

A Memory-Based Processing Approach to Training Student Interpreters

Prof. Anis Behnam Naoum, PhD
Department of Translation, College of Arts, University of Mosul, Iraq
E-mail: anisbehnam@yahoo.com

Barham Sattar Abdulrahman, MA*
Department of English, School of Basic Education, University of Sulaimani, Iraqi Kurdistan Region
* E-mail: barham_star@yahoo.com

Abstract

This study demonstrates that adequate training of the students to fully use of their memory enables them to enhance their translation ability, overcome translation problems, and avoid communication failure. The study argues that failure in any oral translation task, including interpreting, could be attributed to the role of memory (in comprehending and producing oral texts); the more the memory is trained to keep as much information as possible, the easier the interpreting task and the less likely the failure is. To investigate the role of memory in interpreting and how it influences (positively/negatively) the process and product of interpreting, the researchers designed two questionnaires: a quantitative one for the 4th year students at the Department of English, School of Basic Education, University of Sulaimani, and a qualitative one for the translation lecturers, and a videotaped test for a sample of five best students. The data has been analyzed according to a well-specified set of criteria including the linguistic input (e.g. difficulty and structural complexities), background knowledge, and some basic cognitive processes required in interpreting (e.g. attention, associations, inferencing, etc.). This study contributes to research on translation studies and it may yield certain pedagogical implications.

Keywords: Long-term and Short-term memories, Text comprehension and production, Interpreting, Information processing.

1. Introduction

Memory plays an essential role in the process of oral text comprehension and production in a simultaneous translation task (henceforth interpreting will be used instead); it could be also one of the reasons why the interpreters' translation preferences differ.

Comprehension failure has been usually attributed to difficulties in the comprehension of the linguistic input (whether structural or functional); however, failure to interpret due to linguistic difficulties is a result, but not a cause. Comprehension failure is to a large extent related to other problems in the interpreter's storage and/or retrieval of some information pertinent to what is to be interpreted; for 'one cannot get out what one has not put in'. Therefore, understanding a text is not possible unless the memory is continuously consulted whether for deciding what to devote attention to, associating information with other known items, or for recalling information that is needed to understand the oral text. Therefore, this study hypothesizes that adequate training of the students to fully use of their memory enables them to enhance their translation ability, overcome translation problems, and avoid communication failure. It is also hypothesized that failure in any oral translation task, including interpreting, could be attributed to the role of memory (in comprehending and producing oral texts); the more the memory is trained to keep as much information as possible, the easier the interpreting task and the less likely the failure is.

In section (2) some basic facts about oral text comprehension and production will be stated with regards to the role of Short Term Memory (STM) and Long Term Memory (LTM). Some basic cognitive processes and certain constraints of the memory system will also be highlighted. Section (3) briefly highlights the role of educational approach to interpreting. The data analysis in section (4) will be based on (2) and (3) above as well as the set of criteria mentioned earlier.

2. Memory in Oral Text Comprehension and Production

A set of memories is said to be responsible for oral text processing and comprehension: Sensory memory (SM), Short Term Memory (STM), and Long Term Memory (LTM)²; the last two play a major role in text comprehension. It is assumed that STM holds some segmented sentence representations; that is, information that is necessary only for some immediate use, and it contains pointers to previously foregrounded information in

¹ This dictum, cited in Clark and Clark (1977: 136) seems to have its origin in the New Testament "Out of the flow of heart, the mouth speaks." (Mathew, 12: 34)

² For other types of memory, see Ericsson and Kintsch, 1995.

LTM as well as information needed to modify foregrounding for the next sentence (Bourne et al., 1979: 4; Perfetti and Lesgold 1977: 148). Information in STM is subjected to a constant process of rehearsing or it is associated with information which is known, and hence transferred to LTM for more permanent representation (Bourne et al. 1979: 4, 53).

LTM, on the other hand, refers to a more durable store of information that could be retrieved whenever there is a need to do that. LTM is traditionally thought to consist of two-information systems (or sub-memories), viz. episodic memory (EM) and semantic memory (Sem. M) as well as a procedural memory (Procd. M), (Hintzman, 1978: 55; Bourne et al. 1979: 96; Schaefer, 1980: 321; MacCorma, 1985: 129; Lund and Burgess, 1996: 203; Ferret and Grau, 1997: 176). These two-information processing systems selectively receive information from perceptual and cognitive systems, retain various aspects of that information, and transmit it when needed (Bourne et al., 1979: 96). However, the processing labor seems to be divided between these systems. EM stores events and relations among them, i.e., it organizes specific situations in time and space, whereas Sem. M is the memory for language, i.e., a person's organized knowledge of words, structures, meanings, rules, etc. Procd. M, on the other hand, consists of schemas which serve in the translation process for remapping across culturally bound form-function sets. "These schemata are knowledge organizational structures stored in memory and they undergo successive transformation or modification during the process of [translation]" (Shreve, 1997: 130). In other words, Procd. M is responsible for what one can do with facts, concepts, and episodes, as opposed to what those entities are. It tells how the environmental information becomes represented in memory, and how information from memory are activated and retrieved.

Comprehension is realized through certain steps starting from the construction of propositions¹ to organizing them into a whole structure representing the fact² of the message, i.e., constructing a mental model of the text (van Dijk, 1980: 207). Central to these cognitive processes is making inferences to bridge the gaps in the mental representation of the text and the selection of appropriate configuration of schemas³ to account for a situation (Rumelhart and Norman, 1978: 43).

