

## THE IMPACT OF TYPE OF TEXT AND INTONATIONAL CLUES ON IRANIAN STUDENTS SCHEMATIC KNOWLEDGE

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### ABSTRACT

Naturally, language carries knowledge and information. Language comprehension is an interactive process consisting of background knowledge, real inferencing, cognitive tasks and conceptual abilities. Successful comprehension, however, is actually the result of a complex cognitive process. According to the previous research when listeners are exposed to utterances, they can establish schemas generalizing over the sounds they hear or pronounce. Listeners in a communicational context use different cognitive strategies as mental knowledge and linguistic features according to the type of text for inferencing and comprehending. The purpose of the present study was to investigate the impact of different fiction and non-fiction passages on participants' schematic knowledge. In this study for 60 male and female teenagers (13-19) and 60 male and female young adults (20-26) two fiction and non-fiction passages were read. The results showed that participant in these two age groups use different schematic knowledge for making inferencing and this also differed from fiction to non-fiction text.

**Keywords:** Comprehension, Inferencing, Schematic Knowledge, Fiction, Non-fiction.

### INTRODUCTION

Generally, inferring is a strategic process in which one generates assumptions, makes predictions, and comes to conclusions based on the given information (Richards & Anderson, 2005). According to Keene and Zimmerman (1997), inferring is going beyond the literal text, making it personal and three-dimensional, and weaving it into our own stories. Listeners actively process information based on their schematic knowledge and get into inferencing and comprehension according to personal experiences from the real world and comprehension is the process of constructing the interpretation of what text is about (Anderson & Lynch, 2003). Language comprehension is an interactive process consisting of background knowledge, real inferencing, cognitive tasks and conceptual abilities. Successful comprehension, however, is actually the result of complex cognitive processes. In order to communication take place and to be meaningful, prior knowledge or schema needed to be activated within these structures by means of an introductory instructional strategy. It has been found out that listeners relied mostly on contextual clues when they tried to guess meanings from context. Huckin and Bloch (2002) measured the influence of contextual clues

and schematic knowledge on listeners' ability to guess and comprehend the meaning from context. According to Adams (2003), presupposed knowledge and mental reference influence the listener's inferencing of the intended meaning. This study tries to investigate how male and female teenagers and young adults have different inferencing from fiction and non-fiction passages because of their different schematic knowledge processing.

### **Schematic Knowledge**

The schema is the mental map or set of mental connections in mind about a particular idea of thing (Myhill, Jones & Hopper, 2006). The schema contains general knowledge about that domain, including a specification of the relationships among its attributes and the schema provides hypothesis about incoming stimuli, which include plans for interpreting and gathering schema-related information. Studies investigated that schematic knowledge facilitates listening comprehension and helps listeners deal with barriers in listening learning. In the other study McDonald (1999) showed that schema theory details how listeners store and use knowledge about a domain. The theory predicts what information people will select for memory storage, that information will be abstract, and that the information will be interpreted in light of existing and previous knowledge. The richness of a schema affects listening positively for messages that add new information to an existing schema and schemas are particularly helpful for listening during conversation and when a message is complex since they aid in reducing processing load.

### **Fiction and Non-Fiction**

Fiction and non-fiction passages were used to investigate if patterns existed between imaginary information and facts. Kamil and Lane (1997) found that the use of narrative text is viewed as the most logical way to early reading achievement. In fiction, a reader or listener has to identify the characters and follow the events of the story. In general, stories can offer a valuable way of contextualizing and introducing new language, making it meaningful and memorable (Wasik & Bond, 2001; Whitehurst & Lonigan, 1998; Wright, 2000). Fiction texts are associated with feelings and memories, as they are a distinctive manifestation of cultural values and perceptions (Duck, 2005). According to Duck (2005) narrative genres are the primary way by which young students can comprehend and communicate in the world around them. Besides, they presented linguistic forms, grammar, phrases, vocabulary, and formulaic speech within a meaningful and structured context that supports comprehension of the narrative world (Glazer & Burke, 1994; Jennings, 1991; Koisawalia, 2005; Mallan, 1991). However, nonfiction has a different framework. Nonfictional text represents comprises the bulk of passages that students must listen and respond to in standardized tests (Hoyt, Mooney, & Parks, 2003). In non-fiction, a reader needs to comprehend the topic, learn new facts related to it, and be able to find and remember important information (Scharer, Pinnell, Lyons, & Fountas, 2005).

