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The mediating influence of self-efficacy and self-regulation in the relationship between perfectionism and listening anxiety

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Introduction: This study investigates the complex relationship between perfectionism and Listening Anxiety (LA) in the context of English as a Foreign Language (EFL), with a focus on the mediating roles of Listening Self-Efficacy (LS) and Self-Regulated Learning (SRL).

Method: A sample of 350 EFL learners from various language institutes in Iran was selected through cluster random sampling and completed four validated questionnaires measuring SRL, LS, perfectionism, and LA. Structural Equation Modeling (SEM) was employed to analyze the data and provide detailed insights into the interrelationships among these variables.

Results: The results revealed significant linear relationships between the variables under study. Specifically, LS, perfectionism, and SRL were found to directly influence LA, with LS and SRL serving as stronger predictors of LA than perfectionism. In terms of predictive power, SRL ranked just behind LS.

Discussion: Both SRL and LS were significant mediators in the relationship between perfectionism and LA, suggesting that learners' self-regulation and listening self-efficacy play key roles in how perfectionism affects LA. The findings have important implications for EFL instruction: by prioritizing LS and SRL, educators can create a more supportive, enjoyable, and effective learning environment for EFL students, ultimately reducing LA.

KEYWORDS

perfectionism, listening anxiety, listening self-efficacy, self-regulated learning, psychological constructs

1 Introduction

In the realm of language acquisition, the interplay between various psychological constructs has garnered considerable attention (Palmer et al., 2019). Among these constructs, perfectionism, LA, LS, and SRL stand out as pivotal factors influencing language development, especially in the EFL context (Chasetareh et al., 2023; Milliner and Dimoski, 2024; Shu-Yan and Cha, 2019). Understanding the intricate relationships among these constructs may offer invaluable insights into the mechanisms underlying language learning outcomes. Perfectionism, characterized by high standards and a tendency to critically evaluate one's performance, has been identified as a double-edged sword in the language learning domain (Chasetareh et al., 2023). While it can serve as a driving force for achievement, it may also engender heightened levels of anxiety, especially in tasks requiring receptive skills such as

listening comprehension (Sönmez and Kurtoğlu, 2021). LA, in turn, can impede learners' ability to effectively comprehend spoken language, thereby hindering overall language proficiency (Hidayati et al., 2020).

Listening proficiency is crucial for understanding conversational content (Shu-Yan and Cha, 2019) and should be a primary focus for researchers, particularly in the context of EFL. Iranian students, for instance, often face challenges in oral communication due to low listening proficiency. These challenges may arise from several factors, such as the unsuitable methods of teaching or the failure to consider learners' affective factors and individual differences. While speaking in the classroom, learners may experience listening and speaking anxiety due to their tendency to strive for perfection, which could further contribute to anxiety in language acquisition (Navidinia et al., 2019). Perfectionism, in this sense, may lead to increased anxiety. Evidence from the literature (e.g., Liu et al., 2023; Teng and Zhang, 2018) shows that SRL and self-efficacy can function as mediating variables among different psychological constructs. Amidst the challenges posed by perfectionism and LA, learners' individual differences—such as LS and SRL—may emerge as potential mediators that could mitigate or exacerbate the impacts of perfectionism on LA. Listening self-efficacy refers to learners' attitudes and beliefs in their potential to comprehend spoken language (Milliner and Dimoski, 2024), while SRL encompasses the cognitive, metacognitive, and motivational processes through which learners actively engage with and monitor their learning (Koivuniemi et al., 2021).

While various studies (e.g., Liu et al., 2023; Ma et al., 2018; Teng and Zhang, 2018) have explored the mediating functions of self-efficacy and SRL in relation to different personality traits, no known research has explored how LS and SRL mediate the impact of perfectionism on LA. Furthermore, most studies have been situated in specific cultural contexts, primarily focusing on Western or Asian settings. However, cultural factors play a significant role in shaping learners' psychological constructs, and thus, the findings may not be universally applicable. The Iranian context, with its unique socio-cultural and educational features, provides a valuable contribution to understanding the interplay between perfectionism and LA in EFL learning. To bridge the aforementioned gap in the literature, this investigation has several objectives. First, based on Social Cognitive Theory (SCT) and the frameworks of SRL, it investigates the mediating role that LS and SRL play in the effect of EFL learners' perfectionism on LA. Additionally, it examines the direct impacts of SRL, LS, and perfectionism on LA. The research employs Structural Equation Modeling (SEM) to identify both indirect and direct relationships among these variables, aiming to elucidate the intricate interactions between emotional states and personal traits within language learning.

