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Gender Differences in Listening: Research Perspectives

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Abstract: This paper reviews gender differences in listening. The paper focuses on three main questions for reviewing related studies published previously: (1) Between boys and girls, who listen better? (2) Reasons males or females listen better? and (3) Which method(s) researchers mainly used to explore gender differences in listening? Two major fields of research in listening were investigated: cognitive and metacognitive studies. The review reveals that male and female students have used different brain hemispheres for their listening comprehension although there are still debates and discussions on this issue. The reasons males seem listen more attentively than females are due to that fact that males are likely to pay attention to facts while females on the contrary like to listen to information. Surprisingly, there is no clear indication or conclusion to the question "Between males and females, who listen better?", but this review recognizes that metacognitive instruction helps raise learners' metacognitive awareness and assists them in their listening comprehension improvement. Three research methods mostly used for investigating gender differences in listening are recognized which are dichotic listening, brain-dominance inventory, and Metacognitive Awareness of Listening Questionnaire (MALQ) focusing on raising listeners' cognitive and metacognitive awareness when students perform their listening tasks.

Keywords: Brain dominance, Brain hemispheres, Cognition and metacognition in listening, Gender differences in listening, Sex differences in listening

About the Author

Nguyen Minh Trang has been teaching English at tertiary level for over 30 years. Currently, he works as a lecturer for the Faculty of Foreign Languages, Binh Duong University. He also works as a guest lecturer for international and national universities in Ho Chi Minh City, Vietnam. He has several international publications under his credit. His research areas of interest include listening, ELT methods, translation and interpretation, and discourse analysis.

1. Introduction

Researchers have theorized that gender differences will affect students' performance in the classroom (Ackerman, 2006; Gibb *et al.,* 2008). They said that educational practitioners should be aware of the specific academic areas in which these gender differences occur. In this paper, I will investigate gender differences in students' listening comprehension that helps educators design listening tests students can better understand their listening tasks in classroom situations.

Indeed, gender is a listening variable. Brain imaging research (Phillips *et al.*, 2001) demonstrates that men and women bring some very real differences in attention styles and cognitive processing styles to the communicative interaction. Research by Booth-Butterfield (1984) also reveals that males and females listen for different purposes and have different listening goals. Booth-Butterfield says that "the primary contrast appears in task versus

interpersonal understanding: Males tend to hear facts, while females are more aware of the mood of the communication" (p. 39).

Canary *et al.*, (1993), after analyzing hundreds of studies, discovered that men and women listen differently due to unfamiliar reasons. Men and women seek different information from the speaker. Canary also finds out that men focus on the facts when women focus on the mood of the communication. This finding is identical with the previous finding by Booth-Butterfield (1984). These researchers find out that women often communicate at a greater extent because women feel the more information they share, the more the other person understands. However, men see this as a waste of time and that may be the reason when men speak, they often go straight to the point. This makes me question whether gender differences in listening are real? To make it easier for the review, the author of this article asked the following three questions:

1. Between males and females, who listen better?
2. What assists males or females listen better?
3. Which methods do researchers commonly use to explore gender differences in listening?

The objectives of this article is to assist researchers and educators in the field of listening or academic listening understand (a) listening tests should be designed differently to suit candidates of different sexes if gender differences in listening do exist, (b) academic lectures related to academic listening at university should be carefully designed before being delivered to different sexes of students to gain lecturing goals, and (c) suggest less complicated methods for further related studies.

2. Literature Review

For the review of literature related to the issue "man and women listen differently", the author looked at both cognitive and metacognitive studies to find out answers to the mentioned questions.

2.1 Cognitive studies

It is generally considered that women are better in language ability. However, several investigations have indicated that men often are better listeners than women. For example, in an experimental study of Chinese college students aged 18-20 by Boyle (1987), the researcher discovered that the girls were superior in general language proficiency while the boys had higher mean scores in listening vocabulary. Boyle gave students different kinds of tests to understand their listening abilities: a vocabulary recall, a listening passage, a listening conversation, two dictations, vocabulary identification given orally and some other items related directly to listening. He found out that males did significantly well on vocabulary tests while females did significantly well on the other tests. However, when Feyten (1991) looked at the university students of French and Spanish, he found no relationship between gender and any foreign language proficiency measure while Bacon (1992) looked at university students of Spanish. Bacon also failed to find any relationship between gender and listening comprehension.

