The Effect of Bottom-up/Top-down Techniques on Lower vs. Upper-Intermediate EFL Learners' Listening Comprehension

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Abstract

Listening is regarded as an interactive process involving decoding of information. This study was launched to find out the impact of bottom-up (BU) and top-down (TD) techniques on Iranian lower and upper intermediate learners' listening comprehension. We selected a total of 120 participants in six intact classes, three lower intermediate and three upper intermediate. The proficiency level of the groups was further verified and groups at each proficiency level were randomly assigned as a BU group who were engaged in BU activities during the pre-listening stage of each lesson throughout the eight-session treatment, a TD group who performed TD activities, and a control group (CG) for whom no pre-listening attention focusing activities were used. The One-way and Two-way analysis of variance of the listening post-test scores indicated that the lower-intermediate BU group and the upper-intermediate TD group did significantly better compared to the other groups. The findings suggest that BU processing activities were more effective at lower intermediate level while TD processing activities played a more facilitative role for upper intermediate participants. The findings support the interaction between proficiency level and information processing techniques and imply a number of pedagogical implications.

Keywords: Top-down Processing, Bottom-up Processing, Attention Focusing Techniques, Listening Comprehension, Proficiency Level

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1. Introduction

Listening has long been regarded as an unobservable passive skill and not a legitimate subject for scientific scrutiny with the advent of cognitive psychology and the illuminating research findings, however, such naïve beliefs towards the nature of listening were deprecated and consensus began to grow among researchers and scholars in psycholinguistics and applied linguistics over the active nature of auditory processing mechanisms and the listening comprehension. Psycholinguistically, Ashcraft (2002) distinguished the Template Approach (TA) and the Feature Detection Approach (FDA) as two approaches to processing auditory and visual input from the outside world. The advocates of the TA proposed that recognition of visual and auditory data is done by means of templates or stored models of all classifiable data; that is, the mind makes physical identity matches between the incoming stimuli and its stored templates. The enormous diversity in the visual and auditory stimuli, yet, was among several reasons that called into question the construct validity of this model. The FDA, hence, was offered as an alternative model according to which various stimuli encompass a combination of different features which are fragments or components forming the totality of the stimulus. An important element is human attention or the ability to focus on specific external input received or an already established mental even/concept.

Applied linguists, likewise, enthusiastically embraced the findings in more practical spheres of education in general and listening instruction in particular and readdressed the very nature of listening comprehension. Anderson (1995) proposed a tripartite model of listening comprehension comprising three linear and overlapping stages of perception, segmentation, and utilization. Accordingly, the comprehension of oral input is now believed to start with perceptual encoding of the acoustic or written messages that are further parsed

or transformed into mental representations which are further utilized and linked to the mental repertoire of prior knowledge. Later on, Vandergrift and Goh (2012) expanded the model and envisaged listening comprehension as a more intricate process encapsulating not only perception, segmentation, and utilization, but also BU and TD processing mechanisms that might function analytically or automatically depending on the amount of practice to perceive, parse, and utilize the input and to link it to the large body of background information that is stored in the listeners' long-term memory along with the metacognitive strategies they employ to oversee and regulate the process and relieve the burden on attentional resources.

BU mechanisms involve perception and segmentation of different elements of the sensory input from phonemes to syllables, words, phrases, and sentences, rapidly and involuntarily shifting attention to salient features of potential importance (Yanti, 2004); they rely heavily on the listener's knowledge of the target language (Vandergrift & Goh, 2012) and thus seem to be intricately and delicately interwoven with proficiency level. TD processing, however, begins at utilization stage where the meaningful segmented units of input are linked to the stored body of linguistic, pragmatic, prior, and discourse knowledge stored in the long term memory to arrive at some interpretation. It is proposed that in subsequent stages of learning and as a result of meaningful practice listeners receive, learners become capable of automatically orienting their attentional resources and interactively coordinating TD and BU processes (Johnson, 1996). On distinct listening comprehension tasks, the point of departure might be either the textual information contained in the listening text in data-driven processing or the listeners' expectations formed based on conceptually-driven processing which may even interact at a single task of comprehension.

