

## Developing and validating a listening mindset questionnaire through Think-Aloud Protocol

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### ABSTRACT

**Purpose:** This study aims to develop and validate the Listening Mindsets Questionnaire (LMQ) to assess EFL learners' incremental (growth) and entity (fixed) mindsets regarding English listening skills.

**Methodology:** The research employed a mixed-methods approach, specifically a convergent parallel design. The Listening Mindsets Questionnaire (LMQ) was developed based on the framework of Lou and Noels (2017) and consisted of 18 items. It was administered to 289 English language learners at B1, B2, and C1 levels according to the Common European Framework of Reference (CEFR), studying at various English institutes in Zanjan, Iran. Additionally, 10 learners were randomly selected to participate in Think-Aloud Protocols for qualitative validation. The validity of the questionnaire was assessed through factor analysis and Think-Aloud Protocols, while reliability was measured using Cronbach's Alpha. The qualitative data obtained from Think-Aloud Protocols were analyzed through coding in MAXQDA software.

**Findings:** The results from both the factor analysis and the qualitative coding of Think-Aloud Protocols confirmed the validity of the newly developed questionnaire. The LMQ demonstrated a clear factor structure that aligned with the theoretical framework, ensuring its appropriateness for measuring listening mindsets. Additionally, Think-Aloud Protocols supported the questionnaire's validity but highlighted certain limitations in using verbal reports as a validation method. The reliability analysis indicated that the LMQ had a high internal consistency, confirming its suitability for assessing EFL learners' mindsets toward listening.

**Conclusion:** The study provides empirical support for the validity and reliability of the Listening Mindsets Questionnaire (LMQ). The instrument can serve as a useful tool for researchers and educators to assess and understand learners' perceptions of language learning ability in the context of listening skills. Future research should explore further refinements and applications of the questionnaire across diverse learner populations.

**Keywords:** Growth and Fixed Language Mindset, Listening Skill, Listening Mindset Questionnaire, Think-Aloud Protocols.

## 1. Introduction

There has been a significant shift in educational paradigms from curriculum-based pedagogies to learning approaches that emphasize effort, persistence, and cognitive flexibility. Traditional systems of education have often constrained students within rigid curricula, limiting their ability to engage in deeper cognitive processing and meaningful learning experiences. However, over three decades of research indicate that fostering an effort-oriented learning environment and cultivating the belief that intelligence and skills are malleable are essential to both academic success and real-world achievements (Abdellatif et al., 2024; Dweck, 2008, 2010; Eren & Rakıcıoğlu-Söylemez, 2023; Fayzullayeva, 2023). The Language Mindset Meaning System framework integrates findings from psychology and linguistics, highlighting how language mindsets—fundamental beliefs about the nature of language acquisition—interact with motivation, goal-setting, self-regulation, and emotional resilience in learning (Alzamil, 2021; Khajavy et al., 2021; Lou & Noels, 2020).

A substantial body of research suggests that the development of a growth mindset positively influences second language (L2) learners by shaping their perceptions of ability, learning objectives, and responses to challenges. Students who adopt a growth mindset exhibit greater resilience in the face of failure, are more likely to persist in learning tasks, and demonstrate higher motivation to achieve proficiency in a second language (Cohen & Wang, 2024; Derakhshan & Fathi, 2024). The importance of self-beliefs in academic achievement has been well-documented in research over the past few decades (Lou et al., 2022; Nurraida & Muharrami, 2022; Zarrinabadi et al., 2021). Students with a growth mindset—sometimes referred to as an incremental mindset—believe that their abilities can improve with effort and appropriate learning strategies, leading to better academic performance (Alzamil, 2021; Lou & Noels, 2020; Zeeb et al., 2020). Conversely, those with a fixed mindset (entity beliefs) tend to assume that intelligence and abilities are innate and unchangeable, which can result in decreased motivation and poorer academic outcomes (Khajavy et al., 2021). The influence of mindset extends beyond individual belief systems; research indicates that environmental and social factors, such as classroom dynamics and teacher-student interactions, play a crucial role in shaping learners' self-perceptions of ability (Leslie et al., 2015). The Theory of Mindset Influence posits that an individual's self-beliefs are shaped by personal,

interpersonal, and contextual factors, suggesting that changes in mindset may be mediated through interactions with teachers and peers (Alzamil, 2021; Dweck, 2013; Shirvan et al., 2021; Yeager & Dweck, 2012).

The relationship between teacher beliefs and student motivation is well-established. Students often internalize the implicit messages conveyed by their instructors regarding ability and effort (Hochanadel & Finamore, 2015). Moreover, academic performance and prior experiences significantly influence students' self-perceptions, reinforcing or challenging existing mindsets (Eren & Rakıcıoğlu-Söylemez, 2023). Given that growth mindset theory is still in its early stages of application within language learning (Claro et al., 2016), there is a need for research that examines whether changes in mindset are attributable to personal and interpersonal factors within the classroom environment.