Bagheri and Karami (2014) implemented a study on EFL learners' IELTS listening performance in Iran. The main aim of the study was to investigate the effect of explicit teaching of listening strategies on EFL learners' listening scores in an IELTS test. The second purpose was to explore the effect of gender on participants' final listening performance. Forty participants at advanced level attended the classes over a period of three months. Iranian participants were divided into control and experimental groups. The former was only exposed to listening input and the latter received explicit teaching of listening strategies (e.g., selective listening, predicting, and finding key words). They were divided the research participants into male and female classes. The findings demonstrated that explicit teaching of listening strategies had significant effects on participants' IELTS listening scores. However, in terms of the effect of gender, results revealed that gender did not have any effect on participants' IELTS listening scores, and as gender differences in listening comprehension result is still small, therefore, it is inconclusive to confirm the relationship between gender and listening ability.

Lehto *et al.*, (2003) and Piscitelli *et al.*, (2015) conducted their research to find out the relationship between listening and reading comprehension. Lehto *et al.*, (2003) found specific differences in listening comprehension, which, according to these researchers, can be a good predictor of an individual's skills in reading comprehension.

Lehto's study was done with primary school graders who listened to six passages read on a compact disk. Then, the participants listened to 12 sentences related to the passages and were told to mark on their answer sheets whether each sentence was correct or incorrect. Girls' listening comprehension scores were significantly higher than boys' scores, and the difference was comparable to those typically found for females in reading comprehension. Piscitelli *et al.*, (2015) conducted a comparison the students' comprehension when listening to texts or silently reading texts. Twelve students from grade 2 and twelve students from grade 4 of two suburban and district schools participated in the research. The students were asked to listen to a narrative passage from the Qualitative Reading Inventory and reading a passage silently. The results of the study showed that when investigating "gender influence on *silent* reading and *listening* comprehension, girls performed better on *listening* and boys performed better on *silent* reading comprehension." (p. 25)

2.2 Men and women use different sides of the brain for their listening?

Gender differences in laterality might account for the pattern of cognitive sex differences that were reported (e.g., Garai & Scheinfeld, 1968; Maccoby & Jacklin, 1974) nearly 40 years ago, particularly after a review on this question by Levy (1971). Researchers saw it as more than a coincidence that men would outperform women in specific right hemisphere functions doing "visual-spatial tasks" whereas women would have the advantage in particular left hemisphere functions performing "verbal tasks". Levy (1971) expected that men should be more lateralized than women in both verbal and non-verbal tasks, whereas Buffery and Gray (1972) predicted that women should be more lateralized than men. Thus, in Levy's view, men should produce a larger left hemisphere advantage than women for tasks involving verbal processes such as reading words on a computer screen or repeating syllables presented dichotically. Similarly, men should also produce a larger right hemisphere advantage than women for non-verbal tasks such as comparing rotated shapes on a computer or identifying emotions in a dichotic task. Perhaps these ideas predict sex differences in an opposite direction to Buffery and Gray's position.

Researchers have used dichotic listening to test these contradictory predictions. In particular, Hiscock *et al.*, (1994) conducted an exhaustive survey to identify auditory laterality studies relevant to sex differences. Hiscock's dichotic listening experiments showed that 92 out of the 141 studies (65.2%) relevant to gender differences. When sex differences were reported, they typically supported the notion of greater lateralization in men than in women. Hiscock *et al.*, (1994) concluded that there might be small population-level sex differences in laterality. The pattern of results that they observed has supported for Levy's (1971) view.