A major concern for practicing language teachers and educators, hence, has been to accurately pinpoint the extent to which the two processes might be more productively conducive to comprehension for learners at different proficiency levels. A cursory examination of the literature unveils two divergent views on this controversial issue. The first assumption attributes selection of the right processing to the learner's proficiency level which, according to them, has to be taken into account before weighting each of techniques over the other. BU attentional mechanisms utilized in identifying landmarks in visual navigation typical of online and novelty learning are associated with lower level language learning where TD mechanisms like making inferences seem to complicate information processing (Lopez, 2004). Field (2004), however, linked the difficulty in the early stages of second language listening to too heavy a reliance upon BU mechanisms in the face of restricted linguistic knowledge and exhausted attentional resources. Further research in first and second language studies, nonetheless, provided evidence supporting the interactive nature of the two processes (Batova, 2013; Stanovich, 2000; Vandergrift, 2013). Batova (2013) accentuated the synthesis of BU and TD processes to help the listeners by activating background knowledge and forming expectations as well as by piecing together linguistic data until a contextual meaning of an utterance is arrived at. Vandergrift (2013), likewise, emphasized the listeners' use of both linguistic and prior knowledge to comprehend a message in real life situations.

Despite the merits inherent in the interactive use of these processing mechanisms, simultaneously operating the two types of mechanisms normally proves quite challenging and tough for second and foreign language learners owing to variation in their proficiency level (Vandergrift & Goh, 2012). Underdeveloped linguistic resources at higher proficiency levels, according to Lingzhu (2003), often replaces the incentive to make predictions with a fearful

reluctance and subsequent exclusive focus on every bit of linguistic data while listening or reading to rapid flow of input. At lower levels, nonetheless, appeal to immature cognitive repertoire may lead to confusion and distract learners from significant linguistic features of the input. In an Iranian milieu, the common experience of many practicing English teachers is that TD processing cannot be inherently different from a basic introduction to the topic in the form of setting a context using familiar concepts and words as a trigger for BU techniques like pre-teaching vocabulary and directing learners' attention through pre-listening questions. Striking the right balance in weighting each of the mechanisms at various levels of proficiency is an issue that calls further exploration. Tentatively, it might be hypothesized based on the research findings that overemphasis on BU processing mechanisms might be demanded at lower levels of proficiency and during the pre-listening stage of a listening comprehension lesson to assist beginner to pre-intermediate learners expand the required linguistic knowledge needed for deciphering meaning. TD processing seems to be more remarkably beneficial for more proficient learners who have already developed enriched schemata that permit decoding the oral messages through discussion, cultural comparison, and other personalized activities (Field, 2004). To verify more precisely this tentative hypothesis, the present study set out to examine the effect of BU and TD listening activities on lower and upper intermediate Iranian EFL learners' listening comprehension.

2. Literature Review

Owing to the raise of interest in listening comprehension since the beginning of the new millennium, applied linguists have scrutinized the effect of various strategies that might be described as either TD or BU in nature on foreign language learners' reading and listening comprehension (Bozorgian & Pillay,

2013; Danial & Polloway 2005; Navalpakkamand & Itti, 2006; Rahimi, 2012; Vargas & Gonzalez, 2009; Vidal, 2004; Xie, 2005) and explored the problems they face when listening in terms of new interpretations of listening comprehension (Chen, 2013; Masalimova, Porchesku, & Liakhnovitch, 2014; Nowrouzi, Tam, Zareian, Nimehchisalem, 2015). Research on the role of BU and TD strategies in listening comprehension has yielded mixed results.

Investigating EFL university students' BU and TD processing in academic listening, Vidal (2004) found both high and low proficiency participants weaker in BU than in TD processing. The role of BU techniques was also examined by Vargas and Gonzalez (2009) who realized the insufficiency of mere practice and incorporated BU listening strategies in teaching eighth grader high school EFL learners. Based on the data obtained from field notes, video recordings, and questionnaires, they identified restricted vocabulary and listening background in the target language topic as sources of problems and acknowledged the significance of instructing BU listening strategies to beginners who were just starting to develop their listening skills.

In another study, Danial and Polloway (2005) verified the facilitative role of TD strategies like advance organizers in improving learning, retention, and recall of information for participants with disabilities. Xie (2005) ascribed failure in comprehending reading texts to schematic variation and recommended the concomitant teaching of language and sociocultural background to guide participants in reading classrooms to construct schemata and help them assimilate, extract, and consolidate knowledge. The integration of goal-driven TD attention and data-driven BU attention was also highlighted by Navalpakkamand and Itti (2006) as crucial for visual search in reading comprehension.

