners' private speech in different ways and how it provides support for them to think and self-regulate their learning in the specific context of each study. This study intends to investigate the Pre-university EFL learners' use of L1 to understand what functions L1 private speech serves during L2 collaborative reading task. It provides evidence of L1 intrapersonal communication while learners are engaged in reading L2 texts in the context of naturalistic classroom setting. It is an attempt to better understand why and how learners use the L1 self-talk and contribute to the body of knowledge on sociocultural view of L2 learning. It is our intention to contribute to the body of knowledge on L2 learning by arguing the relevance of L1 private speech for foreign language reading and how it might enhance L2 learning of Pre-university learners in a classroom.

SOCIOCULTURAL THEORY AND PRIVATE SPEECH

According to Vygotsky sociocultural theory, just as humans rely on tools to act on the physical world, we also rely on semiotic tools (e.g., speech) to regulate (i.e., organize and control) our mental functions. As Appel and Lantolf (1994, p. 439) state, "speech has dual mediational macrofunctions - a primary function, to mediate our social activity, and a secondary function, to mediate our mental activity". This is an orientation that views speech as both a means of communication and a cognitive tool.

Within the framework of SCT, "humans are understood to utilize existing, and to create new, cultural artifacts that allow them to regulate, or more fully monitor and control, their behavior" (Lantolf, Thorne, and Poehner, 2015, p.1). Vygotsky observed that young children use speech in a self-regulatory manner to guide, plan, and monitor their behavior. This is labeled as private speech. Private speech as Lantolf (2000a, p.

88) states is “speech that is not directed at an interlocutor but is intended for the speaker himself or herself”. In the process of privatizing speech, as Lantolf argues, individual gains control over his/her ability to think, remember, plan, evaluate, and learn. According to Lantolf (2000b, p. 15), private speech is a “speech that has social origins in the speech of others but that takes on a private or cognitive function”. Private speech plays an important role in maintaining self-regulation. Cognitive, meta-cognitive and affective functions are reported for private speech (Appel & Lantolf, 1994; McCafferty, 1994).

Vocate (1994, as cited in Lantolf & Yáñez, 2003) argues that as with social talk, self-talk is dialogic, but instead of an “I” talking to a “You”, private speech entails an “I” that makes choices on what to talk about and a “Me” that interprets and critiques these choices. Vygotsky theorized that because private speech derived from social speech is the precursor to inner speech, mental development can be studied through analysis of private speech. Through the study of private speech, it is possible to observe human mental activity as it is being formed in situated practical activity. Lantolf (2006) states that in L2 learning, self-directed speech acts as not only a means to mediate mental functioning in complex cognitive tasks, but it also serves to facilitate the internalization of mental functions. He further argues that language learning will probably not occur without private speech.

LITERATURE REVIEW

In classroom settings, according to Lantolf and Thorne (2006), language mediates not only learner’s relationship with peers or the teacher but also her/his mental activity. Vygotsky-inspired theory offers a framework through which cognition can be analyzed and examined in a social context. Investigating private speech contributes to our understanding of learner’s mental activity. The relationship between cognitive performance and private speech is documented in previous studies (Diaz, Winsler, Atencio, & Harbers, 1992; DiCamilla & Antón, 2004).

DiCamilla and Antón, (2004) analyzed the speech of English speaking Spanish learners while they were collaboratively producing compositions in Spanish. Researchers audio recorded 14 dyads of university level learners

of Spanish from three different proficiency levels. Participants received no instruction on what language (L1 or L2) to use to perform the task. The authors argued that in a social setting, private speech can be distinguished from social speech and hence private speech produced in such setting can be identified and analyzed. Their study revealed two fundamental cognitive operations for private speech, i.e. focusing of attention and the creation of psychological distance. Researchers argued that participants' private speech enabled them to concentrate on the task and also to distance themselves from the encountered problems. As a result of this, learners gained control in the performance of the assigned task.

Abadikhah and Khorshidi (2013) employed Vygotsky sociocultural theory as the framework to investigate the Persian speaking adult EFL learners' private speech produced during collaborative interactions. The purpose of their study was to find out if the participants externalize private speech in L1 or in L2 and also to examine whether there is a relationship between the amount of private speech and successful task completion. Six advanced and six beginner learners of English were participants in this study and were asked to do a picture description task in pair work. They identified the occurrences of private speech in participants' interaction. Researchers reported that both groups produced private speech for task completion; however, the advanced learners' predominantly produced L2 private speech. They argued that while the use of private speech helped learners get control over the task, no relationship was found between the amount of private speech and successful task completion.