As regards production, many models have been suggested by scholars in the field; however, we find Mondhal and Jensen Model of text production (1992) promising and the most relevant to our investigation of interpreting. The model is cognitively based; its framework is set up on the basis of what memories should be able to provide concerning processing of linguistic knowledge in connection with an interpreting task (e.g. mental representation of an event, and retrieval of information when it is needed).

The model has two basic elements: a knowledge-base and the procedures which account for this base; it focuses on what linguistic knowledge the interpreter uses, how often s/he uses it, and how it is represented.

Two types of processing, in relation to interpreting tasks, are highlighted:

1. Automatic information processing which is triggered by certain signs in the surrounding world. That is, the interpreting task is carried out by means of some patterns activated unconsciously, hence termed skill-based knowledge.
2. Controlled processing which is characterized by its ability to be adapted to new situations. The translation task here is carried out in terms of the declarative knowledge, hence termed knowledge-based knowledge. Since the declarative knowledge might undergo some changes and, hence, require restructuring of knowledge representations, another type of knowledge eliciting could be detected depending on rules -viz. rule-based knowledge.

The model, to be noted, uses 'knowledge' to mean the total mental activity behind any linguistic activity whether conscious or unconscious.

3. Approaches to Teaching Interpreting

As regards teaching interpreting, many approaches have been suggested; some are linguistic others educational. Building on the researchers experience in the field of translation, educational approaches are of the greatest benefit not for students of translation/interpreting only but also for the translator/ interpreter trainers.

Educational approaches to learning/teaching process, including translation of all its types, are basically either student-centered or teacher-centered; the latter, as usually vouched by experts in the field, proved frustrating for the students. The application of the educational approaches to translator training focuses on the process of translation from different perspectives rather than the product of translation: Teaching objectives based on contrastive-linguistic activities (Delisle, 1993); a functional model for text analysis based on simulating professional practice (Nord, 1991); how to go about the process and gradually acquire professional expertise (Gile, 1995); the centrality of the self-concept and authentic translation practice (Kiraly, 1995 and 2000); the role

² "Propositions are conceptual structures that are the minimal bearers of truth or satisfaction." (van Dijk, 1980: 207)

² "A fact is the cognitive representation of an event, action, or state of affairs taking place at a particular time, at a particular place, under certain circumstances, and in a particular possible world." (ibid)

³ Schema in this definition is seen "as a general model of a situation." (Rumelhart and Norman, 1978: 43)

of the teacher as initiator in the process where both procedural and declarative knowledge are practiced and explored (Gonzalez Davis, 2004).

The current work supports all the above mentioned educational approaches as a whole; it emphasizes the process of interpreting and the role of the student interpreters in it as well as the role of memory training as a basic requirement of the success of the translation process.

4. Procedure and Data Collection

To investigate the role of memory in interpreting and how it influences (positively/negatively) the process and product of translation, the researchers designed two questionnaires (cf. Dörnyei, 2003: 25-30): a quantitative one for the 4th year students at the Department of English, School of Basic Education, University of Sulaimani who had a course in translation in the 3rd stage. The questionnaire consists of two types of questions; the first tries to detect the linguistic abilities of the respondents; the other checks some of their cognitive memory-based abilities. A second qualitative questionnaire is designed for the translation lecturers; it consists of ten items, all are mainly concerned with the cognitive memory-based issues in interpreting. A video-taped test for a sample of five best students (according to their academic records, achievement and practical experience) is designed to check their interpreting ability. The test consists of only one text of moderate difficulty. The text sample is delivered to the students with varying speed. The data has been analyzed according to a well-specified set of criteria including the linguistic input (e.g. difficulty and structural complexities, figurative language, etc.), background knowledge, and some basic cognitive processes required in interpreting (e.g. attention, associations, inferencing, etc.).

5. Data Analysis and Results

5.1 Lecturers' Questionnaire

The analysis of the five lecturers' questionnaire (See Appendix, B) as shown in the table below reveals the following (notice that L, M, and H stand for low (less than 50%), moderate (less than 80%), and high (more than 80%) in terms of their awareness of interpreting strategies and interpreting processes:

Lecturers' awareness of interpreting strategies & processes										
Qs.	1	2	3	4	5	6	7	8	9	10
%	40	60	60	40	100	60	100	60	100	80
Total	L	M	M	L	H	M	H	M	H	H

1. Only 40% of them highlighted the importance of using certain strategies to overcome the speed of text delivery. However, the methods they use (what, when, and how) are not quite clear.
2. 60% of the lecturers encourage their students to chunk the text they are listening to into translation units (short sentences in particular). But none of them mentions how to chunk and when.
3. Approximating the meaning of the unknown linguistic items has been reported to be managed through the general meaning of the text (60%). However, none of them states how to manage this interpreting problem; could the general meaning be extracted from individual lexical items, the text domain, the speaker's non-verbal behavior, etc.
4. As regards settling students' interpreting choices, only 40% of the lecturers claim to concentrate on (and improve) specific skills and linguistic abilities that the students own. None of them, however, referred to inferences (or other pragmatic considerations) the students might draw from the linguistic and non-linguistic contexts.
5. Managing time pressure seems to be one of the most important issues the lecturers take into account while teaching interpreting. All the lecturers mention one linguistic/cognitive strategy or translation behavior to manage this serious issue, e.g. skimming the text and leaving the minute details, keeping calm, relying on the gist of the text, raising attention and listening carefully, note-taking, etc.
6. Raising students' attention is also the priority of 60% of the lecturers. Some claim that certain types of non-verbal behavior including silence are effective in raising the amount of attention required for performing a simultaneous task successfully; others resort to encouraging students make use of their own ways which satisfy the implementation of the interpreting task.
7. All the lecturers do not seem aware of the role of the STM in the translation process. Training the STM to keep (-/+ 7) items is prerequisite in a simultaneous translation act. Keeping 5-9 items should be a teaching objective not a matter related to the students' ability as some would claim.
8. 60% of the lecturers are quite confident that reliance on the students' first language or guessing could be helpful in case the set of memories fail them processing or retrieving information. However, it is vague as how the students' first language serves as a managing strategy. This could be no more than time consuming which, in turn, lead to either literal translation or a partial meaningless one.
9. All the lecturers believe that guessing could be the last translation solution. However, none of them