Voyer (1996) looked at Hiscock *et al.*, (1994)'s literature review again and studied sex differences in laterality from a quantitative view. He conducted a meta-analysis using visual, auditory, and tactile laterality measures to measure gender differences in perceptual asymmetries from 266 studies that were conducted before 1994 resulting in 396 effect sizes. For his purpose, only the auditory modality is relevant although Voyer, like Hiscock *et al.,* (1994), also included monaural tasks in his analysis. His study resulted in 120 effect sizes from studies illustrating that gender is a factor of laterality effects, with 94 effect sizes drawn from verbal tasks and 26 from non-verbal tasks. His dichotic listening tasks produced homogeneous effect sizes regardless of task type indicating significant sex differences in the magnitude of laterality effects: men obtaining larger laterality effects than women. However, the mean weighted effect sizes by Voyer's study only indicated an average difference of 0.063 standard deviation units between the auditory asymmetry of male and female participants that led to a similar conclusion with Hiscock *et al.,* (1994)'s that small population-level sex differences in auditory asymmetries have been recognized in their studies. Voyer (2011) carried out another study examining gender differences in auditory asymmetries by means of a meta-analysis. He studied available published literature using dichotic listening as a measure of laterality. The study included 249 effect sizes pertaining to gender differences, and 246 effect sizes for the main effect of laterality, resulting in small and homogeneous gender differences in laterality in favor of men (d=0.054). The results were discussed with reference to top-down and bottom-up factors in dichotic listening. The results supported there is an existence of a small population-level difference, and that men tend to be more lateralized than women.

Liederman *et al.,* (2012) in their study "*Sex Differences in the Use of Delayed Semantic Context When Listening to Disrupted Speech".* They conducted their research when they had research participants listen to spoken words in noisy environments. Eighty-four adult participants (among them were forty-four males) were asked to listen and repeat each sentence. The purpose of the study was to measure the participant's speech perception when

listening to speeches delivered in noisy situations. The semantic benefit effect (SBE) was the difference in the accuracy of report of the disrupted target word during informative versus uninformative sentences. The researchers wanted to test if listeners could perform their listening well in noisy environments with wide variations in audibility, different accents, and different rates of speech. The results of the study showed that females had significantly higher SBEs than males, even though there were "no significant gender differences in terms of number of non-target words reported, the effect of distance between the disrupted target word and the informative cue, or kinds of errors generated". The study revealed that females seem superior than males in using delayed semantic information to decode ambiguous speech signals. They concluded that females tend to engage the hemispheres more bilaterally than males in their word processing, and females have more advantage in proceeding semantic content under ambiguous conditions using their left hemisphere effectively. This claim is rather similar to other researchers (e.g., Gur *et al.,* 1999) concluding that women benefit from a delayed semantic cue more than men that may be related to gender differences in brain lateralization. It is interesting to notice that neuroimaging data from the study have suggested that when females when performing verbal tasks, they often activate both of the brain hemispheres whereas males merely activate primarily the left hemisphere. In addition, Shaywitz *et al.,* (1995) also reported that in right-handed neurologically intact participants, about half of all women manifest bilateral Broca's area activation during phonological processing, and this bilateral activation has never been reported in right-handed men. A similar report on bilateral-female/unilateral-male pattern occurs when listening to a novel or story by Kansaku *et al.,* (2000) and Phillips *et al.,* (2001). Researchers reported that, when females are visually learning novel pseudo words, they bilaterally activate their so-called visual word form area; males primarily activate just the left visual word form area (Chen *et al.,* 2007; Dong *et al.,* 2008). In fact, gender or sex differences have been reported related to right hemisphere activation during visual speech-reading tasks. Ruytjens *et al.,* (2006) found in their research that men activated a more left-lateralized set of networks in speech reading than women.

The purpose of Kök's (2014) study is to assess students' listening comprehension achievement with regard to brain dominance in compliance with the principles of Representational Systems. Thirty-two Turkish students (21 females, 11 males) from the English Language Teaching department of a university took part in the study which was based on a randomized pre-test and post-test control group design. Kök used a brain dominance inventory, and a listening comprehension test in his study. For data analysis, arithmetic mean, standard deviation, percentage, t-test and single factor covariance analysis were administered. The significance level of the tests was .05. The brain dominance inventory rearranged by Davis *et al.,* (1994) was used to determine the brain dominance of the students. The Cronbach Alpha reliability of the brain dominance inventory, which was translated and adapted into Turkish by Kök (2005, cited in Kök, 2014), was .87. The students were also given a 25-item multiple choice listening comprehension achievement test, the KR-20 reliability of which was .89 to assess the listening comprehension achievement of the students. The study resulted in a difference between the listening comprehension achievements of the students who received English Language education designed in compliance with the principles of primary Representational Systems and those who were educated with the traditional methods with regard to the brain dominance inventory; however, there was no statistically significant difference observed between the right brain use of the two groups.