Anani Sarab and Gordani (2014) investigated L2 private speech of Iranian EFL learners. Participants in their study were 30 intermediate adult Persian speaking learners of English in a university in Iran. Participants were asked to solve 10 challenging English riddles while their voices were being recorded. They were instructed to use English in dealing with the task while trying to comprehend and come up with the answer. The researchers found frequent use of reading aloud, repetition, self-explanations, and meta-language as private speech. They reported different functions for private speech such as managing the thought, planning, controlling anxiety, and self-orientation.

Centeno-Cortés and Jiménez Jiménez (2004) investigated the private verbal thinking of three different groups of speakers in the process of their reasoning during problem solving activities. They randomly selected 18 university students and instructors of Spanish in an American university. The participants were asked to answer 15 cognitively challenging questions in Spanish. The researchers compared the private verbal thinking produced by native speakers of Spanish, intermediate level L2 learners of Spanish, and advanced level L2 learners of Spanish. They reported that use of L2 private verbal thinking differed according to participants' proficiency level of L2. They also found that each of this group made use of their L1 in the process of problem solving. They reported participants' L1 as a key factor in the process of reasoning and argued that L1 played an important role in cognitive regulation and learning. Their findings revealed that some speakers were usually unable to solve the problem when their verbal thinking was in L2. However, it was found that when speakers switched to the L1, they were more often successful. The researchers conclude that native language act as a key cognitive and metacognitive tool for L2 learners and should not be banned in L2 classes. Authors highlight the need for more research to further define the precise role of the L1 in learners' language development.

METHODOLOGY

This study adopts a qualitative case study approach which covers both the phenomenon of interest, i.e. use of L1 private speech, and its context. The study was carried out in an Iranian EFL school located in the ESL context of Kuala Lumpur, Malaysia. It involved the participation of all 15 Pre-university students. It should be noted that this was the only Pre-university class in the school and no specific criterion was involved for selection of the participants. English is a compulsory subject for all Pre-university learners. Participants' age ranges between 17 to 18. Their native language is Persian and they have been studying English at school for six years since they were in Grade 6. The school follows the same curriculum as the schools in Iran do and the same textbooks -published in Iran and used in national schools- are used in overseas schools as well. Classroom data was collected in a naturalistic environment during normal class times and conditions. The data for the study involved four reading lessons from learners' English textbook '*Learning to Read English for Pre-University Students*', covered in one

semester. It should be noted the participants would go on to university in the following year. Hence, the main purpose of this textbook is to prepare students for reading skills needed for university, where they would inevitably be required to read articles, books, journals and texts in English, each in their own field.

Qualitative data of real-time production of private speech obtained from audio-recordings of classroom interactions and interviews with the learners were used for the analysis. In order to have additional insights into the phenomenon of private speech, follow up interview with the learners were conducted. Interview data provided the researchers more insights on learners' use of L1 which was not captured through recordings. Qualitative case study guided the researchers in the process of collecting, analyzing, and interpreting the data. However, some quantifications were carried out in order to find out more frequently used L1 utterances as private speech and their functions. This helped to identify the contexts in which utilizing L1 private speech proved more beneficial. When reporting examples of classroom interactions, participants are given pseudonyms to achieve anonymity.

DATA ANALYSIS AND FINDINGS

Using the framework of SCT-L2 which maintains that learners' speech has the ability to function as a "mediational artifact to control thinking" (Lantolf & Thorne, 2006, p. 60), the study focused on the L1 private speech use of the participants and how it functioned in their cognitive regulation during reading L2 texts. Analysis of data revealed instances where learners used L1 not for a communicative function, but as a means for self-regulation. In other words, L1 was used intrapersonally in the learners' private speech to regulate their own cognitive processes. These were audible utterances in the learners' speech which were neither intended for nor directed at others, but to the self. L1 utterances which learner's tone of voice indicated being directed to self or ones which were ignored by peers, and the questions immediately answered by self, were counted as private speech.