2 Literature review

2.1 Perfectionism

Perfectionism is marked by setting extremely high standards and critically evaluating one's performance (Navidinia et al., 2019), has been extensively explored in the context of language learning. While a number of investigation suggests that perfectionism can drive learners to excel and achieve high levels of proficiency (e.g., Noori and Sotoudehnama, 2018), others highlight its detrimental effects, particularly in inducing anxiety and impeding language acquisition (e.g., Rabadi and Rabadi, 2020). In the realm EFL learning, perfectionism has been linked to increased levels of anxiety, particularly in tasks requiring receptive skills such as listening comprehension (Khosravi et al., 2023; Razmi et al., 2021). Understanding the nuanced relationship among perfectionism and language learning outcomes is crucial for designing effective instructional strategies and support mechanisms for EFL learners.

Recent cross-cultural studies emphasize the role of cultural differences in shaping perfectionistic tendencies and their impact on learning outcomes. For instance, comparative research between Hong Kong and the United Kingdom highlights how perfectionism influences student motivation and independent learning skills differently across educational systems (Lo, 2024; Lo et al., 2024). Incorporating such perspectives provides a broader and more balanced view of how perfectionism interacts with language learning anxiety in diverse cultural contexts.

Moreover, it is crucial to critically examine the dual role of perfectionism as both a motivator and a barrier to success. Positive perfectionism, often characterized by setting high but realistic goals and deriving satisfaction from accomplishment, can enhance motivation and academic achievement (e.g., Hamachek, 1978). Conversely, maladaptive perfectionism, associated with unrealistic standards and fear of failure, has been linked to anxiety, avoidance behaviors, and decreased performance (e.g., Flett et al., 2016). These conflicting findings suggest that the impact of perfectionism is context-dependent, influenced by factors such as individual coping mechanisms, cultural expectations, and instructional environments. For example, learners in collectivist cultures may experience heightened anxiety due to societal pressure to meet perfectionistic standards (Lo et al., 2024). Addressing these nuances is essential for designing interventions that balance the benefits of perfectionism while mitigating its negative effects.

2.2 Listening anxiety

Listening anxiety (LA), a manifestation of language-related anxiety, has garnered attention for its detrimental effects on language learning and communication (Karakus Taysi, 2019). High levels of LA can hinder learners' ability to comprehend spoken language, leading to reduced proficiency and confidence in communicative settings (Namaziandost et al., 2019). In the context of EFL learners, LA has been associated with various factors, including proficiency levels, task complexity, and individual differences in cognitive and affective traits (Shu-Yan and Cha, 2019; Monteiro and Kim, 2020).

Conflicting evidence exists regarding the universality of LA's impact. While some studies report a consistent negative effect on language proficiency (e.g., Namaziandost et al., 2019), others suggest that moderate levels of anxiety may serve as a motivator, encouraging learners to engage more deeply with listening tasks (e.g., Scovel, 1991). This highlights the need for future research to explore the conditions under which LA transitions from being facilitative to debilitating, considering variables such as task type, learner characteristics, and cultural background.

Cross-cultural research underscores that socio-cultural norms and communication styles significantly influence LA. For instance, learners from high-context cultures like Hong Kong may experience heightened anxiety due to implicit communication expectations (Lo, 2022). Additionally, leveraging generative AI tools has shown promise

in reducing LA by offering adaptive and personalized support, fostering confidence in listening tasks (Chan et al., 2025).

2.3 Perfectionism and listening anxiety

Perfectionism has been closely linked to heightened levels of anxiety across various domains, including language learning (Haraldsen et al., 2020; Liu et al., 2021). In the EFL context, perfectionistic tendencies may exacerbate learners' anxiety, particularly in tasks requiring receptive skills such as listening comprehension (Mahmoodi-Shahrebabaki, 2017; Zafarani et al., 2022). The pressure to achieve flawless language proficiency and meet unrealistic standards can create a fear of failure and evaluation apprehension among EFL learners, leading to heightened levels of LA (Flett et al., 2016; Sönmez and Kurtoğlu, 2021). This anxiety may manifest as apprehension, self-doubt, and avoidance behaviors during listening tasks, ultimately impeding learners' ability to comprehend spoken language and hindering overall language proficiency (Nakhaei et al., 2023). Empirical evidence suggests that LA and perfectionism share a bidirectional relationship, with each reinforcing and exacerbating the other over time (Razmi et al., 2021). Longitudinal studies have demonstrated that perfectionistic tendencies predict increased levels of anxiety and vice versa, highlighting the need for targeted interventions aimed at addressing both constructs concurrently (Movafaghardestani et al., 2024; Wang et al., 2018). When considering perfectionism, elements such as fear of making mistakes, parental expectations, and parental criticism emerge as significant predictors. According to Al-Mahrooqi et al. (2016), parental engagement significantly influences psychological well-being. High standards and criticism from parents for lower performance can lead to increased learning anxiety. Horwitz et al. (1986) found that committing errors in class discussion and receiving teacher feedback publicly can heighten anxiety and impede learning.