Rahimi (2012) reviewed three main approaches of TD, BU, and interactive processing, a combination of TD and BU strategies, to listening comprehension. He proposed that an awareness of these processes and their contribution to learning at different levels of language proficiency is essential to a theoretically grounded pedagogy of L2 listening comprehension. In another study in the context of Iran, Bozorgian and Pillay (2013) took an interactive approach and verified the effect of teaching BU strategies of repetition and note-taking and TD strategies of guessing, making inferences, and identifying topics in Persian on enhancing 30 Iranian EFL learners' listening comprehension.

Investigation of problems encountered by elementary to lower-intermediate EFL learners in different EFL contexts (e.g., Kasevich, 2010; Masalimova et al., 2014) have highlighted the problems these learners encounter at psychoacoustic, linguistic, and cognitive stages of perception which hamper smooth perception of some speech signals, and thereby, obscure establishment of subsequent phonetic, lexical, syntactic, and semantic representations (Kasevich, 2010). Likewise, Chen (2013) probed listening problems perceived by 31 high-beginning to low-intermediate Taiwanese college students who reported unfamiliar vocabulary, rapid delivery rate, and linking sounds between words, all associated with perception and parsing stages of comprehension, as blocks to comprehension that were partially lifted through a metacognitive and process-oriented task-supported instruction.

In the Iranian EFL context, Nowrouzi et al. (2015) explored listening problems experienced by Iranian English major university students at tertiary level by administering the Listening Comprehension Processing Problems Questionnaire (Nowrouzi, Tam, Nimehchisalem, & Zareian, 2014). The results revealed that the respondents had moderate to high levels of difficulty in

perception and parsing stages that are normally attributed to elementary to pre-intermediate stages of learning. They reported lower range of problems at utilization stage.

To many Iranian EFL learners, listening comprehension still poses a painstaking challenge that may be traced to underdeveloped skills for approaching and processing information BU. In this regard, the present study aimed to examine the effectiveness of BU and TD techniques at LI and UI proficiency levels. To serve the objectives of the current study, the following research questions were formulated:

1. Do bottom-up and top-down pre-listening activities influence Iranian EFL learners' listening comprehension at lower-intermediate proficiency level differently?
2. Do bottom-up and top-down pre-listening activities influence Iranian EFL learners' listening comprehension at upper-intermediate proficiency level differently?
3. Does proficiency level impact the effectiveness of bottom-up and top-down processing activities for Iranian EFL learners?

3. Method

3.1. Design

This quasi-experimental study was conducted to investigate the impact of the independent variables, TD and BU processing activities, on the dependent variable, Iranian lower and upper intermediate learners' listening comprehension.

3.1. Participants

Participants in this study comprised 60 lower-intermediate and 60 upper-intermediate male language learners in six classes, within the age range of 15-18, who were randomly sampled from a population of approximately 200 lower and upper intermediate English learners at Nasim English Institute in Shiraz, Iran based on their performance on the Oxford Placement Test (Allan, 2005). The participants were delineated as lower intermediate (LI), intermediate (I), and upper intermediate (UI) groups. The intermediate participants were excluded from the study and attended regular classes. Those in the LI and UI levels, however, were randomly sub-divided into three sub-groups that were randomly assigned as the control group (CG), the lower-intermediate (LI) and upper-intermediate (UI) experimental groups. The groups received listening instruction based on three sets of activities, as explained in the "Procedure" below.

3.2. Materials and Instruments

The materials used during the treatment were two English course books designed by the Nasim Institute for lower and upper intermediate levels, each containing eight units and comprising speaking, listening, reading and writing skills that are presented over two LI intermediate and two UI semesters. Since the proficiency level of the participants in this study was LI1 and UI1, both groups covered the first four units of each book. The course books contain a wide range of tasks that are performed by the learners to consolidate their explicit knowledge of subskills like grammar and vocabulary and to put it into communicative use via different speaking, listening, and reading activities.