Learners' L1 as an intramental tool in vocalized private speech directed to oneself were identified and coded for the content and functions they served

based on the earlier literature on private speech (Centeno-Cortés & Jiménez Jiménez, 2004; DiCamilla & Anton, 2004; McCafferty, 1994). Data was obtained from learners' speech during pair work, group work, or whole-class interaction while interacting with the teacher. When learners' speech was coded in terms of content, analysis revealed that the L1 utterances were used in repetitions, affective expressions, self-addressed explanations, pause fillers, self-addressed questions, self-addressed negation, and self-addressed directives. Then, these utterances were coded for the functions they served. There was a total of 119 instances of intramental use of L1, i.e. use of L1 utterances in learners' private speech, during the L2 reading. In what follows, segments of learners' interactions are used to discuss and illustrate the findings. To provide context, Romanization of the Persian utterances are given in *italics*. These are followed by the English translations for learners' L1, which are given in brackets []. Words or phrases which are in **Bold** signify L2 utterances within a learners' L1 speech. Sentences which the learners read out from the textbook are underlined. Pauses are shown by + sign and researchers' comments are added in ().

L1 REPETITION AS PRIVATE SPEECH

It was found that the most frequent use of L1 in learners' utterances in their private speech was for repetition (n=43). Analysis showed that most often, repetition occurred after the mediating role of the teacher or a more proficient peer in the group. Excerpts 1 and 2 are examples from data illustrating use of L1 by learners for repetitions which served them cognitive functions. By repeating to himself, the learner was taking over the regulating role played by others earlier.

In Excerpt 1, which is a segment of pair work interaction data, learners were engaged in reading a text about 'Earthquakes and how to survive them'. Mahdi, after reading a sentence about the main layers of the Earth, provides the wrong translation for 'plates' in the context of earthquakes. His more proficient peer, Salar, knows that Mahdi's translation was not the proper one as evident from his utterance in line 10. However, Salar does not know the meaning too. While Salar is thinking, Mahdi calls the teacher for help.

Excerpt 1

1. Mahdi: It is broken into many (reads slowly word by word)
2. Salar: It is broken into many pieces.
3. Mahdi: pieces. Pieces yani chi? yani bakhsh.=
4. [pieces. What does **Pieces** mean? Means part.=]
5. Salar: =ghet'ee ha
6. [=pieces]
7. Mahdi: called plates. Plates yani boshghab.
8. [called plates. Plates means plates (a dish).]
9. Salar: called plates. **Plates Yani, +yaani**
10. [called plates. Plates means + means]
11. Mahdi: Teacher? What's the meaning of plates?
12. Teacher: *safhe, too zaminshenasi.*
13. [layers (of lithosphere), in geology]
14. Salar: *Aha. Safhe, are. Safhe, safhe. farsish yadam rafte bood.*
15. *Boshghab mishe vali inja be maani e safhas.*
16. [Oh, plates, yes. Plates, plates. I'd forgotten the Persian.
17. It can also mean a dish, but here it means plates (of the earth).]
18. Mahdi: Plates, *boshghab, safhe*
19. [Plates, the flat dish, plates of earth]

(Pair work, Reading a text on earthquakes, December 2013)

Mahdi, who finds out another meaning for 'plates', repeats the two different meanings (lines 18-19), the one he already knew, the flat dish, and the one just provided by the teacher, layers (of Earth's lithosphere). This repetition of L1 equivalents might assist Mahdi to organize his L2 and make the newly encountered vocabulary stick in his mind. In this way he is reminding himself of the two different meanings of the L2 word 'plate', the one he knew previously and the one just learned. In other words, repeating the L1 utterances in his self-talk acts as a regulation strategy and might have helped Mahdi be more successful in remembering the words later, and can also be an indication of a shift from being other-regulated to being self-regulated. It is seen that a low proficient learner such as Mahdi is not able to realize that 'plate' as a dish is not relevant in this context when he reads by himself. During interaction with the partner and with the teacher, Mahdi

noticed that 'plate' in the context of the lesson is very different from his previously known meaning. However, noticing alone seems not sufficient to him at this point and he utilizes L1 for repeating and reminding himself of the two meanings. The use of L1 in this way might enhance Mahdi's mental functioning and promote his L2 development by incorporating newly learned meaning in the old ones. It can be argued that in this way he is utilizing existing L1 in order to create new artifact, i.e. L2. This is an evidence illustrating a transition from socially interacting with others to interacting to oneself which from the sociocultural perspective eventually leads to the formation of silent inner speech and verbal thought. This excerpt also provides one more evidence of the use of L1 as repetition in Salar's intramental speech. As seen in line 14, he repeats the L1 equivalent provided by the teacher three times, followed by an L1 utterance meaning "I'd forgotten the Persian". This indicates that by repeating to himself he tries not to forget the word again.