seems to be aware of the risk of deciding on this strategy. Guessing as a final solution to interpreting problem should be based on a broad experience about the text domain and translation competence.

10. All the lecturers except one (i.e., 80%) seem to encourage lagging only one step behind the speaker while interpreting; lagging behind more than one step could be risky. This could be an evidence that they are not aware of the importance of lagging behind two or more steps which contributes to professional performance in the field.

5.2 Students Questionnaire

The 20-item students' questionnaire (See Appendix, A) consists of two types of questions: the first ten items (1-10) are intended to detect the respondents' linguistic and communicative competence through their choices of the most reliable ones; the second ten items (11-20) check the interpreting competence of the interpreters through the use of the basic interpreting processes. The scoring of the highlighted choices in the students questionnaire are, to the best knowledge of the researchers as specialists in the field of study, more indicative about what is actually required in interpreting. Therefore, only these percentages will be relied on in the analysis. To be noted, each item left unanswered by one respondent will be distracted from the overall percentage of the mostly required choices (4%); these items are marked by an asterisk. The following table represents the frequency and percentage of the respondents' performance as well as their total performance depicted as Low (L) if less than 50%, Moderate (M) if less than 80%, and High (H) if more:

Qs.	Respondents' Linguistic and communicative competence										Respondents' Interpreting Competence									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Freq.	16	15	18	21	20	14	11	24	17	9	15	22	9	16	18	19	9	20	8	14
%	60	60	68	44	80	52	44	96	64	36	60	84	36	64	68	76	63	76	32	56
Total	M	M	M	L	H	M	L	H	M	L	M	H	L	M	M	M	M	M	L	M

1. Does familiarity of the text make any difference in the process/product of interpreting?*

The statistical results of the first item of the questionnaire show that (40%) of the respondents believe that the familiarity of the text facilitates the process of interpreting, (24%) makes the whole process smoother, (16%) affects their interpreting decision, and (16%) influences the product quality. Only (4%) of the participants left this item unanswered, probably either due to carelessness or interpreting incompetence. (32%) of the respondents seem to look at familiarity in the sense of background knowledge the interpreter has about the text not the text type/genre itself. However, nearly all the answers (96%) highlight, in a way or another, the students' awareness of the essential role of familiarity of the text to be interpreted. The most reliable choices of the respondents constitute 64%.

2. Does the ability to maneuver (add, delete, paraphrase, generalize, substitute, foreground, etc.) overcome the speed of delivering the text?

(12%) and (48%) of the respondents claimed that they always or usually maneuver to overcome the text delivery speed, respectively. (36%) sometimes use interpreting strategies to prevail the velocity of the text transmission. Only one respondent (4%) claimed that such ability does not help him overcome the speed of text delivering. The most reliable choices of the respondents constitute 60%. This indicates that maneuvering has been understood by (40%) of the respondents in a negative sense; that is, maneuvering is not a basic translation strategy; rather a means resorted to only when they feel that their lexicon fails them.

3. Which do you pay more attention to the co-text or the context?*

As regards the students' attention to the role of co-text in the process of interpretation, only (28%) take the syntactic structures, and what goes with what in the text into account, (12% and 16%) respectively. On the other hand, (72%) of the respondents highlighted the role of context of situation and its relationship with the form of the text in interpreting (24% and 48%, respectively). The rest of the respondents (4%) did not tick any option. The most reliable choices of the respondents constitute 68%. The reason behind ticking choices (a) and (b) (i.e., 28%) could be attributed to the fact that Kurdish EFL learners, in general, heavily rely on the grammatical aspects of language rather than the communicative ones.

4. Which of the following makes the process of interpreting easier: the linguistically-easy text or the ability to relate events and actions together?

Responses to the 4th item of the questionnaire show that both the simplicity of the text and the ability to relate events and actions together contribute to the easiness of the interpreting task (52%). The purpose of interpreting and the overall meaning both constitute (44%), (12% and 32% respectively). The results show that only (4%) of the respondents rely on syntactic and semantic unites to make the interpreting process easier. If we take into account that choice (a) which constitutes (52%) is real in the respondents actual act of interpreting, then the results show that the respondents rely on deductions more than inductions which, in turn, indicates a good understanding of the interpreting process.

5. Which textual elements do you rely on heavily?

Regarding the textual elements that the respondents rely on while they interpret, the results show that (48%) of them depend on paragraphs, (32%) on sentences, (12%) on verb phrases, and only (8%) on noun phrases. The total percentage of the most reliable choices is (80%). This conforms to a great extent with their responses to the previous item; that is, they rely more on deduction than induction.