Similarly, Davis *et al.,* (1994) implemented research with the participation of 49 students which was designed to investigate their learning styles and the use of brain functions. For the brain study, the researchers used the Brain-Dominance Inventory (see Appendix) to see if the students would use which side of the brain for their study. A summary of the Brain-Dominance scores shows that 47.2 percent of the total participants had a bilateral score, and that score was so close in the slight preference category that indicated little different. 29 students said they used the left-sided brain while 9 students had their right hemisphere use. The total of students who had either bilateral or in a slight preference category came to 87 or 84.5 percent.

What does it mean when students use either side of the brain or both sides of the brain in their learning or listening? Davis (1989) and Kindell and Hollman (1989) reported that if learners are auditory, teachers should use more visual or audio resources as learning aid for students' learning. Resources for listening like lectures, discussions, and small group talks are recommended when teachers deliver their speeches. Records, tapes, videotapes, using stereo, radio, and television programmes are also recommended to help students listen well to spoken language. Kindle and Hollman (1989) also used the Brain-Dominance Inventory to implement their study. The brain-dominance inventory scores showed that most students in the sample were either bilateral or in the slight preference category

(84.5 percent). The researchers discovered that most of their students had used a number of the functions of both hemispheres. The results have indicated that students needed to incorporate ways to facilitate learning that would meet both preferences. The researchers give general tips to teachers for facilitating learning based on hemisphericity. For instance, they said for students with a left-brain use, teachers can apply an approach that helps students discover things themselves because students using the left brain like to think that theoretical details are important. These students tend to work alone. Therefore, they should be encouraged to find problem-solving solutions by themselves. For these types of students, new concepts and procedures can be taught logically with analytical exploration. Classroom atmosphere can be "businesslike, and the room can be functional, work-oriented, and uncluttered". relationships between teachers and students can be formal, and teachers can play a role of "authority figures". For students who use their right-brain hemisphere, teachers should clearly explain all abstract notions, principles and processes before lessons are taught as these students need time to assimilate materials and they prefer working with other people. Teachers should play a role of guides or facilitators. Problem-solving exercises should be done with models instructed with concrete steps. Complex tasks should be clearly explained, and class atmosphere should be relaxing and learner-friendly. Teachers are there to help right-brain preference strengthen their personal relationships with friends and to assist right-brain users learn better.

2.3 Metacognitive studies

Metacognition is defined and applied in various ways. Researchers think metacognition is our ability to think about our own thinking or cognition, to some extension, metacognition relates to the ways we process information for different purposes and how we manage the ways we do it. It is the ability to investigate from what occupies our mind at a particular moment in time to analyze and evaluate what we are thinking. Although metacognition has been defined widely in literature, perhaps the most common definition of metacognition is that "metacognition is individuals' having information about their cognitive structure and being able to organize this structure" (Akturk & Sahin, 2011, p. 2). This definition is also found in research work done by Flavell (1979), Wellman (1985), Brown (1987), Jacobs and Paris (1987), Schraw (1994), Livingston (1997), Dunlosky and Hertzog (2000), Georghiades (2004). Thanks to metacognition, we can construct our understandings and the world around us, monitor our thoughts and behaviors (Kluwe, 1982, cited in Hacker, Dunlosky, & Graesser, 2009). For language learners, by applying metacognition, they gradually gain more control of their learning using effective methods in problem-solving and understand better of what they learned. Hacker *et al.,* (2009) said that "at the minimum, learners to be aware of their learning, to evaluate their learning needs, to generate strategies to meet their needs, and to implement these strategies." (p. 1). Metacognition has been referred to with different terms such as the "seventh sense" in learning as Nisbet and Shucksmith (1986) named it. Wenden (1987) is the researcher who has added the concept of metacognition in language learning. Wenden recognized the role of metacognition in developing language learners' autonomous learning. He actually added a new dimension to the discussion that a good language learner is a person who can be metacognitively aware of his self-directed abilities, and therefore will take charge of his own learning processes. Since Wenden's pioneering work, other researchers have conducted further investigations on the role of metacognition in language education, especially in reading and listening skills.