Further support for repetition in L1 as learner's private speech is visible in Excerpt 2 in which Salar is utilizing L1 to focus his attention and make sense of the L2 text. The part of the text being discussed in Excerpt 2 was as follows: "Since a large number of the world's earthquakes each year occur along the Pacific Ocean, this is the most probable area for today's earthquakes". In this example, Salar, in a quiet voice, repeated an L1 translation for a part of the L2 text so that he might avoid distraction.

Excerpt 2

1. Salar: *az an jayi ke har sale tedad e ziadi az zamin larzeha,* +
(quietly repeats)
2. *az an jayi ke har sale tedad e ziadi az zamin larzeha,*
3. *etefagh miofte dar oghyanoos e aram , in mahal be onvane* +
4. [Since each year a large number of earthquakes, +
(quietly repeats)
5. since each year a large number of earthquakes,
6. occur in Pacific Ocean, this area is +]
7. Mahdi: most probable
8. Salar: *Por ehtemal tarin mantaghe baraye zamin larze*
9. [The most probable area for an earthquake.]

(Pair work, Reading a text on earthquakes, December 2013)

L1 AFFECTIVE UTTERANCES AS PRIVATE SPEECH

Another use of L1 by learners as private speech was in utterances produced as affective utterances. This group of utterances included the utterances indicating affective expressions of the learners either regarding the task or their own performance. Utterances of self-criticizing, self-encouraging comments, any motivational utterances, those which were signs of discovery or indicators of learners' notice of an error are categorized as affective expressions. In fact, this group of intramental utterances was the second most frequent one (n=29). The most frequent L1 utterance as affective expressions observed in data was "Aha" [Oh]. "khob" [So], "Ah" [Ugh] and "Are" [Yeah] were other examples. These utterances sometimes were followed by an L1 explanation or repetition. Excerpt 3 is an example for an L1 affective utterance as private speech. Salar is reading and translating. The sentences he is reading are as follows: "The world is getting warmer. It has warmed by half a degree centigrade over the past 100 years". One of the words in the sentence he is reading is 'centigrade'; however, Mani, the less proficient learner in the group, did not realize this at first and had difficulty pronouncing it. He asks the other two partners to provide him with the L1 equivalent, while pronouncing the word wrong. When they point out to him that the word is the same in both Persian and English, Mani gets angry at himself for not having recognized it, as can be indicated by him uttering "[Ugh!, ok, ok, ok, ok!]"(lines 9-10). Mani's "ugh" is a self-criticizing remark, followed by him repeating the word "OK" over and over to himself, trying to recognize his mistake and prevent making it another time. By doing this, he seemed to be trying to focus on other important parts of the task, as opposed to the unnecessary mistake he had made.

Excerpt 3

1. Mani: kenti, kentigrad (wrong pronunciation) *chi mishe?*
2. [What does kenti, kentigrad (wrong pronunciation) mean?]
3. Foad: *Chi?*
4. [What?]
5. Mani: Centigrade (pronounced /**Sentigrad**/) *chi mishe?*
6. [Centigrade, (pronounced /**Sentigrad**/) what does it mean?]
7. Foad: *hamoon sanigrad e khodemoon*
8. [It's the same for us (in Persian)]

9. Mani: *Aaah! Khob, khob, khob, khob.*
10. [Ugh! Ok, Ok, Ok, Ok.]

(Group work, Reading a text on global warming, December 2013)

Data analysis revealed that learners used self-talk in their speech as a means of ‘mediating mental functioning’ in complex cognitive tasks (Lantolf & Thorne, 2006). In many instances, they used L1 to serve them cognitive, metacognitive or affective functions. For example, Mani, when reading the English texts, sometimes evaluated the L2 text and produced L1 utterances such as “*in ke hichi*” meaning [this is nothing] or [it’s easy], and “*inam ke fahmidam* [got this too]” in his private speech. When interviewed later, he reported that doing this helped him focus his attention and direct his thinking to more complex parts of the L2 text. He stated that “*injoori havasam bishtar jam e ghesmat haye sakhtesh mishe* [in this way, I can focus better on the more difficult parts]”. It could be inferred that Mani’s evaluative statements in L1 had an affective function too, [“I don’t have to worry about this”]. L1 motivational statements such as the ones uttered by Mani were used by other learners and it might have helped them focus their attention on more difficult parts of the text.