*6. To what extent your identification of the intentionality of the speaker is taken into account? **

The respondents' answers to the 6th item manifest that identifying the intentionality of the speaker is a prerequisite; it constitutes (56%) distributed on 'always' (20%) and 'usually' (36%). Those who sometimes take this item into account constitute (36%). On the other hand, only (4%) believe that identifying the speaker intentionality is not an important matter in interpreting. The (56%) of the most reliable choices indicates that the respondents' awareness about the pragmatics of the interpreting tasks is not enough to yield an adequate communicative act through interpreting.

7. Do you rely on other languages (e.g. first language) when you interpret?

As regards the 7th item, (20%) of the respondents always rely on their first language, (36%) usually do that, (36%) sometimes, and only (8%) stated that their mother tongue never interferes in the interpreting process. The rate of the most adequate choices (44%) does not seem encouraging in an interpreting task, for interference of any other language in the interpreting process usually lead to communication failure.

8. What unit of translation do you rely on when interpreting?

Most of the respondents either rely on a conceptual unit (56%) or a sentence (40%). Those who rely on phrases constitute only (4%) of the respondents; whereas none of them rely on words as interpreting units. This high percentage of correct choices (96%) means the whole text rather than small units is preferred or relied on by the respondents.

*9. To what extent you rely (access and use) on your background knowledge?**

The respondents' answers to item No. 9 show that (36%) of them have frequent access and use of background knowledge, and (32%) only when the problems arise. These percentages evidently show the respondents' awareness of the vital role of the background knowledge; it is not unusual that the interpreters with enough background knowledge can do their work better. Some other respondents make use of it only when they have enough time (24%) or when figurative language is required (4%). This, undoubtedly, seems strange if we take into account that knowledge is triggered in the mind; it does not need a specific amount of time to be retrieved from the LTM.

10. How do you approximate the meaning of unknown linguistic items?

Concerning item No. 10, the respondents approximate the meaning of the unknown linguistic items in two ways: (64%) of them via lexical relations, and (36%) do so through associations. None of them, however, approximate it through phonological similarities or through problems experienced before; undoubtedly, negligence of the latter indicates lack of interpreting experience. The low total percentage (36%) of the most reliable choices is an indication of lack of experience and training in interpreting.

11. How do you settle your interpreting choices?

A good number of the respondents to the 11th item (40%) do settle interpreting choices building on personal experience, (28%) on the grammatical system, (20%) on hypothesizing meaning, and only (12%) on stylistic preferences. A great part of the responses contradict with item 10 above; how can they settle their translation choices building on their personal experience (40%), whereas none of them in the previous item considered the role of similar problems faced in past interpreting sessions. Therefore, the total (60%) obtained from the respondents is to great extent suspected unless their performance in the test proves the opposite.

*12. How often do you make use of inferencing (or generating inferences)?**

Concerning generating inferences during the interpreting process, (68%) of the respondents sometimes make use of inferencing and (20%) usually resort to it; this goes with the respondents' answers to items 4 and 5 where deductions rather inductions are relied on. (8%) always do that whereas none of the responses denied the essential role of making inferences in interpreting. The positive result (i.e., 88%) indicates a good theoretical level of the respondents' knowledge of the basic role of inferences in an interpreting task.

13. How do you manage the pressure of time while interpreting?

When it comes to time management of interpretation, i.e., how to manage the time pressure that interpreters face, the respondents claim to use different techniques: (52%) avoid complicated structures and turn to literal meaning, (28%) raising attention, (12%) using clichés, and the rest (8%) lagging one step behind. Adopting the 3rd choice, which is the less reliable in an interpreting task, is an indication that the respondents are to a great extent unaware of the impact of this factor in the interpreting process and product. The most reliable choices are the 1st and 4th ones; however, these do not exceed (36%) of the responses.

14. How do you manage issues related to raising attention?

Generally speaking, interpreters face problems in issues related to raising attention. Depending on the data collected in the present study, one can state that the respondents use different ways to manage this issue: (44%),

concentrate on the speaker's non-verbal behavior, (24%) look at the speaker and avoid the audience in order not to be distracted, (20%) focus on the speaker's lips, and (12%), close their eyes while managing this task. Though each interpreter develops certain habits in this regard, still some should be avoided (e.g. closing eyes) in public interpreting sessions. Selecting (a) and/or (b), even so, gives an indication of lack of proficiency. However, the (64%) of the most reliable responses is helpful to a certain extent for beginners to manage an interpreting task.

*15. How do you manage high delivery of speech? **

In order to solve the problem of high speech delivery, (48%) of the respondents manage it by giving the gist of the speech, i.e., interpreting the message content. (24%) add the missing information later when there is enough time to do that. Others (20%) ask the speaker to slow down his/her speech. Yet one respondent (4%) leaves the problematic parts without any interpreting. The (72%) of reliable responses is an indication of good management of speech delivery.

16. How many items (words, numbers, phrases, sentences, etc.) can you keep active in your short term memory?

If we take into account that only professional interpreters with long experience in the field of interpreting might have the ability to keep 1-9 items in their STM active while interpreting, the respondents' answers, as beginners in this field, are promising. With regard to the ability to keep linguistic items in their STM active, (48%) are able to keep 1-5 items, (28%) 1-3 items, and (20%) 1-7 items, and only one respondent (4%) claimed to have the ability to keep 1-9 items active in his STM. As beginners in the field of interpreting, however, keeping 1-5 items active in STM (76%) is by all means promising.