Boynton and Blevins (2003) emphasized the fact that reading and understanding nonfiction text demands abstract thinking. Students must access, comprehend, and integrate new concepts and ideas. Therefore, it is crucial that students be able to recognize the structure of nonfiction text. Duke (2005) indicated that there were many benefits to teaching nonfiction in the classroom and early literacy instruction should include nonfiction materials. Nonfiction is literature that is not fictional (Mish, 2005). In the recent studies, fiction versus non-fiction passages did have an impact

on clue selection, logical thinking skills, and inferencing abilities of the participants. The results of this study indicate that participants' clue selection, logical thinking abilities, and overall inferential thinking abilities in female were more developed in fiction passages than nonfiction passages. So inferential thinking abilities are affected by the use of fiction versus non-fiction passages.

### **Imagery Process of Fiction and Non-Fiction Passages**

Imaging is a sensory link that connects listeners to incoming language and from prior knowledge, accesses background experiences, establishes vocabulary, and creates and stores information in both long term and short term memory. The mental imagery that listeners experience while listening, either spontaneously or induced by instruction has powerful effects on comprehension, memory, and appreciation for contextual inferencing. Comprehension often happens at higher levels such as meaning integration (Yang, &Schmalhofer, 2008). Brain imaging studies of language comprehension have demonstrated that there is a comparable network of areas of the brain activated in higher-order cognitive processes of listening comprehension at the word, sentence, and discourse level (Jobard, Vigneau, Mazoyer, &Tzourio-Mazoyer, 2007). Mental imaging studies of complexity effects on brain activation have also shown comparable modulation of brain activity by task complexity in both listening and reading comprehension tasks (Carpentier, 2001; Constable, 2004; Just & Carpenter, 1987; Keller, Carpenter, & Just, 2001). According to Prat, Keller and Just (2007), individual differences in listening comprehension are associated with brain resources, imaginary activities and schematic inferencing during task performance (Constable, 2004; Jobard, 2007; Michael, 2001).

### **Intonational Changes**

Understanding spoken language can be described as an inferential process based on the perception of several cues rather than a simple match between sounds and meaning. Prosody and intonation are two important aspects of all languages of the world. In general prosody refers to the grouping and relative prominence of the elements making up the speech signal. Intonation on the other hand refers to phrase-level characteristics of the melody of the voice.

Speech through a sequence of legal sound units in a language has some characteristics that convey messages. The characteristics that make listener perceive these effects are collectively referred to as prosody. Prosodic cues such as pitch gestures, accent and stress characteristics reflect the physiological as well as habitual aspect of a speaker (Heck, 2002). When listener listens to people's utterance, some sounds or group of sounds in speech can relatively be heard higher or lower than others. This relative height of speech sounds as perceived by a listener is called pitch.

When speaking, people generally raise and lower the pitch of their voices and form pitch patterns as intonational cues of utterance. Each cue is a complex perceptual entity, expressed primarily using three acoustic parameters: pitch, energy and duration. Prosodic characteristics in speech convey some important information regarding the identity of the spoken language. Pitch is a perceptual attribute of sound. The physical correlate of pitch is the F0 of vibration in vocal folds. This property is used in speaker's verification, by comparing F0 contours. There are two allophones for this pitch accent: Low-Higher (L+H\*) and High (H\*), the former is used for words and phrases

with final stress, e.g., nouns and adjectives longer than one syllable, and also for vocatives (Adams, 2003).