“Learners use language for strategic purposes, one of which is to mediate their own activity through private speech” (DiCamilla & Antón, 2004). Mani used L1 for self-talk at points where he faced comprehension difficulty during reading. Sometimes, when he faced a problem, he asked for help from other learners. After being provided with help, he used L1 and produced the utterance “*Aha gereftam*”, [Oh, got it.]. Later, in the informal follow up interview, he commented that in this way, he gained control over his ability to think, remember, and learn. Mediational function of his private speech was further supported by his comments in the follow up interview data. He reported that,

Excerpt 4

*shakambartarafmishe... Chiziro ke midoonam rahat tar minevisam
ya anjam midam. ... Motmaen misham miram ghesmat e ba'adi.*

[It removed any doubts I had, ... and so I wouldn't get stuck on
a task. ... I'm sure, so I can continue on to the next part.]

(Interview with Mani, October 2013)

L1 UTTERANCES IN PAUSE FILLERS

One way in which learners used L1 private speech was as pause fillers. Pause fillers consist of meaningless sounds such as “um, er, uh,” etc. as well as random utterances which learners use to buy time. They are often used by learners to help focus their attention or to plan their next utterance. These are followed by a pause and indicate a thinking process. For this study, pause fillers such as “um, er, uh” were not counted or included for the analysis, and only L1 pause fillers were taken into account. Examples of L1 pause fillers from the data include “*Masalaaaan*” (drawn out) [for example], “*chiz*” [the, like], “*migeeee*” (drawn out) [it says], and “*misheeee*” (drawn out) [it means]. These L1 utterances usually functioned as a search process for the learners, in order to avoid distractions and to gain sufficient time for thinking up an answer. In order to judge the effectiveness of the pause fillers, they were coded for a second time as ‘effective’ or ‘ineffective’. If the pause-fillers were accompanied by correct answers from the learners, they were coded as ‘effective’, and if they were not, they were coded as ‘ineffective’. Analysis revealed that the number of instances of effective searches were much more than the ineffective ones. This indicates the positive role of L1 on learners’ cognitive processes. Such L1 utterances assisted learners to avoid distraction and focus on the specific problem.

Excerpt 5

1. Mani: *in chi mishod? Mishod (drawn out). Gofiti ha, madeye ghazayi dige?*
2. [What was this again? It was *(drawn out)*. You just told me, nutrients, right?]

(Pair work, Reading a text on why exercise is important, October 2013)

Excerpt 5 exemplifies an effective use of L1 as a pause filler in learners' private speech. Mani, a low proficient learner, while thinking about the word 'nutrient', whose meaning he had been told before, uses the drawn out utterance "*mishod*" as a pause filler, following a self-addressed question "*in chi mishod*" [What was this again?]. His question is obviously rhetorical, as he goes on to say that he had been given the answer to it before, and then answers his own question followed by an L1 utterance "*dige*" for seeking confirmation. The pause filler '*mishod*' in this instance could have functioned as a way for Mani to organize his thoughts, and search for the correct L2 word. The pause filler gave him enough time to be more focused and gather his thoughts, and finally come up with the correct answer. Hence, the pause filler proved effective in this instance. Doing this, Mani is trying to internalize what he had been told previously. So, it can be argued that L1 private speech is a transition phase for Mani to make social speech become inner speech and it is part of his internalization process. His private speech acts as a tool to mediate both his thinking as well as his learning.

L1 SELF-ADDRESSED QUESTIONS

Another group of L1 utterances used in learners' private speech was self-addressed questions (n=12). These included questions directed to the self and not intermentally to others. These kinds of questions, even in a social setting, are ignored by other participants and might be answered immediately by the individual himself. These utterances have regulatory functions. Functions such as self-regulation, managing thought process, task orientation, and lexical search are reported in previous studies for these questions. These L1 utterances mainly functioned as a search process for the learners in this study. Learners used them to direct their thoughts towards a specific item and be more focused on a problem.

Excerpt 7 is an example for the use of L1 which is taken from Matin and Arash's pair work. It exemplifies the metacognitive function of private speech as a "problem solving tool" (Centeno-Cortés & Jiménez Jiménez, 2004, p. 11).

Excerpt 7

1. Matin: when a lot of water covers an area that is usually (dry),
Aha flood ham
2. *mishe + bala payin shodan e ab masalan too darya+*
3. [when a lot of water covers an area that is usually (dry)
Oh, and **flood**
4. means + the rising and falling of water, like in the sea+]
5. Arash: *Na, flood misheee* (drawn out) +++*baroon mishe?* +++
Seil, seil.
6. [No, **flood** means (drawn out) +++ does it mean rain?
+++flood, flood]
- 7.
8. Matin: *Seil?*
9. [flood?]
10. Arash: *Are flood mishe seil.*
11. [Yes, **flood** means flood]

(Pair work, Reading a text on earthquakes, December 2013)