Two kinds of tests were employed to collect the research data. Although the participants in the study had been placed by the institute at LI and UI levels, it was essential to ascertain the initial homogeneity of the three sub-groups at each proficiency level. Hence, the researchers deployed the standard Oxford Placement Test (Allan, 2005) which is a standardized and highly reliable placement test commonly deployed to determine English learners' proficiency level. The original test comprises 200 items with a consistent record of predictive validity. The first part of OPT (items 1-100) measures test takers' grammar knowledge and the second part (items 100-200) tap listening comprehension. The listening comprehension part of OPT was modified into a 30-item test and was employed in the present study after it was piloted and yielded a satisfactory reliability estimate (r=.78). The time allotted for this test was 20 minutes. Those whose scores were up to one standard deviation below the mean were regarded as LI and those with scores higher than one and a half standard deviation above the mean as UI learners. The few cases whose scores fell out of this score range were excluded from further analyses.

Secondly, the listening comprehension component of the Preliminary English Test (PET) (2012), which is a standard test for intermediate learners, was employed at the end of the study to examine the impact of the three sets of activities on the participants' listening comprehension.

3.3. Procedure

The sixteen-session treatment started after the pre-test. The first session started with an integrated-skill set of vocabulary and grammar presentations that were further practiced in a few short reading and listening activities during the session. The second session began with a brief review of the presented information as the preview for reading and speaking activities on the second

two pages of each unit. The listening comprehension in each unit was presented during the third session when two sets of information processing techniques were performed in the two experimental groups at the pre-listening stages of the lesson.

In the two BU groups at LI and UI levels, one or two of four types of BU processing activities were applied to activate the participants' BU processing. These activities, originally designed by Richards (2008) for the purpose of focusing the participants' attention on details and upcoming information in the listening text, included a vocabulary presentation and question/answer practice activity to help the participants use the words, matching statements with pictures, grammar practice, and identifying sentence stress and key words. For instance, the teacher, who was one of the researchers, explicitly and interactively presented five to seven key words based on various vocabulary teaching techniques. A set of oral questions were then asked with a focus on key words, to draw the participants' attention to the words and help them practice using them in their answers to the teacher's questions.

Secondly, the participants were asked to look at a picture illustrating the context of the listening text and to listen to statements uttered by the teacher to guess whether the statements were true or false. The third BU activity was to practice listening for word stress as a marker of the information focus in the sentence. To give an example, the participants would listen to questions with two possible information foci and use stress to identify the appropriate focus. (Words in italic are stressed.)

Table 1. *Sentence Stress as a BU Activity*

Participants hear	*Participants check information focus*	
The bank's *South* branch is repaired today.	Where	When
Is the school open on *Saturday*?	Where	When
John is going to the *hospital* today.	Where	When

The last technique deployed to engage learners in BU processes was helping them to develop the ability to identify key words and information. To give an example, the participants would hear the following statement: "My neighbor is a suspicious old woman because she never talks to me and is always watching me angrily through the window". Then, they were required to decide which of the words were more important and why.

After doing these pre-listening activities that were focused on the linguistic elements in the listening task, the listening section in each unit began and was proceeded with the designed sets of course book activities.

In the TD groups at lower and upper intermediate levels, in contrast, the teaching at the pre-listening stage was concentrated on three sets of TD activities (Richards, 2008). Through a brief topic discussion activity the theme of the listening was elicited and the participants were required to generate a set of questions they expected to encounter in the listening. Further, they were asked to generate a list of topics they had already known about the issues mentioned in the first activity and to list the topics that they expected to learn more about in the listening. Finally, the participants were required to read a relevant news headline and to anticipate the event accordingly before listening to the full news and verifying their predictions. The news items were obtained from internet.

The CG who underwent the same course of instruction with no BU or TD activities began the listening session with pre-teaching of active vocabulary and posing a set of pre-listening questions which they were to answer after the listening. It should be borne in mind that such questions are commonly the only pre-listening activities that keep recurring in listening comprehension classrooms.

After the treatment, the listening section of the PET was administered to the six groups and the participants' mean scores in different groups were compared via one-way and two-way analysis of variance (ANOVA).

4. Results

An independent samples t-test and a one-way between-subjects ANOVA test were run to assess the initial homogeneity of UI and LI groups and that of the three sub-groups at each level at the onset of the study. Then a two-way between-subject ANOVA was run on the six groups' listening post-test scores to test the effect of BU and TD activities on the six LI and UI sub-groups' listening comprehension, as posed in research questions one and two. Finally, two independent samples t-tests were conducted to answer the third research question by comparing the BU and TD groups' listening scores at LI and UI levels.