Research suggests that fostering a growth mindset in language learners can enhance motivation, increase resilience to setbacks, and improve overall academic performance (Dweck, 2019). Instead of focusing on innate intelligence, mindset theory emphasizes the extent to which individuals believe they can develop their abilities through sustained effort and effective strategies (Thu & Vien, 2022). Learners with a growth mindset tend to set higher academic goals, demonstrate increased self-efficacy, and exhibit greater persistence when faced with challenges (Abdellatif et al., 2024; Eren & Rakıcıoğlu-Söylemez, 2023; Pepper et al., 2016). On the other hand, individuals with a fixed mindset are more likely to disengage from challenging tasks, experience heightened anxiety when facing failure, and adopt avoidance behaviors to protect their self-concept (Papi et al., 2021; Zeeb et al., 2020).

A key distinction between these two groups of learners lies in their response to failure. While fixed mindset learners may perceive failure as a reflection of their inherent inability, those with a growth mindset interpret failure as a natural part of the learning process and an opportunity for improvement (Leslie et al., 2015; Ocampo, 2016). Unlike fixed mindset learners who may attribute difficulties to external factors such as inadequate instruction, growth mindset learners tend to attribute setbacks to insufficient effort or ineffective learning strategies, thus remaining motivated to refine their skills (Abdellatif et al., 2024; Zarrinabadi et al., 2021).

Moreover, learners who hold fixed mindsets often rely on rigid learning strategies and struggle with adapting to new linguistic challenges, whereas growth mindset learners

demonstrate greater cognitive flexibility and a willingness to experiment with different approaches to language learning (Lou et al., 2022; Lou & Noels, 2016, 2017). The distinction between these mindsets has significant implications for L2 instruction, as fostering a growth mindset can help learners develop adaptive learning strategies and resilience in the face of linguistic challenges (Zeeb et al., 2020). Despite the growing recognition of mindset theory in education, most research has focused on domains such as mathematics and science, with relatively little attention given to its application in language learning, particularly in the area of listening comprehension (Hoeve, 2018; Zeeb et al., 2020).

Listening is a critical component of language acquisition, yet it has traditionally been overlooked in EFL classrooms (Resnick & Hall, 2003). Listening comprehension is an active cognitive process that requires learners to decode and reconstruct meaning from spoken input (Nunan, 1998). Contrary to the outdated notion of listening as a passive skill, contemporary research emphasizes its dynamic nature, involving both bottom-up and top-down processing mechanisms (Nunan, 1998). Effective listening instruction should train students to differentiate phonetic patterns, recognize intonation cues, and activate prior knowledge to facilitate comprehension (Lanvers, 2020).

Despite its significance, listening instruction is often neglected in language curricula, with greater emphasis placed on grammar and reading comprehension (Solak & Altay, 2014). This lack of focus on listening skills can contribute to learners' frustration and anxiety, ultimately impacting their motivation and overall language proficiency (Alzamil, 2021). Research indicates that a growth mindset can help learners overcome the challenges associated with listening comprehension by fostering resilience and encouraging a strategic approach to processing spoken language (Lou & Noels, 2020).

To address this gap, the present study aims to develop and validate the Listening Mindsets Questionnaire (LMQ), an instrument designed to assess EFL learners' growth (incremental) and fixed (entity) mindsets regarding listening comprehension. The study utilizes a mixed-methods approach, combining quantitative factor analysis with Think-Aloud Protocols (TAPs) to examine the validity and reliability of the LMQ. Think-Aloud Protocols, in which learners verbalize their thought processes while completing tasks, provide valuable insights into cognitive processing and response accuracy (Thu & Vien, 2022). While TAPs have been widely used in educational psychology, their validity in assessing linguistic mindsets has received limited

attention. Research suggests that verbal reports can serve as an effective means of evaluating learners' comprehension processes, although they should be interpreted with caution (Cohen & Wang, 2024).

By integrating insights from mindset theory and listening comprehension research, this study contributes to the growing body of literature on language mindsets and their impact on L2 acquisition. The findings are expected to inform pedagogical strategies aimed at fostering resilience, motivation, and self-efficacy in EFL learners. Given the increasing recognition of mindset interventions in education, this research highlights the potential benefits of integrating mindset-based approaches into language instruction. Future studies should explore how growth mindset interventions can be effectively implemented in diverse linguistic and cultural contexts to enhance learner engagement and academic success.

Thus, this study seeks to answer the following research questions:

1. How valid and reliable is the Listening Mindsets Questionnaire (LMQ) in assessing EFL learners' listening mindsets?
2. What insights can Think-Aloud Protocols provide regarding learners' cognitive and metacognitive processes in listening comprehension?
3. How do Iranian EFL learners and instructors perceive mindset-based instruction in listening?

## 2. Methods and Materials

### 2.1. Study Design and Participants

The study employed a mixed-methods design integrating both quantitative and qualitative approaches to develop and validate the Listening Mindsets Questionnaire (LMQ). This design was selected to ensure a comprehensive understanding of EFL learners' listening mindsets by capturing both statistical patterns and in-depth participant perspectives. The study utilized a convergent parallel design, in which qualitative and quantitative data were collected and analyzed simultaneously, allowing for a triangulation of findings. The study sample consisted of 289 Iranian EFL learners, comprising 126 females (43.6%) and 163 males (56.4%), with an average age of 17.79 years ( $SD = 3.13$ ). Participants were drawn from various educational backgrounds, including 40 ninth-grade students (13.8%), 67 tenth-grade students (23.2%), 63 eleventh-grade students (21.8%), 67 twelfth-grade students (23.2%), and 53 individuals (17.4%) with education beyond high school.