In metacognitive listening, males were reported to feel less anxious and were more self-efficacious than females (Pintrich & De Groot, 1990). Yet, females know more about cognition that helps them in their self-regulation, and they employ more metacognitive strategies than males in learning situations (Peklaj & Pecjak, 2002). In their study, Lin & Wu, (2003) confirmed that listening favors women, while grammar and vocabulary goes better for men. Robichaud *et al.,* (2002) found that women reported negatively in problem solving, and they were engaged more in cognitive avoidance, thus leading to excessive worry. However, other studies (e.g., Kimura, 2008) did not find any gender differences on lack of confidence in listening and anxiety over English listening tests.

Abdelhafez (2006) carried out a study on the effect of some metacognitive language learning strategies on developing listening and reading comprehension of EFL university freshmen. 80 first-year EFL majors at the Faculty of Education, Minia University participated in this study. 40 students joined the experimental group and another 40 students joined the control groups. Some metacognitive language learning strategies in listening and reading comprehension tasks were given to the experimental group while the control group completed the tasks without any metacognitive training. To measure the effects of the study, a listening comprehension test, a reading comprehension test, and an English Proficiency Examination were designed. A T-test of the study data revealed that students from

the experimental group surpassed their counterparts from the control group in listening, reading, and the English Proficiency Examination post-tests. The author concluded that training in metacognitive language learning strategies helped develop EFL learners' listening and reading skills and raise their language proficiency levels.

Selamat and Sidhu (2011) conducted a study on ESL Malaysian students' perceptions of metacognitive strategies used in understanding lectures. The researchers recognized listening performance to lectures is hard, especially for freshmen. It is even more difficult for them to listen to lectures in spoken English. 34 first-year students from the faculty of education in a public university took part in the study. A questionnaire and semi-structured interviews were used as tools for data collection. Data revealed that the students perceived the metacognitive strategy training improved their listening skills to lectures. Findings from the research suggested students should be encouraged to play a more active role in overcoming their listening difficulties using the metacognitive knowledge to help them solve out problems in lecture listening.

Ratebi and Amirian (2013) researched types of metacognitive strategies students used when they practiced listening. Ratebi *et al.,* (2011) conducted his study with university English majors in Iran from high and low-proficiency listeners. The results showed that the participants used "problem-solving strategies most frequently and person-knowledge strategies least frequently". The authors also discovered that high-proficiency listeners used metacognitive strategies more than low-proficiency listeners. There was also a significant difference in the use of "person-knowledge strategies" between these two groups of listeners.

Coskun (2014) studied the effects of metacognitive strategy training on the listening performance by Turkish beginner students. A control group (n=20) and an experimental group (n=20) were selected as the subjects of the research. The experimental group received five-week training embedded into a listening course book while the other group did not. At the end of the intervention period, a listening test adopted from the course book was used to administer the two groups. T-test results revealed that the experimental group performed statistically better in the listening test. The research suggested that metacognitive strategy training should be blended in the regular listening teaching programs to assist students become better listeners.

An increasing interest in applying metacognitive instruction to improve language learners' listening comprehension has emerged for nearly two decades (Bozorgian, 2012; Fahim & Fakhri Alamdari, 2014; Hossein, 2015). Researchers have conducted studies to investigate the impact of metacognitive strategies on students' listening comprehension, particularly when they took IELTS listening tests or listening to academic lectures.

Bozorgian (2012) and Hossein (2015) studied the role of metacognitive instructions in listening comprehension. These authors carried out their studies on the impact of metacognitive instruction on Iranian students' listening comprehension when taking IELTS listening tests. Both studies focused on the "strategy-based" approaches. 28 adult students of high intermediate level of Iranian EFL learners applied the advanced organisation, directed attention, selective attention, and self-management metacognitive strategies in their IELTS listening while other 32 female learners used a "strategy-based" instruction, planning, monitoring and evaluation when performing their IELTS listening. A comparison of pre-test and post-test of each study scores revealed similar results: low-proficiency listeners improved more than high-proficiency listeners in the IELTS listening sections. Findings of both researches do support the hypothesis that metacognitive instruction helps listeners in the listening process and improving listening performance.