17. If your long/short term memory fails you to process or retrieve specific information, what strategy do you rely on?

Processing or retrieving specific information at a point of time in interpreting can be managed by following different strategies: (56%) of the respondents depend on asking for repetition by the speaker, (20%) guessing, (16%) trying to make choice from the speaker's previous text, and only (8%) resort to ignoring the speaker's speech. The percentage of the most reliable choices (36%) implies that the respondents are not aware of (or acquainted with) the use of interpreting strategies.

*18. How often do you feel frustrated to perform an interpreting task? **

As regards item No. 18, (64%) of the respondents are sometimes frustrated when they perform an interpreting assignment, (16%) sometimes feel frustrated, and the same percentage by those who never feel disappointed. This high percentage (80%) of reliable responses indicates that the respondents have enough self-confidence and motivation to perform an interpreting task.

19. Do you lag more than one step behind the speaker?

Responses to the 19th item show that the majority of the respondents (68%) sometimes lag more than one step behind the speaker, (28%) usually do that, while only one respondent (4%) always does so. None of the respondents seems to lag. This, however, contradicts with what two respondents (8%) claimed earlier in their response to item No. 13 that they resort to lagging one step behind to overcome time pressure. To be noted, lagging more than one step behind the speaker in most interpreting sessions is a must in order to avoid literal interpretation. The low percentage of the reliable responses (32%) indicates that the respondents either lack interpreting competence or enough training to raise the capacity of their STM.

20. Do you rely on guessing the meaning of certain parts of the text as an interpreting strategy?

Guessing is another strategy that is used by the interpreters when they want to interpret and have insufficient information whether their interpretation is correct. (40%) usually guess, (32%) never guess, (24%) sometimes, and only (4%) always. Those who claimed that they never resort to guessing (32%) contradict their answer to item No. 17 where five of them (20%) claimed to do that. Undoubtedly, this is an indication that the respondents are neither aware of the basic role of memory training nor competent in using interpreting strategies.

5.3 Video-taped Test

Five top students (according to their academic achievement and interpreting experience) are selected to interpret a text entitled "*Cell Phones: Hang up or Keep Talking*" (See Appendix, C). The text is of moderate difficulty, but is supposed to be familiar to them since it tackles a topic that is common even to all people. The text is delivered by a competent English lecturer after having received certain instructions about the speed of text delivery which suits the students' level of proficiency. The interpreting sessions are held in the English Department lab to guarantee the best possible interpreting environment.

The analysis of the five interpreting sessions is built on list B items in the students' questionnaire, with reference to list A items and the lecturers' questionnaire when necessary. Such reference would enable the researchers to detect through these criteria the authenticity of the data collected in the questionnaires. The table below depicts the interpreters' performance and management of the interpreting processes and strategies (in the five separate interpreting sessions) in terms of three levels: Low (less than 50%), Moderate (less than 80%), and High (more than 80%). As regards scoring, the total performance of each interpreter has been measured according to the number of misuse of interpreting processes and strategies. Moreover, the total use of each

In general, failure of the interpreters to using strategies or misusing them is not due to certain linguistic considerations, rather to their inability to manage certain cognitive strategies mentioned above. For instance, Interp. 1 failed to interpret “*Cell Phones: Hang up or Keep Talking*” adequately not because of the figurative language used but his inability to deduce the intended meaning through inferring it from the context.

In sum, the researchers' observation of the students' videotaped interpreting performance shows that the familiarity of the interpreters with cell phones and their effects on human's health did not help them much interpret smoothly; though some of their attempts to guessing paraphrasing, giving extra information, and some other strategies sometimes resulted in distorting the SL message. This contradicts with what the interpreters claimed in their answers to questions (2) and (15) of the questionnaire. The use of strategies is low in general; it does not exceed (40%).

All the interpreters did not seem to have any problem as regards attention; their performance and their reaction to the whole task of interpreting in progress indicated full readiness to complete it successfully. This is why all the interpreting sessions went smoothly. It has been observed that all of the interpreters used to fix their eyes on the speaker (probably at his lips) or to observe his non-verbal behavior. None of the interpreters, however, was noticed to close his/her eyes while interpreting as a means for raising attention. However, interpreting without moving hands or using gestures is an indication that the test-subjects are far away from proficiency in this field.

This result conforms to a great extent with the interpreters' answers to item No. (14) in the questionnaire.

It seems that time pressure of the interpreting process has been, in general, managed negatively. None of the interpreters' performance shows any indication that they have received enough training (or trained themselves to improve the capacity) of the STM. The interpreters relied on strategies rather than the cognitive processes to manage this basic issue in interpreting. For instance, all the interpreters left some expressions uninterpreted, e.g. health professionals worried (Sent. 4), the negative publicity of such ideas (Sent.6), change in the tissues of the brain (sent. 9), etc.; avoided complicated structures, e.g. High-tech machines (Sent 17), can be detected with modern scanning equipment (Sent 9); resorted to literal meaning, e.g. regular phone (Sent 20), warning label (Sent 23); asked for repeating, e.g. a travelling salesman had to retire at a young age because of serious memory loss (Sent 10), high-tech machines can detect very small amounts of radiation from mobile phones (Sent 17), etc. Even lagging behind the speaker two or more sentences by most of the interpreters was not a technique used by them to gain time, but a result of failure to catch meaning of some lexical items or figurative expressions. This is evident in the case of Inter.3 who always used to lag behind missing parts of the ST message without interpretation. This, to be noted, does not conform with the interpreters' responses to item (19) of the questionnaire where (32%) of the responses were in favor of lagging more than one step behind the speaker. Moreover, this negative result conforms with the respondents' responses to item (13) of the questionnaire where (52%) reported to rely on avoiding complicated structures and resorting to literal meaning. However, it contradicts with their responses to item (16) of the questionnaire where (76%) of them claimed to have the ability to keep 1-5 items active in their STM.