Participants were recruited through language institutes and high schools in different cities, ensuring diversity in learning experiences and exposure to English as a foreign language. Inclusion criteria required participants to be actively engaged in EFL courses and to have had previous exposure to English listening instruction. Exclusion criteria included students with hearing impairments or those who had never engaged in structured English listening activities. Participation was voluntary, and all respondents provided informed consent before engaging in the study.

## 2.2. Data Collection Tools

The primary data collection tool was the Listening Mindsets Questionnaire (LMQ), a self-report instrument consisting of 18 items rated on a six-point Likert scale ranging from strongly disagree (1) to completely agree (6). The questionnaire was adapted from Lou & Noels (2017) and designed to measure three key constructs: General Listening Beliefs (GLB), which assesses perceptions of general listening intelligence; Beliefs about Second Language Listening Aptitude (L2B), which examines learners' views on the potential to improve listening skills in an L2; and Beliefs about Age Sensitivity in Listening (ASB), which explores how age is perceived to affect listening skill development. The questionnaire was initially translated into Persian by a bilingual expert in language education to ensure linguistic clarity and cultural relevance. The Persian version was then reviewed by researchers before being back-translated into English to ensure equivalence with the original. Participants were provided with both the Persian and English versions, allowing them to choose the version that best suited their comprehension abilities. Additionally, the Think-Aloud Protocols (TAPs) were utilized as a qualitative validation technique, in which 10 randomly selected participants were asked to verbalize their thought processes while answering the questionnaire. Their responses were recorded and later coded and analyzed to evaluate the face validity and interpretability of the questionnaire items.

## 2.3. Data Analysis

The data analysis process involved both quantitative and qualitative techniques. In the quantitative phase, descriptive statistics, confirmatory factor analysis (CFA), and reliability tests were conducted using AMOS 24.0 and SPSS 26.0

software. Descriptive statistics provided insights into mean scores, standard deviations, skewness, and kurtosis values, ensuring that the data met assumptions of normality. To examine the construct validity of the LMQ, confirmatory factor analysis (CFA) was performed using the Maximum Likelihood Estimation (MLE) method. Three models were tested: a one-factor model, in which all items loaded onto a single construct; a three-factor model, in which each item was assigned to its respective GLB, L2B, and ASB factors; and a hierarchical three-factor model, where the three sub-factors were treated as indicators of a higher-order listening mindset construct. Model fit indices, including Chi-square/df ratio ( $\chi^2/df$ ), Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA), were used to assess the model's statistical robustness. Internal consistency was evaluated using Cronbach's alpha, with values above 0.70 considered acceptable for psychometric reliability. Inter-factor correlations were assessed using the Pearson correlation coefficient, determining whether the three constructs were statistically distinct yet related.

The qualitative analysis of Think-Aloud Protocols followed a thematic coding approach, wherein participants' responses were transcribed, categorized, and analyzed using NVivo 12 software. The initial open coding phase identified 420 conceptual labels, which were later refined into core categories reflecting innate and acquired listening intelligence. The analysis aimed to uncover patterns in students' reasoning processes and assess how well the questionnaire items captured the intended constructs. Responses that exhibited consistent interpretations across multiple participants were considered valid and reliable, while discrepant responses were further examined to identify potential ambiguities in the questionnaire wording. Saturation was reached at 10 participants, as no new conceptual patterns emerged beyond this point.

## 3. Findings and Results

The qualitative analysis of the Listening Mindsets Questionnaire (LMQ) revealed distinct conceptualizations of listening intelligence among EFL learners. The open coding process identified 420 concepts, with a high frequency of occurrence. After categorizing these concepts, the core codes were refined into selective codes:

**Table 1***Codes Discovered Through Qualitative Analysis*

Open Codes (Concepts)	Central Codes (Categories)	Selective Codes
Extracted Codes: 200 concepts	Hereditary listening intelligence (85) Enhanced listening intelligence (115)	Innate Talent
Extracted Codes: 220 concepts	Individual concepts (43) Family (27) School (70) Social environment (48) Technology (32)	Acquired Talent

The findings indicate that students perceive listening mindsets in terms of two key factors: innate talent and acquired talent. The innate factor refers to hereditary influences on listening intelligence, with some participants suggesting that listening ability is biologically determined or enhanced by parental stimulation before birth. The acquired factor, on the other hand, encompasses a range of external influences, including individual effort, family environment, school instruction, social exposure, and technological tools. These results highlight a dual perspective on listening intelligence, where some learners attribute success to natural ability, while others recognize the role of effort and environmental factors in skill development.

Further analysis of the Listening Mindsets Questionnaire (LMQ) using the three key components—General Listening Beliefs (GLB), Listening to a Second Language Beliefs (L2B), and Age Sensitivity Beliefs (ASB)—confirmed the validity and reliability of the instrument within the study's target population. The confirmatory factor analysis, discussed later in this study, supports these findings. Additionally, the questionnaire was tested using the Think-Aloud Protocols, where participants provided written and open-ended feedback on the questionnaire's clarity, relevance, and validity.

The Think-Aloud Protocols reached saturation at 10 participants, as responses began to show significant overlap. Each response was analyzed through qualitative coding, revealing patterns in participants' understanding of listening intelligence. The results of this qualitative study align closely with the quantitative data. Specifically, the GLB component, which assesses general listening intelligence, corresponds to the innate talent category, as 200 extracted qualitative codes reflect similar beliefs about the biological and hereditary nature of listening skills. Similarly, the L2B

and ASB components, which evaluate the modifiability of listening skills and age-related sensitivity, align with the acquired talent category, demonstrating that participants also recognize the role of practice, exposure, and environmental factors in enhancing listening intelligence.