4.1. The Initial Homogeneity of the Participants

Having checked the normality of the sets of research data obtained from the OPT and the PET, $p>.05$, the data obtained from the OPT were first compared to assess the groups' initial homogeneity. The difference between the UI group ($M=14.52$) and the LI group ($M=15.91$) was statistically tested via an independent samples t-test the results of which indicated that the difference between the two sets of triadic groups reached significance level, $t(118)=-3.97$, $p=.000<.05$, supporting the placement of the participants at two different proficiency levels.

Since each group had further been subdivided into three distinct sub-groups of BU, TD and CG, it was also crucial to test the initial homogeneity of

the three subgroups at the onset of the study. Hence, the groups' descriptive statistics were calculated for the TD (M=14.32), the BU (M=15.06), and the CG (M=14.19) at LI and UI levels, respectively. Further, a one-way between-groups analysis of variance was conducted to compare the slight difference among the groups, as presented in Table 1.

Table 1. *The ANOVA for the LI and UI Sub-groups' OPT Scores*

Pretest					
	Sum of Squares	df	Mean Square	F	Sig.
LI					
Between Groups	8.85	2	4.42	1.13	.32
Within Groups	222.85	57	3.91		
Total	231.71	59			
UI					
Between Groups	1.23	2	.61	.17	.84
Within Groups	201.35	57	3.53		
Total	202.58	59			

As indicated in Table 1, there was no statistically significant difference at $p<.05$ level in OPT scores for the three LI groups: $F(2, 57)=1.13$, $p=.32$, nor for the three UI groups: $F(2, 57)=0=.17$, $p=.84$; that is, all LI and UI participants in the three subgroups could be considered homogeneous in terms of their initial listening comprehension skill.

4.2. BU and TD Processing at LI and UI Levels

The first two research questions addressed the impact of BU and TD processing activities in the pre-listening stage on the listening comprehension of Iranian EFL learners at LI and UI proficiency levels. Hence, first the descriptive statistics were calculated, as illustrated in Table 2.

Table 2. *Descriptive Statistics of the LI and UI Sub-groups' Post-test Scores*

Proficiency	Processing	Mean	Std. Deviation	N
LI	BU	16.53	1.76	20
	TD	14.08	1.44	20
	CG	13.88	1.33	20
	Total	14.83	1.93	60
UI	BU	14.32	1.27	20
	TD	17.01	1.47	20
	CG	11.13	1.23	20
	Total	14.15	2.75	60
Total	BU	15.43	1.88	40
	TD	15.55	2.06	40
	CG	12.51	1.88	40
	Total	14.49	2.39	120

As shown in Table 2, at the LI level, the BU group (M=16.53) stood well above the the TD group (M=14.08) and the CG (M=13.88). At the UI level, however, the TD group (M=17.01) outperformed the BU group (M=14.32) and the CG (M=11.37). Further, the data were assessed for the homogeneity of variances the results of which supported the homogeneity of variances of the post-test scores, $p=.516>0.05$.

Then, a two-way between-groups analysis of variance was conducted to explore the impact of proficiency level and BU and TD activities, as measured by the PET, on the participants' listening comprehension. Table 3 displays the results.

Table 3. *The Two-way ANOVA for the LI and UI Sub-groups' Post-test Scores*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	446.92[a]	5	89.38	43.56	.000
Intercept	25222.75	1	25222.75	1.22	.000
Proficiency	13.83	1	13.83	6.74	.011
Processing	236.79	2	118.39	57.70	.000
Proficiency*Processing	196.29	2	98.14	47.83	.000
Error	233.88	114	2.05		
Total	25903.56	120			
Corrected Total	680.81	119			

a. R Squared = .656 (Adjusted R Squared = .641)

As tabulated in Table 3, there was a statistically significant main effect for proficiency level, $F(2,114)=6.74$, $p=0.011<.05$, and for TD and BU activities, $F(2,114)=57.70$, $p=.000<0.05$). The interaction effect between proficiency and processing was statistically significant as well, $F(2, 114)=57.70$, $p=.000<0.05$). The first two research questions were hence responded positively, BU and TD pre-listening activities have differential effects on Iranian EFL learners' listening comprehension at LI and UI proficiency levels. The findings indicated higher mean scores for the BU group at LI level and TD group at UI level supporting the significant impact from the proficiency level.