The results of the interpreters' performance in the interpreting test also show their inability to retrieve information from the LTM. A clear evidence for that is the guessing strategy they always resorted to. To be noted, this strategy is usually relied on when the interpreter has neither sufficient information about the problematic part of the SL speech nor the previous parts of the speech help interpreting it. Nonetheless, frequent instances of guessing in the five interpreting sessions have nothing to do with failure to retrieve from the LTM, rather they are due to lack of linguistic competence, inability to relate events and actions together in a unified whole, and approximating/hypothesizing meaning. For instance, it is unreasonable to expect a (student) interpreter guessing the meaning of “The explosion around the world in mobile phone use has some health professionals worried.”(Sent 4), “In one case, a travelling salesman had to retire at a young age because of serious memory loss.” (Sent 10), or “Mobile phones can be very useful and convenient, especially in emergencies. In the future, mobile phones may have a warning label that says they are bad for your health.” (Sents. 22 and 23). Similarly, it is unexpected from them to ask the speaker for the meaning of well-known lexical items or expressions such as “serious memory loss” (Sent 10), “change in the tissues of the brain” (Sent 9), “convenient” (Sent 20), “the negative publicity of such ideas” (Sent 6), “high-tech machines” (Sent 17), etc. These results, again, refute the interpreters' claims in their responses to items (17) and (20) of the questionnaire.

6. Findings and Conclusions

Part of the difficulties in an interpreting task is due to prior knowledge about the text type/genre and its domain, interpreting skills, language abilities, and the socio-cultural background of the speaker, interpreter, and the intended listener in the TL. It has been found that these factors correlated with the differences in the subjects' ability to account for the different phases of the interpreting process itself (cf. Naoum, 2001). That is, subjects with more background knowledge, skills and verbal abilities had more efficient control over their processing of

the ST (e.g. representation of the information, inferencing, retrieving, and realizing coherence) than those with poor abilities. It was also found that these difficulties as well as some features of the interpreter himself, text, and context determined in each step of processing the outcome of the comprehension process – viz. coherent mental representation of the ST. However, these cannot be managed unless the translator's horizons be broadened to cover all of these areas. Other difficulties could be related to the individual processing characteristics (e.g. selection of cues, using strategies and other meta-cognitive processes) which are relatively different from one test-subject to another. It could also be attributed to some affective differences (e.g. self confidence, motivation) which either direct the process and realize the goal or block it.

The main factors that affect comprehension and production in the process of interpreting as regards the interpreter's information processing system can be summarized as follows:

1. The ability of the student-interpreter to raise their attention to the coming flow of speech to be interpreted and keeping motivated are basic to the success of the interpreting task. This process keeps the knowledge structure (i.e., schemas) relevant to the topic highly activated.
2. Adequate decoding of the message which requires basic linguistic and cognitive skills and strategies (e.g. negotiating meaning, making inferences, etc.) is not helpful unless the interpreting process is run by a well-trained STM. This however cannot be attained, as the results of data analysis show, unless intensive course(s) be given to the student-interpreters, as well as attending and participating in actual interpreting sessions.
3. The familiarity of the speech and less complicated structure and style, though make understanding the speech content easier, do not solve the problem of speech delivery speed and time pressure. These issues can be only settled if the student-interpreter is aware of the cognitive processes and mechanism of information retrieval from the LTM. Therefore, incoherent speech comprehension and interpreting failure are expected unless the time required for retrieving information from LTM to STM and then to report it verbally is decreased to the minimum.
4. Building on the fact that the information-processing required for any comprehension (and production) tasks is determined and constrained by the capacities and operational characteristics of STM and LTM which frequently create retrieval problems (Ericsson and Kintsch, 1995: 212), it is recommended that interpreting courses should include practical procedures that enables the trainees to have a clear picture of the interpreting process.
5. Finally, though this study intended, through constructing questionnaires for the students and their lecturers as well as testing them, to give a useful account of the interpreting process at the early stages of students training, further studies are recommended to highlighting how to raise/focus attention, make use of time available, use some basic interpreting strategies, and most importantly how to develop awareness of their role in the translation process.