## **METHOD**

Listeners as participants in a communicational context use cognitive strategies, mental knowledge and the information that can be found in the text or operations as steps in order to inference and comprehend. Naturally, cognitive, social and psychological factors influence mental understanding and inferencing in order to comprehend (Adams, 2002). Naturally, speakers mark the pragmatic force of the information in an utterance. As a result, intonational events can often provide information to the listener about the prosodic structure of text, in addition to carrying a pragmatic message. In spoken interaction a tone of voice, a feeling about the way speaker spoke, the atmosphere of a conversation often give significant cues to different age groups of listeners for inferencing different types of passages (Wagner, 2006). According to Keene and Zimmerman (1997), inferencing is going beyond the literal meaning of text for weaving inferencing into mind as a meaningful communication. According to the result of this study this mental inferences differ from male to female and in different age group.

### **Participants**

In this study, the participants included 60 male and female teenagers and 60 male and female young adults. The age range for the teenagers and young adults were 13-19 and 20-26 respectively. The samples were randomly chosen after Oxford Placement Test (OPT) from 100 male and female teenagers and 100 male and female young adults studying English as their second language.

### **Materials and Procedures**

The materials for testing participants' inferencing of passages and evaluating their listening comprehension ability of making schematic references consisted of two fiction and two non-fiction passages that were read aloud to participants. Passages were created according to Leslie Holzhauser-Peters, M.S., CCC-SLP from Lexile Site<sup>1</sup>. Two fiction and two non-fiction passages were created for each group. The passages were no more than 150 words. After participants , according to OPT, were randomly chosen, during the study two fiction and non-fiction passages were read aloud without considering intonational changes to control group (CG). Then, the same passages were read with applying intonational changes to experimental group (EX). By the way, passages for every age group were chosen differently. Responses were recorded verbatim. According to Lexile's score, participants were given scores from zero to four based on their logical inferencing, clue selection and mental interpretations follow: After it the data are compared and investigated according to SPSS software SPSS is a comprehensive and flexible statistical analysis and data management solution. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and conduct complex statistical analyses and make mathematical and statistical relationship between parts of research.

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<sup>1</sup> This is a framework for reading and listening which matches the appropriate score to each text based on degree of difficulty of text and each text was given a Lexile score from zero to four.

**Table 1. Explanation of participants' Inference/logical Thinking of the passages**

<b>Lexile's Score</b>	<b>Participant's Inferencing and clue selection</b>
<b>4</b>	The correct and true logical inference or mental thinking most of the time
<b>3</b>	The correct and true logical inference or mental thinking some of the time
<b>2</b>	The correct and true logical inference or mental thinking not some of the time
<b>1</b>	The correct and true logical inference or mental thinking not most of the time
<b>0</b>	Participants did Not attempt to guess or explain

## RESULTS AND DISCUSSION

Participants of different age groups in CG and EX were given scores based on their inference and logical thinking skills and their ability to determine what clues are most important in the inferencing and comprehension of the fiction and non-fiction texts.

**Table 2. Descriptive Statistic of Male Teenagers from Fiction and Non-fiction Texts Without Considering Intonational changes**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Fiction</b>	30	.00	4.00	2.7000	1.02217
<b>Non-Fiction</b>	30	.00	4.00	3.3561	.69763
<b>Valid N (listwise)</b>	30				

**Table 3. Descriptive Statistic of Female Teenagers from Fiction and Non-fiction Texts Without Considering Intonational changes**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Fiction</b>	30	.00	4.00	3.4506	.58124
<b>Non-Fiction</b>	30	.00	4.00	2.3100	1.0019
<b>Valid N (listwise)</b>	30				

**Table 4. Descriptive Statistic of Male Young Adults from Fiction and Non-fiction Texts without Considering Intonational changes**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Fiction</b>	30	.00	4.00	2.9800	.9605
<b>Non-Fiction</b>	30	.00	4.00	3.5933	.5200
<b>Valid</b>	N 30				
<b>(listwise)</b>					

**Table 5. Descriptive Statistic of Female Young Adults from Fiction and Non-fiction Texts without Considering Intonational changes**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Fiction</b>	30	.00	4.00	4.3265	.3605
<b>Non-Fiction</b>	30	.00	4.00	2.9123	.5200
<b>Valid</b>	N 30				
<b>(listwise)</b>					