The Think-Aloud Protocols further confirmed the validity of the Listening Mindsets Questionnaire. As shown in the coding analysis, participants differed in their interpretation of some questions, raising concerns about face validity for certain respondents.

1. Comparing responses from Learners 1 and 2 showed discrepancies in their understanding of the questionnaire, suggesting that the questionnaire's face validity was not strong for them.
2. Learners 3 and 2 demonstrated similar interpretations, confirming the validity of their responses and allowing for their perspectives to be combined in the coding process.
3. Learner 4's responses aligned well with Learners 2 and 3, reinforcing consistent interpretation across these participants.
4. Learner 5's responses were consistent with those of Learners 2, 3, and 4, supporting the internal validity of the questionnaire.
5. Learner 6 showed strong agreement with Learners 2, 3, 4, and 5, further confirming response reliability.
6. Learner 7's responses were also consistent with those of Learners 2, 3, 4, 5, and 6, reinforcing the stability of the questionnaire's items.
7. Learner 8 had partial overlap with the others, indicating some variations in interpretation.

8. Learner 9 showed strong agreement with Learners 2, 3, 4, 5, 6, and 7 but had minor deviations from Learner 8.
9. Learner 10's responses aligned closely with Learners 1 and 8, indicating a separate pattern of understanding.

The Think-Aloud Protocol analysis showed that Learners 2, 3, 4, 5, 6, 7, and 9 had a consistent understanding of the questionnaire, confirming that the instrument had strong internal validity for these participants. This consistency suggests that the questionnaire effectively measured participants' beliefs about listening intelligence in a meaningful and reliable manner. Furthermore, the internal validity of the study was confirmed by the expert reviews, with all three referees agreeing that the questionnaire aligned with the intended research objectives.

**Table 2**

*Questionnaire Items*

GLB (1-6)	L2B (7-12)	ASB (13-18)
- Double effort to improve the innate nature of listening intelligence	- Effect of biological factors on listening intelligence	- Effect of young age on listening skills
- No change in listening intelligence	- No change in listening skills in L2	- Effect of old age on listening skills
- Relationship between personality and listening intelligence	- Weak listening intelligence in L2	- Listening skills can be changed at different ages
- Changeability of listening intelligence	- Ability to change listening intelligence	- Listening skills do not depend on age
- Ability to measure listening intelligence	- Effect of listening skill activity	
	- Strengthening with practice	

These results confirm that students categorize listening intelligence into two primary constructs: innate and acquired talent. Those who believe in innate listening ability view intelligence as hereditary and fixed, whereas those who endorse acquired intelligence highlight the importance of personal effort, education, and environmental influences in developing listening skills.

The qualitative analysis results can be synthesized into a final diagram illustrating the dual conceptualization of listening intelligence:

1. Innate Talent:

- Hereditary listening intelligence (85 codes)

These findings indicate that respondents accurately interpreted the questionnaire's constructs, supporting its scientific rigor and applicability in EFL research. While some participants (Learners 1 and 8) exhibited differences in interpretation, the majority of respondents demonstrated consistent and meaningful engagement with the questionnaire items. This suggests that, overall, the Listening Mindsets Questionnaire is a valid and reliable tool for assessing EFL learners' beliefs about listening intelligence and skill acquisition.

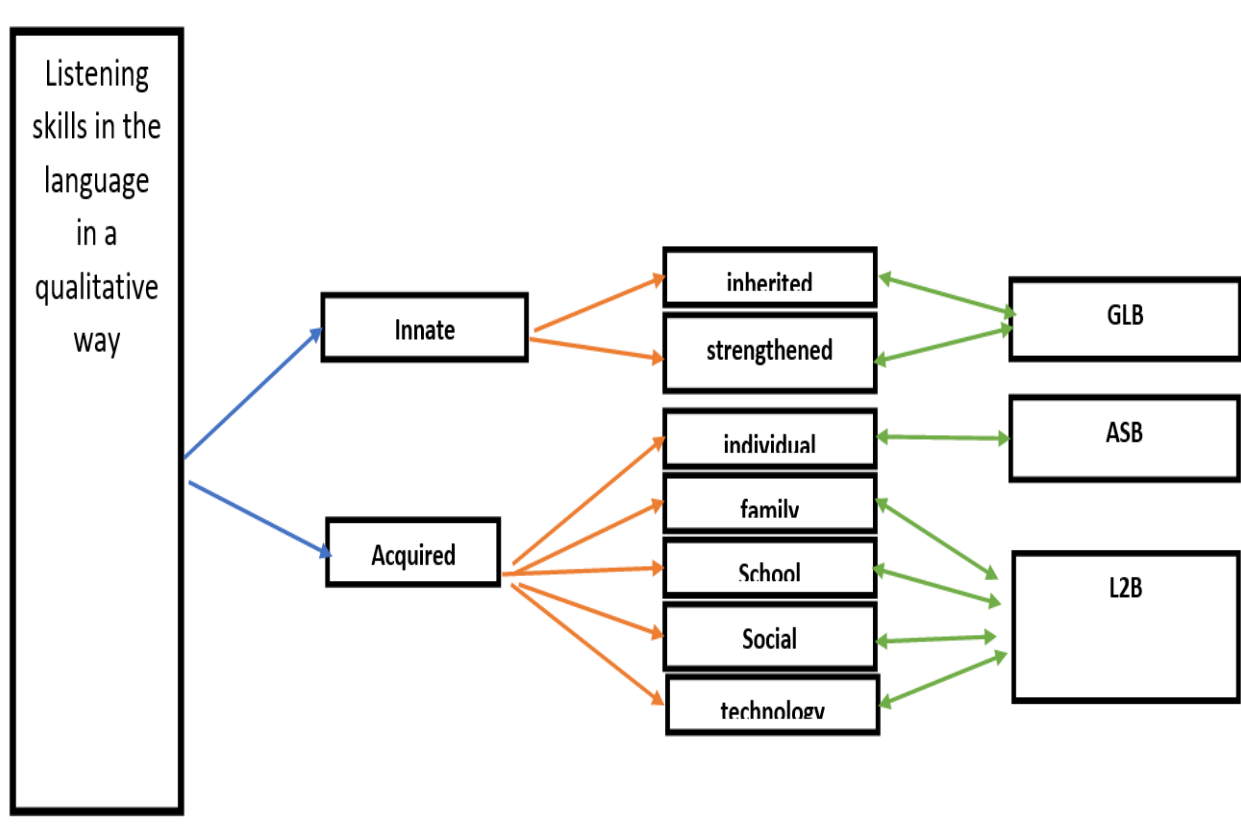
To further understand participants' beliefs, the variables in the Listening Mindsets Questionnaire were categorized based on their alignment with the innate and acquired talent models.