In the excerpt above, when the learners were engaged in reading the L2 text, Matin had a lexical problem. He did not know the meaning of the word ‘flood’. Matin referred to the glossary beside the text and read the definition aloud (line 1- 4) but did not finish the sentence. However, he got the wrong meaning from the glossary definition. Arash realized that the meaning was not correct, but he himself could not recall the correct one immediately. Arash used L1 in two utterances which seemed to help him remember the L1 equivalent for the word ‘flood’ (line 5). His tone of voice and the way he uttered ‘*mishe*’ indicate that he was thinking and wanted to take his time. After a pause, he produced a self-directed question “*baroon mishe?*” [Does it mean rain?]. He was not seeking a response from Matin and this was not intended at his partner because it was Matin who had started the query in the first place. From the context, it is evident this is a self-addressed question to regulate his own thinking and gain control over his abilities to retrieve from memory the L1 equivalent. Here, private speech is the site where a lexical search took place. Finally, the question was answered not by the listener but by the speaker when he remembers the L1 equivalent for ‘flood’ and utters “*seil, seil*” [flood, flood] in line 5.

Similar to pause fillers, the L1 self-directed questions were coded for a second time as ‘effective’ or ‘ineffective’. That is based on the search results, if they were followed by correct answers from the learners, they were coded as ‘effective’, and if the search was not successful, they were coded as ‘ineffective’. In Excerpt 8, Mahdi produced two self-addressed questions in his private speech. The paragraph the learners were reading at the time was about how exercising makes one flexible. The first L1 self-addressed utterance assisted him in remembering what he was looking for, as indicated by his utterance “*Aha!* [Oh!]”. However, the second one was an ineffective search, as indicated by his L2 utterance “I don’t know”, which came after a long pause. He used self-addressed questions in order to direct his thoughts towards a specific objective so that he could retrieve information from memory. However, this instant may have been ineffective because he might have had any relevant prior knowledge about the topic and thus a transfer of function from the social to the cognitive domain may not occur.

Excerpt 8

1. Mahdi: And not flexible. And + *dige chi bood?* +++ *Aha!* In young,
2. younger, for example 18,...
3. [And not flexible. And + what else? +++ Oh! In young,
4. younger, for example 18, ...]
5. Mahdi: *chera mige ke injoori mishe?* +++ I don’t know.
6. [It asks why this happens? +++ I don’t know.]

(Group Work, Reading a text on why exercise is important, October 2013)

Functions served by self-addressed questions were not limited only to the L1 lexical searches or to looking for meanings. In a few instances it was seen that learners utilized L1 in their self-addressed questions in search for correct L2 pronunciation. These self-addressed questions were followed by a few attempts at properly pronouncing an L2 word. They would usually utter both the wrong and the right pronunciation, and then decide which one was right.

It was observed that in a few instances in the data where learners used self-addressed questions for L2 correct pronunciations, they proved effective. For example, in one instance when Salar was asked on how

this repetition helped him, he answered with “*Injoori mifahmim kodum ghashangtare*. [It lets me know which sounds better.]” By this, he is indicating that one pronunciation is more familiar to him than the other.

L1 SELF-ADDRESSED EXPLANATION

Moreover, learners used L1 in their self-addressed explanations (n=15). Excerpt 9 is an example of use of L1 for self-addressed explanations where Mahdi used L1 in his private speech to make sense of a part of the reading text which was challenging for him. Mahdi and his partner were reading a text about earthquakes, and the sentence under question in Excerpt 9 was “This is because several million earthquakes occur each year.”

Excerpt 9

1. Mahdi: (quietly) *tedad e maadood e milionha!* +++ (Can’t make sense)
2. (quietly) [A small number of millions!] +++ (Can’t make sense)

(Pair work, Reading a text on earthquakes, December 2013)

At first, Mahdi did not know the meaning of the word ‘several’, and asked his peer, Salar, for the meaning. After being provided with a meaning by Salar, he tried to substitute it into the sentence. In this way, he tried to resolve the conflict between words whose meaning he already knew and the meaning for the word ‘several’ offered by Salar, through explaining and translating to himself. However, the sentence as a whole did not make sense. As a result of this, the meaning provided by Salar was rejected by Mahdi and then he called the teacher for help. Mahdi’s behavior in resolving his problem using L1 indicates the role of his L1 in making sense of the L2 text. He used L1 as a cognitive tool to assist him to regulate his mental function and maintain self-regulation.

