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## Examining Visual and Auditory Learners' Reading and Listening Comprehension Skills: A Causal Comparative Study

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### Abstract

Reading and listening are two receptive skills indispensable for English language acquisition. Students are given reading and listening comprehension tests in academic settings, increasing the importance of these skills. However, reading and listening comprehension depends on various factors, including learning styles. While previous research in Pakistan has explored the connection between learning styles and academic success, there is a gap in the literature in understanding how specific learning styles, such as visual and auditory, influence fresh undergraduates' reading and listening comprehension. Therefore, employing a causal-comparative design under a quantitative paradigm, this study examined whether reading and listening comprehension differed based on their students' learning styles (visual and auditory). The data was collected using a learning style questionnaire, a reading comprehension test, and a listening comprehension test, and it was analyzed using an independent sample t-test. The findings revealed that students' reading and listening comprehension scores did not significantly differ based on their preferred learning styles, visual or auditory. The findings indicated that sig. values of reading comprehension (0.672) and listening comprehension (0.668) were greater than the p-value of 0.05. Hence,  $H_0$  was accepted, and  $H_a$  was rejected. The study will have implications for teachers who want to adapt their teaching methods to fit the individual learning styles of their students.

### Introduction

Reading and listening, being two receptive skills, cannot be separated from English language acquisition. Students should listen to as many videos or audio and read as many books as possible to speak and write English proficiently. But, students find it challenging to develop their abilities in reading and listening because they have to understand the reading and listening content. Reading involves making sense of written words, and a reader's capacity to understand what an author is conveying is shaped by their prior knowledge of the text's subject (Pang, Muaka, Bernhardt, & Kamil, 2003). Because of this, reading is more than just reading. As Saadi (2012) said, many students face difficulty in reading material because they face difficulty comprehending the text. He discovered that teachers may not have adopted suitable strategies while teaching reading because if teachers use teaching methods that are unsuitable for students, they (the students) lose motivation and interest. Students should become proficient readers because English classes provide a range of reading materials to students.

Compared to reading, listening is a crucial skill that tends to improve quickly in the early stages of learning a new language. This rapid development in listening skills also positively impacts the progress of reading and writing abilities. Listening is an "acceptance technique" in which people can get ideas based on the sounds they hear (Harmer, 2001). To grasp spoken information, listeners must combine details from different sources such as phonetics, phonology, lexis, syntax, semantics, and pragmatics (Osada, 2004). Therefore, learning to listen is challenging as it involves extracting meaning from spoken input, incorporating information from various sources, and storing it in long-

term memory based on one's knowledge of both their native and second language. Bingol, Celik, Yildiz, and Mart (2014) believe that listening is a difficult skill to develop for many students as they need to pay close attention and concentrate. It also requires a quiet environment, because it is difficult to listen in English when there is a lot of noise.

However, it is not easy for students to acquire reading and listening skills simultaneously. Therefore, scholars are addressing common concerns related to reading and listening problems, prompting an investigation into this phenomenon. In this regard, Gilakjani (2012) highlighted that a key goal in a foreign language learning setting is to make students aware of their interpersonal differences and how these differences can influence the learning process and outcomes. Essentially, the diverse personal backgrounds students bring to the classroom may result in varied learning results. Ellis (2003) also emphasized this point, arguing that language learners are different in many ways such as personality, learning style, motivation, ability and age which are important factors to determine English learning success or failure. One such dimension is learning styles. Learning style refers to personal preferences, favorite methods of consuming, storing and maintaining new knowledge and competences (Wang, 2007). As a consequence, each style of learning has its advantages and disadvantages, and people who stick to a style will never be perfect learners (Dennis & Samin, 2011). Given that learning style is a particular way for learners to learn something or a preferred way to learn (Richards, Platt, & Platt, 1992), learners will be happy and willing to absorb information in their own way. Therefore, learning style is about 'how' learners like to learn material, not about 'what' they learn. Many students depend on visual images or gestures (visual), others may give preference to listening to music and learning better by hearing (auditory), while others might engage themselves in to hands-on activities (kinesthetic) and respond better (Barbe & Milone Jr, 1981).