- Enhanced listening intelligence (115 codes)
2. Acquired Talent:
- Individual learning experiences (43 codes)
  - Family influences (27 codes)
  - School environment (70 codes)
  - Social exposure (48 codes)
  - Technological aids (32 codes)

This structured representation further reinforces the theoretical underpinnings of mindset research and provides a clear framework for interpreting EFL learners' beliefs about listening skill development.

**Figure 1**

*Final Diagram Representation*



The qualitative findings of this study confirm that listening intelligence is perceived through a dual lens of innate ability and acquired skill development. The Listening Mindsets Questionnaire was validated through both quantitative factor analysis and qualitative Think-Aloud Protocols, ensuring that it accurately measures EFL learners' beliefs about listening abilities. The overlap between qualitative coding results and quantitative questionnaire components further supports the validity and reliability of the instrument.

The quantitative findings of this study provide a comprehensive understanding of listening mindsets among Iranian EFL learners, focusing on the reliability and validity of the Listening Mindsets Questionnaire (LMQ). The analysis was conducted on 289 participants, including 126 female (43.6%) and 163 male (56.4%) language learners, with a mean age of 17.79 years ( $SD = 3.13$ ). The participants' educational levels varied, with 40 ninth-grade students (13.8%), 67 tenth-grade students (23.2%), 63 eleventh-grade

students (21.8%), 67 twelfth-grade students (23.2%), and 53 learners (17.4%) with education beyond high school.

The LMQ scale included 18 items rated on a six-point Likert scale (1 = strongly disagree, 6 = completely agree). The questionnaire measured three distinct components:

1. General Listening Beliefs (GLB) (items 1 to 6) – assessing learners' perceptions of general listening intelligence.
2. Beliefs about Second Language Listening Aptitude (L2B) (items 7 to 12) – examining learners' beliefs regarding listening skill acquisition in a second language.
3. Beliefs about Age Sensitivity in Listening (ASB) (items 13 to 18) – assessing learners' perceptions of age-related changes in listening ability.

The Persian version of the LMQ was translated and validated by experts in language education to ensure linguistic accuracy and conceptual clarity. Both Persian and English versions were provided to participants to minimize misinterpretation and enhance reliability.

**Table 3**

*Descriptive Statistics of LMQ Items*

Item	Mean	SD	Skewness	Kurtosis	Factor
1	4.10	1.59	-0.40	-1.01	GLB
2	4.42	1.51	-0.59	-0.87	
3	5.00	1.47	-1.49	-1.43	
4	4.76	1.53	-1.18	0.21	
5	4.55	1.47	-0.96	-0.09	
6	4.45	1.54	-0.82	-0.51	
7	2.81	1.27	0.48	-0.45	L2B
8	3.84	1.55	-0.17	-1.06	
9	4.15	1.73	-0.61	-0.89	
10	4.11	1.74	-0.50	-1.21	ASB
11	4.69	1.73	-1.03	-0.46	
12	4.56	1.70	-0.77	-0.84	
13	3.07	1.54	-0.49	-0.95	
14	3.24	1.61	-0.24	-1.24	
15	3.35	1.74	-0.30	-1.19	
16	4.09	1.69	-0.29	-0.35	
17	4.37	1.50	-0.55	-0.80	
18	4.16	1.66	-0.51	-0.98	

Among the items, the highest mean score ( $M = 5.00$ ,  $SD = 1.47$ ) was found for Item 3, while the lowest mean score ( $M = 2.81$ ,  $SD = 1.27$ ) was recorded for Item 7. The skewness and kurtosis values for all items remained within the range of  $\pm 2$ , indicating that the data followed a normal distribution, allowing for further factor analysis.