Excerpt 10 is an evidence of Matin’s use of L1 self-addressed explanation in his private speech. It is taken from Matin and Hasan’s interaction data, and illustrates an evidence of learner’s use of L1 in reading

L2 for making more meaning out of the text. Matin, at one point, appears to be attempting to make an explanation and ignores his peer's input, but he stops soon to explicitly state that he is explaining for his own sake, and not for the peer. In the excerpt, Matin reflects on what he was doing during reading a challenging part of the L2 text, and that it served metacognitive function for him. The two learners were engaged in reading a text on global warming. Matin, after reading a sentence, which was a definition for 'climate change', tried to make sense of the sentence. He did not know the meaning of 'pattern' and looked it up in a bilingual dictionary, and then read the meaning out loud (line 1-3). Matin was trying to make sense of the challenging part of the text, and ignored Hasan's offer of help and input (line 5), and reread the sentence again (line 7). He then produced the utterance 'Aha' [Oh] which indicates he finally made sense of the sentence. This is further supported by his attempt to go ahead and explain the sentence when produced the L1 utterances "dare mige" and "vaghti mige" [It's saying that]. He attempts to intramentally clarify his understanding of the text; however, as we see, he did not finish his translation of the sentence and instead had a social speech with his partner. What Matin said to his partner (lines 13-18) is further evidence of L1 use in his private speech to make more sense of L2 text. And that at that point, he preferred his own self-talk to regulate his learning and not the peer's other mediation.

Excerpt 10

1. Matin: general patterns, ++ patterns mean (looks up dictionary)
+++
2. patterns means *tarh, olgoo*.
3. [general patterns, ++ patterns mean (looks up dictionary)
+++
4. pattern means pattern, design]
5. Hasan: *khob az khodam miporsidi dige*.
6. [You could have just asked me]
7. Matin: climate change is a change in these general weather, *aha*,
dare
8. *mige bar hasb e, vaghti mige ye*
9. [climate change is a change in these general weather,
10. oh, it's saying that, based on, when it says a]
11. Hasan: *ye olgoo*

12. [a pattern]
 13. Matin: *na! vaghti mige* (did not finish his sentence). *Agha, man ke*
 14. *daram tozih midam manzooram in nist ke to nafahmidi.*
Vase
 15. *khodam chiz mikonam, tozih midam.*
 16. [No! When it says (did not finish his sentence). Dude, I'm not
 17. explaining because I think you don't understand, I'm
 18. explaining it for myself]
 19. Hasan: *midoonam. Begoo.*
 20. [I know. Go on.]

(Pair work, Reading a text on global warming, December 2013)

Matin explicitly verbalizes that his use of L1 when attempting to translate and explain the L2 text is for his own understanding and his own thinking process. As evident in lines 13 to 18, he emphasizes that it was not socially directed at his partner, but meant for himself. In line 16, when Matin said “No”, he meant it as “don’t talk, I’m thinking”. He then realized that his tone of voice was harsh, and so explained that he was thinking out loud to himself. Matin’s L1 speech (lines 7-10) seemed to be communicative; however, this was also directed to self. This indicates his use of L1 as a cognitive tool to control his own cognitive process.

L1 SELF-ADDRESSED NEGATION

In few instances learners used L1 in self-addressed negation (n. 6). This was an indication of noticing their mistake and a possible change in their behavior. Excerpts 11 and 12 exemplify learners’ L1 in their vocalized private speech negation which functioned as noticing a mistake and attempting to correct it. In Excerpt 11, Matin and Arash are reading a text about earthquakes. Matin had just learned the word ‘though’ in the paragraph previous to this excerpt. The sentence he is attempting to read below is as follows: ‘It is thought that about 700 shocks each year have this power’. While reading, he says “though” instead of ‘thought’. But he immediately notices his mistake and produces an L1 self-addressed negation “*Na!* [No!],

followed by a self-addressed explanation to further remind himself of the correct term. However, we do not get to see how useful this private speech was for Matin as Arash had already jumped in and read out the term correctly while Matin was still attempting to continue reading. Matin realized it was Arash's turn to read, and stopped reading.

Excerpt 11

1. Matin: *khob, It is though, Na! inja **though** nist dige, are,*
=(overlapping) *Aha! toyi.*
2. [Well, it is though, No, it's not '**though**' here, yeah,
=(overlapping) Oh! it's
3. your turn (to read).
4. Arash: =(overlapping) It is thought that about 700 shocks each
year ...