Learning styles influence learning behaviors of students in all settings. The study of Bhatti and Bart (2013) which examined how students' learning styles impact their academic achievement revealed that students primarily adopted specific learning approaches influenced by both learning patterns and gender. Students that have distinct learning styles exhibit distinct behaviors in their perception, interaction with the learning environment, and their response to the learning conditions. Because learners' preferences differ due to certain learning styles, educators need to consider changes in the characteristics of student learning styles. It is important because knowledge about students' learning styles may help teachers know that student bring along their class differences (Wang, 2007). Since many teachers do not pay much attention to how students learn, many students are unaware of their own learning styles. Thus, students do not understand that knowing their learning styles can help them to learn the language easily.

Learning styles play a vital role in academic performance and reading and listening comprehension skills (Braio, 1996; Saadi, 2012). Rizky (2013) undertook a causal comparison study to figure out whether the visual, auditory and tactile learning types of SMP Islam Harapan Ibu sophomores were substantially different in their English grades. The findings revealed significant differences between students' English scores. In addition, Gilakjani (2012) examined the learning preferences of English as a Foreign Language (EFL) students in Iran. The research objective was to enhance teachers' understanding of how learning styles influence the teaching approach. The results revealed that Iranian EFL students tend to prefer visual learning, and those who adopt this style perform exceptionally well in their academic pursuits. Consequently, reading and listening skills proficiency can be considered a significant aspect of students' success in English language learning.

It is evident from the above studies that learning style is one of the key factors which influence language acquisition. It is related to reading and listening scores, as their comprehension is guided by the way students want to learn. They find it easy to take in information, grasp it, perceive it, and process it according to their own preferences. These aspects influence the learning styles associated with reading and listening comprehension. While learning styles are varied, students often have a learning style that is dominant, and they prefer that style to others. As for the reading and listening problems of English students, it is believed that the way of learning, especially the visual way, has an impact on good reading comprehension and auditory learning has the same effect on listening comprehension (Barbe & Milone Jr, 1981). This is also confirmed by Gilakjani (2012) who points out that visual learners learn through perception and imagination, preferring knowledge in text, such as a list of thoughts. Auditory learners are often born listeners who prefer to explain things to them verbally instead of reading written information, and by listening and speaking they learn.

Previous studies have examined the impact of learning styles on academic achievement in Pakistan (Akhtar, 2010; Munir, Ahmad, Hussain, & Ghani, 2018); nevertheless, there is still a dearth of particular studies examining how learning styles - specifically, visual and auditory - affect reading and listening comprehension in Pakistani universities. To bridge this knowledge gap, the study aims to examine whether there is a difference in students' reading and listening comprehension based on their learning styles (visual and auditory). In other words, it aims to find differences in reading and listening comprehension scores of students based on how they learn. In this case, kinesthetic learning style is omitted. This study can help teachers implement more effective teaching strategies catering to each

student's unique learning style. It will also help to improve diverse students' reading comprehension outcomes in classrooms.

### Research Questions

1. What is the difference in students' reading comprehension based on their learning style (visual and auditory)?
2. What is the difference in students' listening comprehension based on their learning style (visual and auditory)?

### Research Hypothesis

H<sub>0</sub>: There is no significant difference between students' reading comprehension test scores based on their learning style (visual and auditory).

H<sub>a</sub>: There is a significant difference between students' reading comprehension test scores based on their learning style (visual and auditory).

## Methodology

### Research Design

Under the quantitative paradigm, this study used causal-comparison study design. Cause-and-effect comparisons are sometimes referred to as ex-post facto, and because its Latin is "after the fact", both the effect and the so-called cause may have occurred, therefore retrospective studies are carried out (Ary, Jacobs, & Razavieh, 2010). The study used a categorical independent variable that involved two sets of learning styles: visual and auditory. Both groups were tested for reading and listening comprehension. Participants' scores on the reading and listening comprehension tests helped measure criterion variables like student's reading and listening comprehension performance. Simultaneously, the predictor variable is the student's learning style. The study focused only on visual and auditory learning styles.

### Sampling and Participants

A basic random sampling technique was employed to choose participants for the analysis, meaning that there is an equal chance for each participant to be included in the sample (Taherdoost, 2016). The participants were 49 students from an English class of first-semester at a public sector university in Pakistan. These students were selected as active participants for this research study because they were either auditory (n=24) or visual learners (n=25).