**Table 6. Descriptive Statistic of Male Teenagers from Fiction and Non-fiction Texts with Considering Intonational changes**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Fiction</b>	30	.00	4.00	2.9954	.86944
<b>Non-Fiction</b>	30	.00	4.00	4.2014	.49763
<b>Valid</b>	N 30				
<b>(listwise)</b>					

**Table 7. Descriptive Statistic of Female Teenagers from Fiction and Non-fiction Texts With Considering Intonational changes**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Fiction</b>	30	.00	4.00	4.8798	.41124
<b>Non-Fiction</b>	30	.00	4.00	2.8800	.97510
<b>Valid</b>	N 30				
<b>(listwise)</b>					

**Table 8. Descriptive Statistic of Male Young Adults from Fiction and Non-fiction Texts with Considering Intonational changes**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Fiction</b>	30	.00	4.00	3.0986	.7605
<b>Non-Fiction</b>	30	.00	4.00	5.0123	.3980
<b>Valid N (listwise)</b>	30				

**Table 9. Descriptive Statistic of Female Young Adults from Fiction and Non-fiction Texts with Considering Intonational changes**

	N	Minimum	Maximum	Mean	Std. Deviation
<b>Fiction</b>	30	.00	4.00	5.4562	.3405
<b>Non-Fiction</b>	30	.00	4.00	3.0010	.4900
<b>Valid N (listwise)</b>	30				

Tables display that the greatest mean score ( $M = 5.4562$ ) belonged to the female young adults' comprehension of fiction passages in the experimental group and the lowest mean score (2.3100) belonged to the female teenagers comprehension of non-fiction in the control group. In general, as tables statistically describe, intonational changes (Falling and Rising) and type of passages (Fiction and Non-fiction) impact male and female teenagers and young adults' schematic knowledge and mental references based on their previous background knowledge and personal experiences.

**Table 10. The Significant Result of Participants' Inferencing and Comprehension**

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
<b>Intercept</b>	2220.417	1	2220.417	4005.728	.000
<b>Gender</b>	.017	1	4.017	7.030	.003
<b>Age</b>	4.267	1	4.267	7.697	.006
<b>Intonation</b>	15.000	1	15.000	27.061	.000
<b>Type of Text</b>	15.425	1	15.425	28.000	.000
<b>Error</b>	64.300	116	.554		

In this study 0.05 is significant index. It means that according to SPSS statistical result of this study .05 is meaningful source for measuring the other scores. As Table 10 shows the level of significant of gender, age, intonation and type of passage in this study are less than 0.05 ( $.003 < .05$ ,  $.006 < .05$ ,  $.000 < .05$ ). It means that there is meaningful relationship between type of passages and



genders' inferencing based on their schematic knowledge. In the other word fiction or non-fiction passages have different impact on their listeners' inferencing. As the result show gender as another factor or variable has impact on the listener According to the results females' inferencing of the fiction passages are more logical and based on the real world experience while males' inferencing of the non-fiction passages are more based on their logical thinking and true experiences of the real world. Also according to the result of the study intonational changes in the speaker's utterance impact listeners' inferencing of the different passages, too. That is, when reader or teacher in the study changes intonation male and female listeners have different inferences and when the result are compared between Ex and CG the study can accept this factor as another important variable that impacts inferencing. The result of this study can be applied for second language teachers in the classroom and between two genders in order to increase learning quality and quantity. Off course this topic is not investigated in this research , but can be worked in the next researches.

## ACKNOWLEDGMENTS

I have had great fortune during these studies. I would like to express my special appreciation to Dr. Reza Biria whose invaluable suggestions and constructive comments helped me in accomplishing this study. Finally I would like to thank all of the students and teachers who took part in the experiment.