Fahim and Alamdari (2014a, 2014b) conducted a study examining the effects of metacognitive instruction on EFL learners' metacognitive awareness and their listening comprehension. Thirty listeners (12 male and 18 female students aged 20-24) at intermediate EFL level participated in a ten-week intervention program in metacognition. The focus of metacognition was on prediction, monitoring, evaluating, and problem-solving investigated by the Metacognitive Awareness Listening Questionnaire (MALQ) (see Appendix). A listening test was also designed to track changes in the participants' metacognitive awareness and listening performance before and after the intervention period. Pre-test and post-test scores of the study revealed that metacognitive instruction raised the learners' metacognitive awareness, and helped them improve their listening comprehension abilities.

3. Methods

3.1 Study design

An in-depth investigation of published articles available on the Internet and books written on this topic has been used for this review. Key terms (*gender differences in listening, sex differences in listening, brain dominance, brain hemispheres, listening comprehension)* which are mentioned on the abstract of this review were extensively used to google out information, mainly via Google, Google Scholar, Research Gate, and Academia.edu. Particularly, references cited from published articles were also re-used extensively to reach the targeted reference materials.

3.2 Data collection and data analysis

Document analysis techniques including skimming, reading and interpretation techniques recommended by Bowen (2017) as a main process for data analysis were used which involved content analysis and thematic coding of the collected data (see Figure 1). Concretely, content analysis helped the reviewer organized information into categories related to the central questions of the review, and it helped this reviewer identify pertinent information (Corbin & Strauss, 2008; Strauss & Corbin, 1998). Thematic coding for analysis carried out in this review has assisted the reviewer in discovering the emerging themes from the collected data, which became the categories for analysis (Fereday & Muir-Cochrane, 2006).

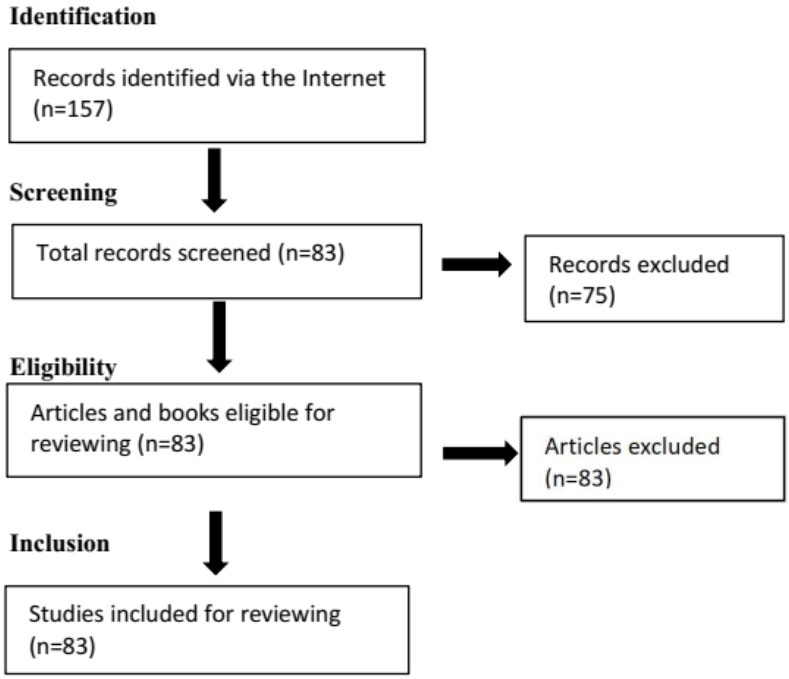

Figure 1. Article and book selection process for reviewing.

4. Findings

From the two fields of cognitive and metacognitive studies, the review focused on the three targeted questions to find answers to: (1) males and females' differences in listening, (2) who listens better: males or females, and (3) which common tools or methods which the researchers or authors have used to measure gender differences in listening to spoken English?