(Pair work, Reading a text on earthquakes, December 2013)

Another example, taken from whole class interaction data, illustrating self-addressed negation is in excerpt 12. The sentence learners had just read was 'With this in mind we have to think of the costs of action and weigh them against the risks of inaction'. In the excerpt, the teacher is asking the learner about the referent of the word 'this'. Iman gives a wrong answer at first, but he quickly produces a self-addressed negation as he notices his mistake, [No], makes a short pause, and then comes up with the correct answer.

Excerpt 12

1. Teacher: With this in mind, with what in mind? 'this' refers to?
2. Iman: Global warming, *na!* [no] + effects of global warming
3. Teacher: possible effects of global warming

(Whole class, Reading a text on global warming, November 2013)

L1 SELF-ADDRESSED DIRECTIVE

In only 2 of 119 L1 private speech utterances did self-addressed directives occur. Excerpt 13 is taken from a group interaction of three peers, Mahdi, Hadi, and Foad. They are reading a text on why exercise is important. Mahdi, the lower proficient learner, is reading aloud from the text, and does not know the meaning of the word “function”, and his rising intonation implies that he needs help. Hadi does not know the meaning either. Foad answers wrongly, notices his mistake and immediately produces an L1 self-directed negation, followed by an L1 self-addressed directive “*Vaista!* (wait!)]. He gives a short pause, and then when he is unable to provide L1 equivalent for ‘function’ he uses L1 intermentally directed to peers and asks to see the part of the text as reference.

Excerpt 13

1. Mahdi: You need callories for all your body’s func, function, function?
2. Hadi: **function** *chi mishe?*
3. [What does **function** mean?]
4. Foad: *harekat. Na! vaista. + matn ro bebinam. Kojast?*
5. [Movement. No! Wait. + let me see the text. Where is it?]

(Group work, Reading a text on why exercise is important, October 2013)

DISCUSSION, IMPLICATIONS AND CONCLUSION

The main aim of the present study was to explore the functions served by learners’ L1 (Persian) private speech in reading L2 (English) texts within the framework of Vygotskian sociocultural theory. This study analyzed Pre-university learners’ L1 private speech utterances in reading L2 texts. Data analysis in this study provided support for the theoretical orientation that views dialogue as both a means of communication and a cognitive tool. According to Vygotskian sociocultural theory, speech has dual mediational macrofunctions - a primary function, to mediate our social activity, and a secondary function, to mediate our mental activity (Appel & Lantolf, 1994). L1 Private speech observed in the data displayed a variety of regulatory

functions. In some instances, it was used to reduce anxiety and the affective load. In other instances, it functioned to retrieve information and knowledge from memory or confirm own comprehension or to make sense of L2.

It can be concluded that as learners' L2 was not fully developed to mediate their thinking processes, L1 was used in a self-regulatory manner to do so. The texts in the learners' textbooks were challenging and required learners to integrate their L2 knowledge with their knowledge of the world acquired through their L1. The SCT view that self-regulation occurs more frequently in cognitively demanding contexts was supported. When the text became difficult to understand, learners utilized L1 to assist them in different ways, affectively to decrease anxiety and motivate themselves, and cognitively to deal with the cognitive challenges. Use of L1, for example when repeating vocabularies and explaining meanings of difficult parts of the L2 text confirms the use of language as a cognitive tool and indicates learners' active participation in their own process of learning. This is consistent with Dicamilla and Anton (2004) argument that in collaborative context too learners mediate their own activity through private speech.

DiCamilla and Antón (2004, p. 41) argue that "language use is not restricted to the exchange of information. Learners also use language for the strategic purposes, one of which is to mediate their own activity through private speech." According to SCT, private speech plays an important role in the movement from interpersonal mediation to independent problem solving. Swain and Lapkin (2013, p.113) state that language mediates cognitively complex thinking, and that the first language is the most powerful tool for doing so. They further argue that "emotion and cognition together drive learning" (p. 114). Analysis of functions revealed that learners used L1 private speech as a tool to mediate and direct their thinking. For example, Self-questioning, repetition, and producing utterances such as "*Mige ke*", [it says that], and "*Aha, gereftam!*" [Oh, got it] were observed in data and served the function of focusing learners' attention on the task or the linguistic problem they were trying to solve. In some instances, it helped them to retrieve knowledge from the memory and make meaning of L2 text in their own minds as well. L1 affective utterances were used by learners to relieve their tension and anxiety and as it was evident from their reflections during the follow-up interviews, L1 private speech played an important role in their verbal thinking which eventually contributed to their self-regulation

and problem solving and allowed learners to “control both themselves and the problem” (DiCamilla & Anton, 2004).

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