## REFERENCES

- Adams, M. (2002). Teaching English. *Journal of English Linguistics*, 30, 4, 353-365.
- Adams, M. (2003). Language as a natural object Phonetics Investigation Aspect. *The Linguistic Review* 22: 447-466.
- Anderson, K, & Lynch, T. (2003). Learner/non-teacher interactions: the contribution of a course assistant to EAP speaking classes. *Interaction and Language Learning. TESOL Case Studies in Practice series*. Alexandria, VA: TESOL.
- Boynton, A. & Blevins, W. (2003). *Teaching Students to Read Nonfiction*.
- Duke, N. (2005). The scarcity of informational texts in first grade. *Reading Research Quarterly*, 35(2), 202-204.
- Glazer, S., & Burke, M. (1994). An integrated approach to early literacy. *Australian Review of Applied Linguistics* 15 (1), pp. 95-106.
- Heck, M. (2002). The impact of curriculum innovation on the cultures of teaching. *Asian EFL Journal*, 7(4), 39-45.
- Hoyt, L., Mooney, M., & Parkes, B. (2003). Part 1: Bringing informational texts into focus. *Exploring informational texts. From theory to practice* (p. 1). Portsmouth, NH: Heinemann.
- Huckin, T., & Bloch, J. (2002). Strategies for inferring word-meanings in context: A cognitive model. In T. Huckin, M. Haynes & J. Coady (Eds.) *Second Language Reading and Vocabulary Learning* (pp. 153-178).
- Jenning, P. (1993). Infants' preference for the predominant stress pattern of English words. *Child Developments* 64, 657-686.
- Jobard, G, Vigneau, M., Mazoyer, B. & Tzourio-Mazoyer, N. (2007). *Impact of modality and linguistic complexity during reading and listening tasks*. Brazil University Press.



- Kamil, M., & Lane, D. (1997). Using information text for first grade reading instruction: Theory and practice. Retrieved August 5, 2005, from <http://www.stanford.edu>
- Keene, E., & Zimmerman, S. (1997). *Mosaic of thought: Teaching comprehension in a reader's workshop*. Portsmouth, NH: Heinemann. University Massachusetts press.
- Keller, D., Carpenter, P. & Just, M. (2001). *Comprehension in Listening*. M.U: Journal of Manchester University Press.
- Koisawalia, H. (2005). Reading or listening, Inference Applied Linguistics.
- Lexile (2008). Lexile framework for reading. Retrieved March 5, 2006, from <http://www.lexile.com>.
- MacDonald, E. (1999). The Real Thing? Authenticity and Academic Listening. *TESL Canada Journal*, 251-267.
- Mallan, J. (1991). Using Features in Learning. Exploring informational texts. From theory to practice (pp. 50-51). Portsmouth, NH: Heinemann
- Michael, B. (2001). A Perspective on Psycholinguistics. *Natural Language and Linguistic Theory* 20: 413-50.
- Mish, F. (2005). *Merriam-Webster's collegiate dictionary*. (11<sup>th</sup> edition). Springfield, MA: Merriam-Webster, Inc.
- Myhill, D., Jones, S., & Hopper, R. (2006). *Talking, listening and learning: effective talk in the primary classroom*, Open University Press.
- Nesset, T. (2008). Cognitive Knowledge and Grammar: A basic introduction. *Journal of Linguistics* ; Volum 45.(2) s. 477-480.
- Prat, C., Keller, T., & Just, M. (2007). *Brain of the Individual differences in Cognition*. American Psychological Association.
- Richards, J. C., & Anderson, N. A. (2005). How do you know? A strategy to help emergent readers make inferences. *The Reading Teacher*, 57, 290-293
- Scharer, P., Pinnell, S., Lyons, C., & Fountas, I. (2005). Becoming an engaged reader. *Educational Leadership*, 63(2), 24-29. Retrieved from <http://www.ascd.org/portal/site/ascd/menuitem>
- Wagner, D. T. (2006). How knowledge helps. [Online] Available [http://www.aft.org/pubs-reports/american\\_educator/issues/spring06/willingham.htm](http://www.aft.org/pubs-reports/american_educator/issues/spring06/willingham.htm)
- Wasik, M., & Bond, T. (2001). *Young children's storybook reading: Longitudinal study of parent-child* (Final report to the Spencer Foundation).
- Yang, C., & Schmalhofer, F. (2008). Neural indicators of inference processes in text comprehension. *Journal of Cognitive Neuroscience*. Volume 20.