To evaluate the construct validity of the LMQ scale, Confirmatory Factor Analysis (CFA) was conducted using

AMOS 24.0 with the Maximum Likelihood (ML) estimation method. Three competing models were tested:

1. One-factor model – all items loaded on a single latent construct.
2. Three-factor model – items were assigned to their respective GLB, L2B, and ASB factors.
3. Hierarchical three-factor model – sub-factors contributed to a general listening mindset factor.

Table 3 presents the fit indices for these models.

**Table 4**

*Fit Indices for LMQ Measurement Models*

Index	One-Factor Model	Three-Factor Model	Hierarchical Three-Factor Model	Cut-off Criteria
Chi-Square ( $\chi^2$ )	1100.27	268.31	301.62	Lower is better
Degrees of Freedom (df)	135	132	132	-
$\chi^2/df$	8.15	2.03	2.29	<3
GFI (Goodness-of-Fit Index)	0.610	0.909	0.896	>0.90
AGFI (Adjusted Goodness-of-Fit Index)	0.506	0.882	0.865	>0.85
CFI (Comparative Fit Index)	0.638	0.949	0.936	>0.90
RMSEA (Root Mean Square Error of Approximation)	0.158	0.060	0.067	<0.08

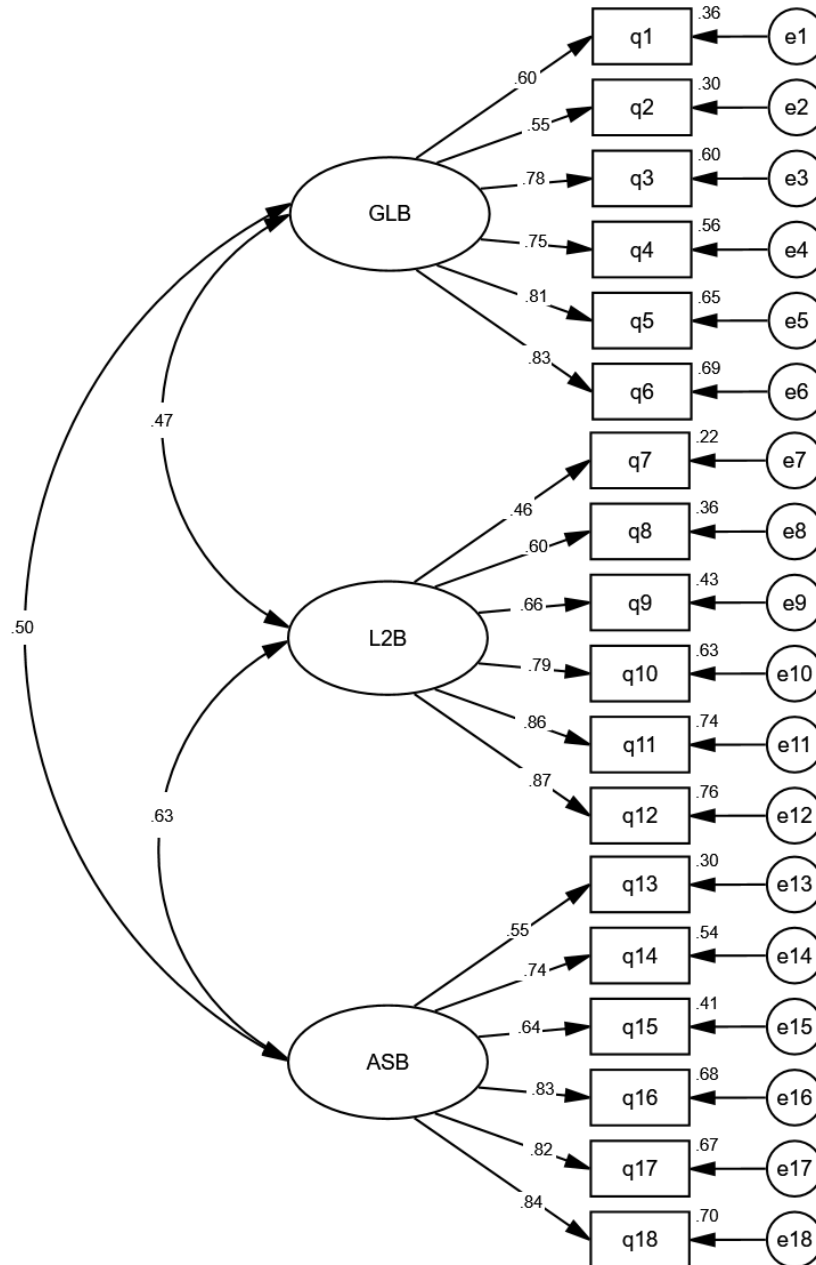


The results indicate that the three-factor model and hierarchical three-factor model both provided acceptable fits to the data. However, the hierarchical model showed a slightly weaker fit compared to the three-factor model.

Given that CFI and RMSEA values met standard cut-off criteria, the three-factor model was selected as the most appropriate representation of the LMQ structure.

**Figure 2**

*LMQ measurement model using standard data.*



The lowest factor loading was observed for Item 7 ( $\beta = 0.465$ ), while Item 11 ( $\beta = 0.858$ ) had the highest factor loading. Given that all loadings exceeded 0.32, it can be concluded that each item had sufficient power to measure its

respective factor, confirming the construct validity of the LMQ scale.