4.3. The Impact of Proficiency Level

The third research question delved into the effects of proficiency level on the effectiveness of bottom-up and top-down processing activities for Iranian EFL learners. Two independent samples t-test were conducted to answer this research question. Table 4 displays the results.

Table 4. *Independent Samples t-test for the LI and UI BU and TD Groups' PET Scores*

		Levene's Testfor Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df.	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
BU Posttest scores	Equal variances assumed	2.55	.11	4.54	38	.000	2.21	.48	1.22	3.19
	Equal variance not assumed			4.54	34.64	.000	2.21	.48	1.22	3.20
TD Posttest scores	Equal variances assumed	.041	.84	-6.33	38	.000	-2.92	.46	-3.86	-1.98
	Equal variance not assumed			-6.33	37.98	.000	-2.92	.46	-3.86	-1.98

As revealed in Table 3, There was a statistically significant difference in the BU groups' scores at LI level (M=16.53, SD=1076) and the BU group at UI level (M=14.32, SD=1.27), (t(38)=4.54; p=.000<0.05); Similarly, a statistically significant difference was observed in the TD groups' listening comprehension scores at LI level (M=14.08, SD=1.44) and the TD group at UI level (M=17.01, SD=1.47), (t (38)=-6.33; p=.000<0.05).

5. Discussion

The findings revealed that both BU and TD groups at the LI and UI levels did significantly better than the CG, which accentuates the effectiveness of contextualizing listening comprehension tasks by drawing learners' attention towards linguistic features of the input and to activate their background knowledge via BU and TD processing techniques. The findings are in line with numerous previous studies (Batoa, 2013; Fuente, 2012; Kurita, 2012; Navalpakkam & Itti, 2006; Rahimi, 2012; Vandergrift, 2013; Vidal, 2004; Yantis, 2004) which asserted the significance of data-driven and conceptually-driven information processes in language learning and comprehension.

The choice of the optimal attention focusing activities was also found to be at least partially reliant on the learners' proficiency level. The LI participants in the present study benefited more adequately from BU activities while the TD activities were found more effective with UI participants. The findings lend support to those of Vidal (2004) that underscored learners' weakness in BU processing and of Vargas and Gonzalez (2009) who acknowledged the significance of instructing BU listening strategies to beginners.

Employing a self-report five-point Likert scale, Nowrouzi et al. (2012) investigated 100 Iranian EFL learners and reported moderate to serious listening problems relevant to the fast rate of delivery and lapses in sound discrimination as well as morphological confusion mainly owing to highly restricted lexical repertoire and failing to remember the meaning of familiar words. The participants in their study also reported moderate to server problems in dealing with unfamiliar topics and information density but found it less tough to grasp and distinguish the main idea from relevant supporting evidence. High rate of delivery was also noted as a source of difficulty by Goh, (2000), Hassan (2000), Liu (2002) and has been attributed to differences

between English as a stress-timed language and other syllable-timed languages like Chinese and Persian (Griffth, 1991, Lin & Wang, 2006; Hall, 2007). Lexical problems have likewise been associated by Boersma and Cutler (2008) to homophones such as lain/lane that might be alleviated through contextualization.

Such problems shared by many EFL learners are viably more pervasive at beginning to LI levels of proficiency and might be substantiated in terms of the perception, parsing and utilization stages of comprehension (Anderson,1995; Goh, 2000; Vandergrift, 2003), the orientation of attentional resources that might be BU or TD, the extent to which focal or peripheral attention is required for processing input from either source, and the degree of the listeners' metacognitive control over the comprehension process (Vandergrift & Goh, 2012).

Conceivably, lower level EFL learners have a more restricted linguistic repertoire in the target language and employ more data-driven mechanisms to process the input they receive. Perception of information from sensory memory to the working memory is initially dependent on controlled focal attention while practice and elaboration are conditions for submitting the uptake from short-term to long-term memory. Over time and through extensive exposure to comprehensible input (Krashen, 1985), restructuring (McLaughlin, 1990), or metacognitive control (Vadergrift & Goh, 2012) the content of the long-term memory expands and comprehension processing becomes automatic reliving the burden on attentional resources and facilitating concomitant data-driven and conceptual- driven processing. In fact, it seems to be the adequate focus on prerequisite linguistic components of the input at initial stages and sufficient meaningful and communicative practice that can automatize processing mechanisms which permit spotting the attention on constituent elements of the

data to check various features against the mental prototype, a BU process, or on the conceptual mental representations first and then to the features present in the data giving rise to TD processing.