### Data Collection

The data was collected using three research tools: a) The Learning Style Questionnaire, b) The Reading Comprehension Test and 3) The Listening Comprehension Test. The questionnaire was Perceptual Learning Style Preference Questionnaire (PLSPQ) developed by Reid (1987) and was later adapted by

Gilakjani (2012). This study used the tool's later version, which consisted of 15 items, five for each learning style (auditory, visual and kinesthetic). The questionnaire was made on Google forms and was sent to students via email and WhatsApp. The students answered according to the five-point Likert scale. Based on the Likert scale, the student's answers were scored in this way: strongly agree (5), agree (4), uncertain (3), disagree (2), and strongly disagree (1). The reliability of the scale was calculated at 0.70 which means the tool was reliable.

In addition to it, research participants with visual and auditory learning styles (n=49) were given reading and listening comprehension tests. The reading comprehension test included reading text taken from a number of sources. The multiple-choice questions were tailored according to the level of first semester students. The quiz consisted of 20 multiple choice questions with each having four options: A, B, C and D. Similarly, the listening comprehension test included some short conversations from British Council website, and the test comprised 20 MCQs with each item followed by four options: A, B, C D.

### Data Analysis

For the purpose of data analysis, the questionnaire was utilized to categorize learning styles. Subsequently, students exclusively exhibiting primary visual and auditory learning styles were chosen. The scores from reading and listening comprehension tests were then analyzed. An independent sample t-test was employed to identify differences in reading and listening comprehension between visual and auditory learners. To establish statistical significance in the sample data, the significance level was set at .01 or .05. If the obtained value falls outside this range, it indicates a lack of significant difference (Mueller, 1992). In other words, if a p-value found is less than 0.05, H<sub>a</sub> (alternative hypothesis) is accepted and H<sub>0</sub> (zero hypothesis) is rejected.

## Findings and Discussion

To address the research question, the data was collected from first semester students at a public sector university in Pakistan. The data pertaining to the visual and auditory learners was used for the purpose of this study. Of the students surveyed, 25 were visual learners, and 24 were auditory learners. Next, to find significant differences in reading and

listening comprehension related to visual and auditory learning styles, an independent sample t-test was performed using SPSS 2.7 software.

Before conducting the independent sample t-test, it is essential to assess whether the standard variables (reading and listening comprehension) exhibit a normal distribution within each group. The normality test employed for this analysis is the Shapiro-Wilk test, with a significance level ( $\alpha$ ) set at 0.05. The choice of the Shapiro-Wilk test is justified by the study's sample size of 49 and the presence of two sample sets. The findings indicate that the data conforms to a normal distribution, as the significance values exceed 0.05. Specifically, the significant values for the two groups are 0.07 (Auditory) and 0.094 (Visual), with  $\text{Sig.} = 0.07$  and  $0.094 > 0.05$ . Consequently, it can be inferred that all the data is normally distributed.

Having found out that the data is normally distributed, this study proceeded with the hypothesis. The hypothesis test is important for conducting research to prove that previous assumptions are correct. Thus, an independent sample t-test was performed to assess major differences in reading and listening comprehension using both visual and auditory learning styles. Levene's variance equality test was done to see whether the null hypothesis ( $H_0$ ) is rejected or the alternative hypothesis ( $H_a$ ) is accepted. In other words, it was done to figure out whether any significant difference exists between groups (visual and auditory learning styles).

Table 1 displays data derived from reading comprehension scores of visual and auditory learners. The table exhibits the reading score of students with auditory learning style ( $M= 9.00$ ,  $SD= 0.784$ ) is higher than the visual learning style ( $M= 8.53$ ,  $SD= 0.743$ ). According to Table 2, the p-value is 0.672, which is greater than 0.05, which means that there is no significant difference in reading comprehension between the visual and auditory learning styles. The results of the independent sample t-test suggest that the alternative hypothesis ( $H_a$ ) is rejected, while the null hypothesis ( $H_0$ ) is accepted. This indicates that there is not a significant difference in the mean reading comprehension scores between students with visual learning styles and those with auditory learning styles.

**Table 1. Group Statistics for Reading Comprehension**

	Learning Styles	N	Mean	Std. Deviation	Std. Error Mean
Reading Comprehension	Auditory	24	9.0000	.78446	.20966
	Visual	25	8.5333	.74322	.19190

**Table 2. Independent Sample t-test for Reading Comprehension**

		Levene's Test for 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
n	Equal variance assumed	.183	.672	1.645	27	.112	.46667	.28367	-.11538	1.04872
	Equal variance not assumed			1.642	26.582	.112	.46667	.28422	-.11694	1.05027

After investigating the differences in reading comprehension, the differences in listening comprehension based on auditory and visual learning styles were calculated. The results shown in Table 3 show that the listening score of learners with auditory learning style ( $M= 7.57$ ,  $SD= 1.089$ ) was slightly higher than that of visual learning style ( $M=7.53$ ,  $SD= 1.245$ ). According to the output of Table 4, it is found that the p-value is 0.668, and therefore  $p > .005$ . Hence, it can be inferred that the null hypothesis ( $H_0$ ) was accepted, while the alternative hypothesis ( $H_a$ ) was rejected.