Cronbach's alpha and Pearson correlation coefficients were used to assess internal consistency and factor correlations.

**Table 5**

*Descriptives, Reliability and Correlation Analysis*

Factor	Cronbach's Alpha ( $\alpha$ )	1	2	3	Mean	SD
GLB	0.86	-	-	-	27.29	7.01
L2B	0.89	0.44**	-	-	24.16	7.48
ASB	0.87	0.47**	0.57**	-	22.27	7.60

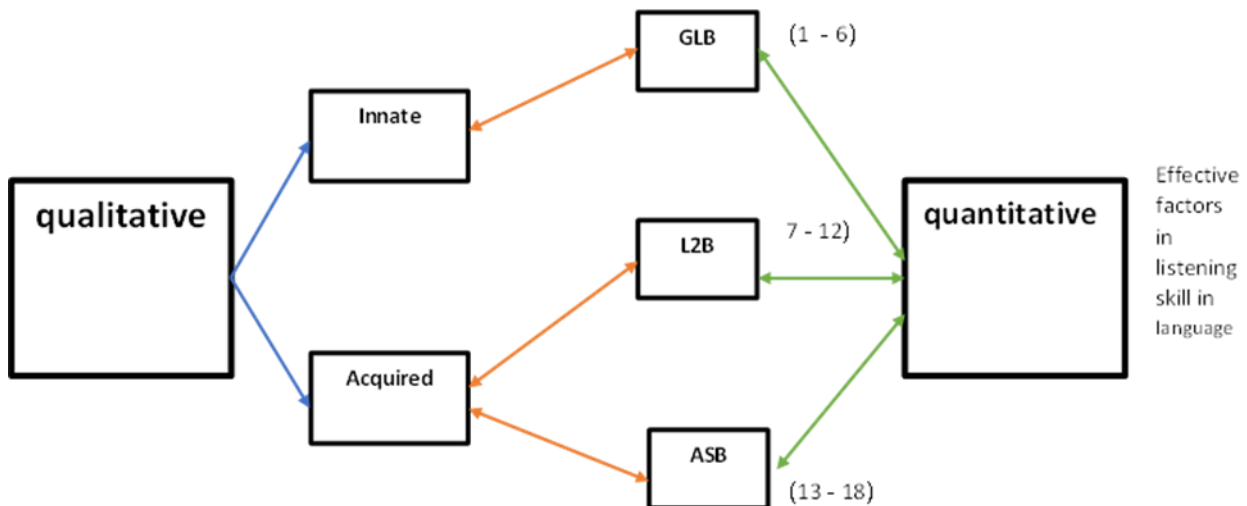
All Cronbach's alpha values exceeded 0.70, confirming that the LMQ scale exhibited strong internal consistency. The correlations among the three components were significant, supporting the validity and reliability of the questionnaire.

Based on the CFA, reliability analysis, and descriptive statistics, the Listening Mindsets Questionnaire (LMQ) is a

valid and reliable instrument for assessing listening intelligence beliefs among EFL learners. The final measurement model (Figure 2) provides a theoretically and statistically sound structure, reinforcing the scale's robustness.

**Figure 3**

*Final Model of the Study*



When examining the normality of the data, the researcher tested the hypothesis that the data distribution is normal at a 0.05 error level. If the test statistic is greater than or equal to 0.05, there is no reason to reject the null hypothesis, which suggests that the data is normally distributed.

**4. Discussion and Conclusion**

The findings of this study provide empirical evidence for the validity and reliability of the Listening Mindsets Questionnaire (LMQ) in assessing EFL learners' beliefs about their listening abilities. The results of the factor analysis confirmed that the LMQ effectively differentiates between growth (incremental) and fixed (entity) mindsets in

listening comprehension. The high internal consistency of the questionnaire, as indicated by Cronbach's Alpha, suggests that it is a reliable tool for measuring language mindsets in the context of listening skills. Additionally, the Think-Aloud Protocols (TAPs) provided qualitative insights into learners' cognitive and metacognitive processes, reinforcing the validity of the LMQ. Learners who endorsed growth mindsets demonstrated greater resilience, strategic listening behaviors, and adaptive responses to challenges, while those with fixed mindsets exhibited avoidance behaviors, frustration, and self-doubt when encountering listening difficulties.

The results align with Dweck's (2008) theory of growth and fixed mindsets, which posits that learners who believe

in the malleability of intelligence engage in more effortful and strategic learning behaviors (Dweck, 2008). Similarly, Lou and Noels (2019) emphasize that language mindsets influence learners' goal-setting, motivation, and emotional regulation (Lou & Noels, 2019), all of which were observed in the present study. Learners with growth mindsets were more likely to embrace difficulties in listening comprehension and adopt strategies such as active prediction, selective attention, and inference-making, whereas those with fixed mindsets tended to withdraw from challenging listening tasks.

The findings of this study support previous research indicating that mindset beliefs influence second language acquisition outcomes (Abdellatif et al., 2024; Cohen & Wang, 2024). Specifically, the results are consistent with Lou and Noels (2016), who argue that learners with a growth mindset demonstrate greater persistence, resilience, and motivation in learning an L2. The current study expands on these findings by illustrating how mindset beliefs shape listening comprehension strategies, an area that has received limited attention in previous research. The Think-Aloud Protocols revealed that growth mindset learners were more likely to persevere through difficult listening passages, while fixed mindset learners often expressed frustration and attributed their difficulties to innate limitations.