A Key to some unique Transliteration Symbols:

<u>Consonants</u>	<u>LongVowels</u>	<u>Short Vowels</u>
sh voiceless alveolar fricative	aa ا	a
zh voiced alveolar fricative	wu و	u
R voiced alveolar glide (emphatic)	iy ي	i
r voiced alveolar glide (clear)		
L voiced alveolar lateral (dark)		
l voiced alveolar lateral (clear)		
ch voiceless alveolar plosive		
kh voiceless velar fricative		

References

- Bourne, L. Dominowski, R. and Loftus, E. (1979). *Cognitive Processes*. New Jersey: Prentice-Hall, Inc.
- Clark, H. and Clark, E. (1977). *Psychology and Language*. New York: Harcourt Brace Jovanovich, Inc.
- Delisle, J. (1993). *La Traduction Raisonnée*. Ottawa: Université d'Ottawa.
- Dörnyei, Z. (2003). *Questionnaires in Second Language Research: Construction, Administration, and Processing*. USA: Lawrence Erlbaum Associates.
- Ericsson, K. and Kintsch, W. (1995). "Long-Term Working Memory" *Psychological Review*, 102: 2, 211-245. [Online] Available: <http://www.jimdavies.org/summaries/ericsson1995.html> (September 29, 2014)
- Ferret, O. and Grau, B. (1992). "An Episodic Memory for Understanding and Learning." In R. Mittkov and N. Nicolov, *Recent Advances in Natural Language Processing*, (pp. 173-184). John Benjamins Publishing Company.

- Gile, D. (1995). *Basic Concept and models for Interpreter and Translator Training*. Amsterdam: John Benjamins.
- Gonzales-Davies, M. (2004). *Multiple Voices in the Translation classroom*. Amsterdam: John Benjamins.
- Hintzman, D. (1978). Comments on the Paper By Hunt and By Rumelhart and Norman. In: Cotton and Klatzky, *Semantic Factors in Cognition*, (pp. 55-60). New York: Lawrence Erlbaum.
- Kelly, D. (2005). *A Handbook for Translator Trainers*. Manchester. St Gerome Publishing.
- Kiraly, D. (1995). *Pathways to Translation*. Kent: Kent State University Press.
- (2000). *A Social Constructivist Approach to Translator Education*. Manchester: St Jerome.
- Lee, L. and Gundersen, E. (2002). *Select readings: Pre-intermediate*. Oxford University Press. Oxford.
- Lund, K. and Burgess, C. (1996). Producing High-Dimensional Semantic Spaces from Lexical Co-occurrence. *Behaviour Research Methods, Instruments and Computer*, 28 (2), 203-208.
- MacCorma, E. (1985). *A Cognitive Theory of Metaphor*. The MIT Press. Massachusetts.
- Mondhal, M. & Jensen, K. A. (1992). Information Processing in a Translation Task. *Multilingua*, 11(2), 195-216.
- Naoum, A. (2001). *A Cognitive Pragmatic Approach to Translation*. Unpublished PhD Thesis. University of Mosul.
- Nord, C. (1991). *Text analysis in Translation*. Amsterdam: Rodopi.
- Rumelhart, D. and Norman, D. (1978). Accretion, Tuning and Restructuring: Three Modes of Learning. In Cotton and Klatzky, *Semantic Factors in Cognition* (pp. 37-53). New York: Lawrence Erlbaum.
- Schaefer, C. (1980). *Episodic Memory, Semantic Memory, and Fluency*. IRAL. Vol. xviii/4 (321-325).
- Shreve, G. (1997). "Cognitive and the Evolution of Translation Competence." In J. Danks, G. Shreve, S. Fountain and M. McBeath (Eds.), *Cognitive Processes in Translation and Interpreting* (pp. 120-136). London: Sage Publications, Inc.
- Van Dijk, T. (1980). *Macrostructures: An Interdisciplinary Study of Global Structures in Discourse, Interaction and Cognition*. Hillsdale, NJ: Lawrence Erlbaum Associates, Publishers.
- Vienne, J. (1994). "Towards a Pedagogy of 'Translation in Situation'". *Perspectives: Studies in Translatology*. 2 (1): pp 51-59.

Appendix

A. Students' Questionnaire

Dear students,

The current study is concerned with the role of memory in the interpreting task. Your answers to the following questions would enable the researchers to decide on certain issues in interpreting and the role of memory in particular. Please, let your answers not be based on mere speculations, but on what you actually do when interpreting. Tick one of the choices (a-d), and then comment in details about the questions and your choices (e). Your efforts are highly appreciated.

Questions:

1. Does familiarity of the text make any difference in the process/product of interpreting?
 - a. it influences decisions to interpret.
 - b. it facilitates the process in general.
 - c. It makes the process smoother.
 - d. it affects the quality of the product.
2. Does the ability to maneuver (add, delete, paraphrase, generalize, substitute, foreground, etc.) overcome the speed of delivering the text?
 - a. always.
 - b. usually.
 - c. sometimes.
 - d. never.
3. Which do you pay more attention to the co-text or the context?
 - a. what goes with what in the text.
 - b. linguistic items and syntactic structure.
 - c. The relationship between the form and the context.
 - d. The current actual context of situation.
4. Which of the following makes the process of interpreting easier: the linguistically-easy text or the ability to relate events and actions together?
 - a. both.
 - b. the purpose of translating throughout the process.
 - c. sometimes sentences, others propositions (i.e., syntactic and semantic units, respectively).
 - d. overall meaning.
5. Which textual elements do you rely on heavily?
 - a. verb phrases.
 - b. noun phrases.
 - c. sentences.
 - d. paragraphs.
6. To what extent your identification of the intentionality of the speaker is taken into account?
 - a. always.
 - c. sometimes.