When applied to language learning, concomitant attention to constituent cores of the data, e.g. phonological and lexical features, and to the conceptual mental representations, entails the very existence of relevant mental representations in English and at the same time highlights the intricate challenge posed by such a bi-directional focus for lower level language learners who are striving to communicate in a language to which they are not natives (Chen, 2013). Although complementary nature of processing mechanisms has been stressed (Stonovich, 2000), striking the right balance in implementation of BU and TD techniques and activities at various proficiency levels seems to hold the key to more enhanced learning experiences. Learners at lower proficiency levels with presumably more restricted conceptual resources in the target language (Kasevich, 2010; Masalimova et al., 2014; Vadergrift & Goh, 2012) need to focus more on the linguistic data which can cautiously be employed in further TD activities. More proficient learners, however, are assumed to have already established sufficiently rich schemata to make sense of the linguistic input and can move more easily back and forth between their long-term and short-term memory stores. This was found to hold true even for learners along the intermediate continuum, LI and UI.

The effectiveness of BU and TD techniques at PI and UI proficiency levels might be construed in terms of the participants' Zone of Proximal Development (ZPD), an interactive, collative adaptive process comprising both assimilation and accommodation (Smith, Dockrell & Tomlinson, 1997). While assimilating, learners incorporate new knowledge into their existing mental structures to expand this knowledge bank (Pritchard, 2009) which is simply

known as their background knowledge. The mental processes at work are technically referred to as BU mechanisms that direct the locus of attention to the outward information since absolutely no relevant schematic representation of the information exists in the mind. Addition of the new information brings about some alteration to the mental structures which has to be controlled to avoid contradiction and reach a stable state of equilibration. The hierarchical nature of these processes can justify the findings from the current enquiry.

The BU techniques employed by the teacher at LI level seem to have aided the participants to assimilate the new information, incorporate it into their background knowledge, and accommodate their mental structures equipping them with what they needed to comprehend the listening texts. Application of TD activities did not prove effective for the LI group since the participants lacked prerequisite mental structures. Conversely, at the UI level where the learners had developed more complex mental resources in the language, TD processing activities could successfully activate the right schemata enabling the participants to prognosticate some sort of relationship between the incoming information and what they had previously stored. This prognosis seems to have fueled their comprehension by bridging the gaps.

6. Conclusion

The gradual evolution of listening instruction could be traced from a purely text-orientation towards communication-oriented, learner-oriented, and metacognitive-oriented practice (Vandergrift & Goh, 2012). A stronger emphasis on the application of skills and micro-skills and on raising learners' consciousness of the very nature of the listening process (Buck, 1995) and metacognitively training listeners how to regulate and direct their cognitive comprehension processes (Goh, 2008) characterize listening instruction in the

post-method era. The findings from this study underscore the stronger need for outweighing BU mechanisms at lower proficiency levels and offer a number of implications for syllabus designers, practicing teachers, and EFL learners. Close scrutiny of listening instruction in Iranian context will certainly unveil overlook of BU techniques and the learners' legitimate demand for taking into account linguistic features of meaning-focused input in the form of listening and reading texts. Syllabus designers are recommended to acknowledge this local need by incorporating some supplementary BU activities in teacher's guides that accompany each series of course books.

Moreover, practicing teachers are advised not to rely exclusively on the course book materials which may overemphasize TD processing in adherence to a more communicative methodology. Course books can be complemented by some meticulously selecting BU activates from the wide range of sources available in the form of on-line supplementary materials that can be incorporated into various stages of teaching. Even if the need for language-focused learning and practice in BU processing is officially overlooked by executives and teachers, learners can take the lead and plan some self-generated BU activities.

This study was delimited to a small sample of LI and UI learners at a given institute. Extending the research to larger samples of male and female learners at elementary and advanced levels will provide a more valid account of the interaction between processing and proficiency across gender. In addition, this study did not take into account strategy training as a variable that might influence the quality of the learners' information processing. Whether and to what extent addition of cognitive and metacognitive strategy training at different stages of listening instruction might prove effective in enhancing male

and female EFL learners' listening comprehension at different proficiency levels is also a fertile soil for future research.

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