Therefore, the results suggest that there is no significant difference in students' listening and reading comprehension based on their visual and auditory learning styles.

**Table 3. Group Statistics for Listening Comprehension Test**

	Learning Styles	N	Mean	Std. Deviation	Std. Error Mean
Listening Comprehension	Auditory	24	7.5714	1.08941	.29116
	Visual	25	7.5333	1.24595	.32170

**Table 4. Independent Sample t-test for Listening Comprehension Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Listening Comprehension	Equal variances assumed	.188	.668	.087	27	.931	.03810	.43597	-.85644	.93263
	Equal variances not assumed			.088	26.895	.931	.03810	.43389	-.85235	.92854

The findings of the current research indicate that there was no significant difference in students' scores for reading and listening comprehension based on their learning styles (visual and auditory). Although this finding contradicts with previous research studies in which learning styles have an impact on achievement (Bhatti & Bart, 2013), studies indicate differences in students' English comprehension scores related to their visual, auditory, and kinesthetic learning preferences (Rizky, 2013). In fact, contradictions because reading and listening comprehension scores are not primarily affected by the way they are learned (Ellis, 2003). According to Ellis (2003), various elements impact academic success, including motivation, talent, cognitive ability, interest, and external factors like weather. Consequently, reading and listening scores may be subject to the influence of these factors.

In line with the findings of the present study, Mahiroglu and Bayir cited in Erginer (2014) confirmed that there were negligible variations in reading and listening comprehension scores among students with visual and auditory learning styles. The results indicated that the manner in which students learn did not impact their academic performance, including reading comprehension. The study disclosed no noteworthy association between learning style and reading comprehension. Likewise, in the study conducted by Naning and Hayati (2011), no connection was identified between the learning style of students enrolled in the English Education And Learning Program and their proficiency in listening. This suggests that all students have an equal opportunity to receive high reading comprehension scores regardless of how they study. Furthermore, various factors can impact reading and listening comprehension; so, educators must employ suitable teaching strategies to facilitate students' comprehension of reading and listening materials.

### Conclusion

To summarize, the study aimed to find differences in students' reading and listening comprehension scores of students based on their learning styles – auditory and visual. The causal-comparative study is used as a research design for research. The findings suggest no significant difference between students' reading and listening comprehension scores depending on their learning styles (visual and auditory). Hence,  $H_0$  was accepted, and  $H_a$  was rejected. Therefore, it can be concluded that learning styles, at least in the case of this study, do not contribute significantly to reading and listening comprehension scores. Other factors, such as motivation, talent, cognitive ability, and interest, may play a greater leading role. This also means that students who use learning styles effectively do not necessarily achieve good grades in reading and listening.

In contrast, students who do not use learning styles effectively do not necessarily achieve poor results in reading and listening. It contradicts the general assumption that learning style is a significant factor in reading



comprehension because students with visual learning styles better understand a book than other types of learners. Similarly, it is assumed that the style of auditory learning affects listening comprehension, as auditory learners tend to better understand when listening to new information rather than reading. However, the findings of this study portrayed a slightly different picture.

### **Limitations of the Study and Directions for Future Research**

Since this study focused only on visual and auditory learning methods, this study is not intended to study all types of learning styles and their impact on students' reading and listening comprehension. This, although stands as a limitation of the study, gives space to future studies to examine whether the way of active learning affects students' reading and listening comprehension. Additionally, the small sample size was a limitation because the study was conducted in one class of a public sector university. Future studies should go for large sample sizes as they may produce different results. While research makes a substantial contribution to the existing body of knowledge in the subject area, there are various factors that require exploration concerning the learner's background and its influence on reading and listening comprehension. These aspects include personal factors like cognitive ability, motivation, physical factors, and so on. Regarding English as a second language in Pakistan, experimental studies can also be done to find a repertoire of effective strategies for students to practice reading and listening. Some of the strategies may be contextually relevant but remain unexplored.

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