The role of self-regulation in language learning also emerged as a critical factor. As noted by Khajavy et al. (2020), learners who believe in their ability to improve their language skills are more likely to engage in self-regulatory behaviors, such as setting specific goals, monitoring their progress, and adjusting their strategies accordingly (Khajavy et al., 2020). In the present study, growth mindset learners frequently engaged in self-monitoring and adjusted their listening strategies based on feedback. Conversely, fixed mindset learners demonstrated a lack of strategic flexibility, often relying on passive listening and avoiding complex listening materials.

These findings align with Claro et al. (2016), who emphasize that academic success is closely linked to self-beliefs and previous experiences (Claro et al., 2016). Learners with a history of success in listening comprehension tasks were more likely to endorse a growth mindset, whereas those with negative past experiences were more likely to develop fixed beliefs about their listening ability. This suggests that educators must consider the role of prior learning experiences when designing listening instruction and implement targeted interventions to foster

growth-oriented beliefs in students struggling with listening comprehension.

The results of this study also contribute to the ongoing discussion on the role of mindset theory in EFL instruction. Hochanadel and Finamore (2015) argue that teachers play a crucial role in shaping students' mindsets, and the findings of the present study reinforce this claim (Hochanadel & Finamore, 2015). The Think-Aloud Protocols revealed that many learners' mindset beliefs were influenced by their classroom environment, suggesting that teacher discourse and instructional practices can either reinforce or challenge fixed mindset beliefs. This supports the Theory of Mindset Influence (Leslie et al., 2015), which posits that personal, interpersonal, and contextual factors collectively shape self-beliefs.

Moreover, the study provides evidence for the importance of motivation in listening comprehension. Research by Lou and Noels (2020) suggests that growth mindsets contribute to learners' motivation and willingness to engage in language learning tasks (Lou & Noels, 2020). The findings of this study are consistent with this claim, as growth mindset learners were more likely to persist through difficult listening exercises, while fixed mindset learners exhibited avoidance behaviors. These findings highlight the importance of cultivating adaptive motivational beliefs in EFL instruction to enhance listening comprehension outcomes.

The results also support Dweck's (2019) assertion that mindset interventions can significantly impact academic performance (Dweck, 2019). Studies on mindset theory in STEM education have shown that students who receive explicit instruction on growth mindsets demonstrate increased resilience and academic achievement (Cohen & Wang, 2024; Derakhshan & Fathi, 2024; Eren & Rakıcioğlu-Söylemez, 2023; Zarrinabadi & Mantou Lou, 2022). Although research on mindset interventions in EFL instruction is still emerging, the findings of this study suggest that similar interventions could be beneficial in fostering effective listening strategies among language learners.

Despite its contributions, this study has several limitations. First, the sample was limited to Iranian EFL learners, which may affect the generalizability of the findings to other linguistic and cultural contexts. Future studies should explore the applicability of the Listening Mindsets Questionnaire (LMQ) in diverse educational settings to assess its broader validity. Second, while the Think-Aloud Protocols provided valuable qualitative

insights, they may have been influenced by social desirability bias, as some participants may have modified their responses to align with perceived expectations. Future research should triangulate qualitative data with additional observational methods to minimize this bias. Lastly, the study's cross-sectional design limits the ability to draw causal inferences. Longitudinal studies are needed to examine the long-term effects of mindset beliefs on listening comprehension.

Future research should explore the effectiveness of mindset interventions in EFL listening instruction. While previous studies have demonstrated the impact of growth mindset interventions in STEM education, little research has been conducted on their application in language learning contexts. Investigating how explicit instruction on growth mindsets influences EFL learners' listening strategies and motivation would be a valuable direction for future studies. Additionally, future research should examine how teacher discourse and feedback influence students' mindset beliefs. Observational studies that analyze teacher-student interactions in the classroom could provide deeper insights into how mindset beliefs are reinforced or challenged. Finally, research should explore the interplay between mindset, grit, and self-regulation in listening comprehension to identify the most effective strategies for fostering resilience in language learners.

Educators should implement growth mindset interventions in EFL listening instruction by explicitly teaching students that listening skills can be improved with practice and effort. Teachers should emphasize strategic listening approaches, such as active listening, inference-making, and self-monitoring, to help students develop more adaptive learning habits. Additionally, instructors should provide constructive feedback that encourages a growth-oriented perspective, reinforcing the idea that listening difficulties are temporary and can be overcome with persistence.

Classroom activities should be designed to promote learner autonomy and resilience in listening comprehension. Interactive listening tasks that challenge students without overwhelming them can help foster confidence and motivation. Teachers should create a supportive learning environment where students feel comfortable taking risks and learning from their mistakes. Lastly, assessment methods should shift from performance-based grading to progress-based evaluation, encouraging students to focus on improvement rather than fixed outcomes.

By integrating growth mindset principles into EFL pedagogy, educators can empower learners to approach listening comprehension with confidence, persistence, and strategic awareness, ultimately improving their long-term language learning success.

### Authors' Contributions

All authors significantly contributed to this study.

### Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

### Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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### Declaration of Interest

The authors report no conflict of interest.

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### Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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