- b. usually. d. never.
7. *Do you rely on other languages (e.g. first language) when you interpret?*
a. always. c. sometimes.
b. usually. d. never.
8. *What unit of translation do you rely on when interpreting?*
a. a word. c. a sentence.
b. a phrase. d. a conceptual unit.
9. *To what extent you rely (access and use) on your background knowledge?*
a. frequent access and use. c. when I have enough time.
b. when a problem arises. d. when figurative language is required.
10. *How do you approximate the meaning of unknown linguistic items?*
a. through lexical relations (i.e. synonyms or alternative meanings, antonyms, etc.).
b. through associations.
c. through phonological similarities.
d. similar problems faced in the past.
11. *How do you settle your interpreting choices?*
a. on grammatical systems. c. on hypothesizing meaning.
b. on stylistic preferences. d. on personal experience.
12. *How often do you make use of inferencing (or generating inferences)?*
a. always. c. sometimes.
b. usually. d. never.
13. *How do you manage the pressure of time while interpreting?*
a. Lagging one step behind. c. avoiding complicated structures and resorting to literal meaning.
b. Using clichés d. raising attention.
14. *How do you manage issues related to raising attention?*
a. I close my eyes.
b. I avoid looking left and right and the audience too.
c. I concentrate on the speaker's lips.
d. I notice the speaker's non-verbal behavior.
15. *How do you manage high delivery of speech?*
a. asking the speaker to slow down.
b. giving the gist of the speech.
c. leaving parts of the speech uninterpreted.
d. adding the missing information later when I have enough time.
16. *How many items (words, numbers, phrases, sentences, etc.) can you keep active in your short term memory?*
a. one-three. c. one-seven.
b. one-five. d. one-nine.
17. *If your long/short term memory fails you to process or retrieve specific information, what strategy do you rely on?*
a. omission. c. asking the speaker to repeat.
b. choices from the previous text. d. guessing.
18. *How often do you feel frustrated to perform an interpreting task?*
a. always. c. sometimes.
b. usually. d. never.
19. *Do you lag more than one step behind the speaker?*
a. always. c. sometimes.
b. usually. d. never.
20. *Do you rely on guessing the meaning of certain parts of the text as an interpreting strategy?*
a. always. c. sometimes.
b. usually. d. never.

B. Lecturers' Questionnaire

Dear lecturers,

The current study is concerned with the role of memory in the interpreting task. Your comments on the following questions would enable the researchers to better decide on certain issues related to training student interpreters, the role of memory in particular.

Let your comments not be based on mere speculations, but on what you actually do when teaching

translation/interpreting. Your efforts are highly appreciated.

Questions:

1. Do you teach your students to maneuver (add, delete, paraphrase, generalize, substitute, foreground, etc.) in order to overcome the speed of text delivery?
2. What unit of translation do you advise your students to rely on when interpreting?
3. What do you advise your students to do to approximate the meaning of unknown linguistic items?
4. What do you concentrate on to settle your students' interpreting choices?
5. What do you advise your students to do to manage the pressure of time while interpreting?
6. How do you manage issues related to raising your students' attention?
7. How many items (words, numbers, phrases, sentences, etc.) do you train your students to keep active in their short term memory?
8. If your students' long/short term memory fails them to process or retrieve specific information, what strategy do you advise them to rely on?
9. Do you advise your students to rely on guessing the meaning of certain parts of the text as an interpreting strategy?
10. Do you advise your students to lag more than one step behind the speaker?

C. Text sample

CELL PHONES: HANG UP OR KEEP TALKING?

Millions of people are using cell phones today⁽¹⁾. In many countries, cell phones are very popular with young people⁽²⁾. They find that the phones are more than a means of communication— having a mobile phone shows that they are cool and connected⁽³⁾.

The explosion around the world in mobile phone use has some health professionals worried⁽⁴⁾. Some doctors are concerned that in the future many people may suffer health problems from the use of mobile phones⁽⁵⁾. In England, there has been a serious debate about this issue. Mobile phone companies are worried about the negative publicity of such ideas⁽⁶⁾. They say that there is no proof that mobile phones are bad for your health⁽⁷⁾.

On the other hand, why do some medical studies show changes in the brain cells of some people who use mobile phones⁽⁸⁾? Signs of change in the tissues of the brain and head can be detected with modern scanning equipment⁽⁹⁾. In one case, a travelling salesman had to retire at a young age because of serious memory loss⁽¹⁰⁾. He couldn't remember even simple tasks⁽¹¹⁾. He would often forget the name of his own son⁽¹²⁾. This man used to talk on his mobile phone for about six hours a day, every day of his working week, for a couple of years⁽¹³⁾. His family doctor blamed his mobile phone use, but his employer's doctor didn't agree⁽¹⁴⁾.

What is it that makes mobile phones potentially harmful⁽¹⁵⁾? The answer is radiation⁽¹⁶⁾. High-tech machines can detect very small amounts of radiation from mobile phones⁽¹⁷⁾. Mobile phone companies agree that there is some radiation, but they say the amount is too small to worry about⁽¹⁸⁾.

As the discussion about their safety continues, it appears that it's best to use mobile phones less often⁽¹⁹⁾. Use your regular phone if you want to talk for a long time⁽²⁰⁾. Use your mobile only when you really need it⁽²¹⁾. Mobile phones can be very useful and convenient, especially in emergencies⁽²²⁾. In the future, mobile phones may have a warning label that says they are bad for your health⁽²³⁾. So for now, it's wise not to use your mobile phone too often⁽²⁴⁾. (Lee and Gundersen, 2002: 55-56)

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: <http://www.iiste.org/journals/> All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Academic conference: <http://www.iiste.org/conference/upcoming-conferences-call-for-paper/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