Data analysis shows that men and women do listen differently due to the purposes or goals they aim at. Concerning about the question "who listens better?", the review of of this paper finds confused as various studies resulted in different claims related to this matter of concern. It seems listening results are also depended on extra factors other than the tests or examinations, including the use of the brain hemispheres, anxiety, background knowledge that listeners acquired before, cognitive or metacognitive instruction, and proper listening strategies. Common methods used to explore gender differences in listening comprehension include dichotic listening, the Metacognitive Strategy Instruction (MetSI), and the Metacognitive Awareness Listening Questionnaire (MALQ) although some researches have used functional Magnetic Resonance Imaging (fMRI) as a measurement tool for this topic; however, the techniques of instructing this tool is rather complicated and costly which required funds and

groups of researchers for longitudinal studies. In addition, as the study is complex and long-term experimental, participants in this type of research is rather limited (Cai *et al.,* 2021).

5. Discussion

Research demonstrates that males and females have real differences in attention and cognitive processing styles when performing their interaction (Phillips, Lowe, Lurito, Dzemidzic, & Mathews, 2001). Research reveals that different sexes find their own ways to learn to listen depending on their different purposes and different listening goals (Booth-Butterfield,1984; Phillips, Lowe, Lurito, Dzemidzic, & Mathews, 2001). For instance, Booth-Butterfield (1984) said that "the primary contrast appears in task versus interpersonal understanding: Males tend to hear facts, while females are more aware of the mood of the communication" (p. 39). From their studies (e.g., Liederman *et al.,* 2012; Shaywitz *et al.,* 1995) confirmed that women tend to engage their hemispheres more bilaterally than men do in their word processing. These authors said that females have more advantage in proceeding semantic content under ambiguous conditions, using their left hemisphere effectively. This claim is rather similar to other researchers (e.g., Gur *et al.,* 1999). It is interesting to notice that neuroimaging data from Gur's study have suggested that when women perform verbal tasks, they often activate both of the brain hemispheres whereas males merely activate primarily the left hemisphere. In fact, sex differences have been reported in terms of the degree of right hemisphere activation during visual speech-reading tasks. Ruytjens, Albers, VanDijk, Wit, and Willemsen (2006) also conclude in their research that men activated a more left-lateralized set of networks in speech reading than women. Based on a review of the literature, Beeman and Chiarello (1998) concluded that language learners use the right hemisphere of the brain d to "maintain activation of a variety of semantic relations between words, alternate meanings of ambiguous words, and metaphoric interpretations". In contrast, learners use the left hemisphere in auditory language comprehension, primarily focusing on "single words in a sentence and selects only the dominant meaning of each word". Therefore, from these studies, I think the fact that women greatly use that their right hemisphere as compared to men may contribute to women's superiority in the use of a delayed semantic cue to disambiguate an earlier-occurring disrupted word.

Who listens better?

Several researchers concluded in their studies that men outperform women in right hemisphere functions of visual-spatial performance tasks whereas women have the advantage in left hemisphere functions involving verbal tasks (Garai & Scheinfeld, 1968; Levy, 1971; Maccoby & Jacklin, 1974). For students with a left-brain use, researchers recommended teachers to use the discovery approach as these types of students like to find theoretical details which are important to them. Researchers also discovered that students who use a left-brain hemisphere prefer working alone. Therefore, problem solving, new concepts and procedures that are taught to these types of learners should be logically explained and analytically explored. They also like graphs, charts, and tables aid learning. For these students, the class atmosphere should be businesslike, and the classroom can be functional, work-oriented, and uncluttered (Kindell and Hollman, 1989). For students having a right-brain preference, they like to work with other friends. All concepts, principles and procedures in taught lessons need time to assimilate materials. Problems should be solved with models or with verbalized steps and explanations should be given to complex tasks. A relaxing and friendly classroom atmosphere should also be taken in notice. In fact, review of this paper shows there is gender differences in listening between males and females (Feyten, 1991; Bacon, 1992; Lehto and Anttila, 2003; Bagheri and Karami, 2014); however, who listens better is still debated and needed for further research confirmation. But this review has found out the reasons males or females can be promoted to become better listeners in L1 or L2 listening comprehension as described in the next section.

What assists males or females listen better?

This review discovered that metacognitive instruction raised the learners' metacognitive awareness and assisted listeners improve their listening abilities. The metacognitive framework that researchers have proposed serves two important functions in language education in general and in listening comprehension in particular: (1) raising listeners' "knowledge about cognitive states and processes", and (2) helping listeners in self-management or in their "control of cognition" while listening (Paris & Winograd, 1990). Research findings do support the view that

metacognitive instruction has assisted listeners in considering the process of their listening input and promoting learners' listening abilities (Bozorgian, 2012; Hossein, 2015). Ratebi and Amirian (2013) and Coskun (2014) have found out that proficient listeners used metacognitive strategies more frequently than less proficient listeners, therefore, the use of "person-knowledge strategies" do make a difference in listening results between the two groups of listeners. In addition, metacognitve strategies including prediction, monitoring, evaluating, and problem-solving proved to assist improve intermediate EFL listeners (Fahim & Fakhri Alamdari, 2014a, 2014b).

Methods used to explore gender differences in listening

The review of this paper also revealed common research methods that most researchers used to explore sex differences in listening education. In cognitive studies, dichotic listening (e.g. Gruber & Gaebelein, 1979; Hiscock *et al.,* 1994; Voyer, 2011; Cai *et al.,* 2021), and recall/checklist recall were often used to evaluate gender differences in using brain hemispheres for listening comprehension. For instance, Gruber *et al.,* (1979) implemented a study at the University of North Carolina at Greensboro for the first author's master's thesis experiment with the participation of 120 (60 males and 60 females) graduate and undergraduate college students. Participants presented a talk on either a masculine (chess), feminine (interior decorating), or neutral (snow skiing) topics. The results supported the "hypotheses that when a male speaks, he is listened to more carefully than a female speaker, and males were still recalled better than females". (p. 1)

In metacognitive studies, the most two common methods used by researchers are Brain-Dominance Inventory (see Supplementary information) and the Metacognitive Awareness Listening Questionnaire. With Brain-Dominance Inventory, researchers (e.g., Davis, 1994; Selamat & Sidhu, 2011; Kök, 2014) examined how language listeners use their brain hemispheres to understand listening tests. With the Metacognitive Strategy Instruction (MetSI), and the Metacognitive Awareness Listening Questionnaire (MALQ), researchers (e.g. Fahim & Alamdari, 2014a; Vandergrift *et al.,* 2011; Vandergrift & Goh, 2021) used the metacognitive strategies, metacognitive strategy instructions to explore metacognitive processes that language learners used to develop their listening comprehension skills when they are assigned to perform listening tasks.

6. Conclusion

Gender differences in listening is true, and these differences should be the focus of further research in the future. This review reveals the fact that listening tasks assigned to language learning, especially in the field of listening should be carefully designed with the notion of sex or gender differences as male and female students learn and listen differently; therefore, not all listening exercises can satisfy the ears of learners of different sexes. Thus, results may be different between groups of males and females possibly depending on the listening tasks or listening tests designed.

More studies in this area should be done with appropriate methods that can help reduce anxiety while language learners practice listening. Review of this paper shows that creating a businesslike or friendly atmosphere for male or female learners should also be taken into great consideration when listening lessons or listening tasks are designed, especially with listening tests designed for important evaluation or assessment.

7. Limitations and Recommendations

Although the author of this review tried to search and cover as many updated papers related to the review topic, the author ensures there are still more resources that can be missed from this view. Further review on the topic is needed, especially the emerging trends of research on brain science that is closely related to listening development of L1/L2 English learners.

Besides the research methods commonly used to investigate gender differences in listening as mentioned in the Findings and Discussion sections of this review, it is recommended that researchers and educators should think of other methods which can easily be applied in classroom using technology as a means of listening comprehension measurement, like the use of smartphones by right- or left-brain hemisphere phone users as one of the many examples. Apparently, smartphones can tell researchers the tendency listeners use the brain dominance for their better listening comprehension that is also worth of scientific research. Research related to neuroscientific

approaches to L1/L2 listening comprehension and gender differences used by this approach should also be taken into future consideration.

Supplementary Information

Brain-Dominance Inventory is given in the supplementary file (PDF).

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