However, opposing viewpoints suggest that not all aspects of perfectionism are harmful. For instance, adaptive perfectionism, characterized by a focus on growth and self-improvement, may foster resilience and perseverance during challenging tasks (e.g., Stoeber and Otto, 2006). These contrasting perspectives underscore the need for a balanced approach in addressing perfectionism in EFL learners, considering both its motivational benefits and potential psychological costs.

2.4 Listening self-efficacy and listening anxiety

Self-efficacy, grounded in SCT, highlights the impact of social learning, social interactions, and cognitive processes on behavior (Bandura, 1999). Listening self-efficacy (LS) refers to learners' dependence and credence in their power and skill to understand, significantly influencing their emotional responses and cognitive engagement during listening tasks (Milliner and Dimoski, 2024). Despite widespread agreement on the inverse relationship between LS and LA (e.g., Goh and Taib, 2006; Mills et al., 2006), some studies suggest that self-efficacy may not fully buffer against anxiety in all contexts. For instance, learners with high LS may still experience anxiety in highly evaluative settings or when faced with unfamiliar accents or content (Rahmat et al., 2020; Shu-Yan and Cha, 2019). These findings highlight the complexity of the LS-LA dynamic and call for a nuanced understanding of contextual factors that modulate this relationship.

Conversely, low levels of LS are associated with increased susceptibility to LA, as learners may doubt their ability to understand spoken language and anticipate failure or embarrassment (Mills et al., 2006). Thus, this lack of confidence can exacerbate anxiety symptoms, leading to heightened levels of apprehension, self-doubt, and avoidance behaviors during listening tasks. Empirical academic works have consistently manifested that LS and LA are inversely related. Higher self-efficacy tends to predict lower anxiety levels and vice versa (e.g., Goh and Taib, 2006; Rahmat et al., 2020). Moreover, Beatson et al. (2020) uncovered that self-efficacy is a strong predictor of academic success.

Recent research highlights the interplay between LS and cultural diversity in influencing anxiety. Comparative studies suggest that learners' perceptions of self-efficacy differ across cultural contexts, influenced by variations in educational practices and social expectations (Lo et al., 2024). Additionally, the integration of AI-driven learning platforms has been shown to enhance LS, offering students adaptive resources to build confidence and reduce anxiety (Chan et al., 2025).

2.5 Self-regulation and listening anxiety

Self-regulation involves individuals actively managing their thoughts, emotions, and behaviors to achieve personal objectives (Zimmerman, 2000). Self-regulation, encompassing cognitive, metacognitive, and motivational processes, plays a significant role in how learners handle their emotions, behaviors, and cognitive strategies during language learning tasks (Ghonsooly and Ghanizadeh, 2013). English as foreign language learners who possess effective self-regulation skills are better prepared to manage challenges, regulate anxiety, and engage in adaptive learning behaviors (Guo et al., 2018) and can manage their stress effectively (Trotter et al., 2023). In the listening comprehension context, self-regulation permits students to monitor their comprehension, use cognitive strategies, and adjust their listening behaviors in response to task demands (Zhang and Nguyen, 2022). However, individuals with deficits in self-regulation may struggle to regulate their attention, manage anxiety, and employ effective learning strategies during language tasks namely listening, leading to heightened levels of LA (Martirossian and Hartoonian, 2015). Further research (e.g., Movafaghardestani et al., 2024) indicates an inverse interplay between LA and SRL. Higher self-regulation levels generally predict lower anxiety. Learners who possess strong self-regulatory skills demonstrate greater confidence, perseverance, and adaptability in managing anxiety-inducing challenges during English listening tasks (Martirossian and Hartoonian, 2015).

2.6 Mediating role of listening self-efficacy

The connection between anxiety and perfectionism often involves cognitive and emotional elements, such as one's beliefs in their abilities (Wan et al., 2022). Listening self-efficacy, which make reference to learners' trust in their capability to understand spoken language (Milliner and Dimoski, 2024; Shu-Yan and Cha, 2019), might serve as a mediator

between perfectionism and LA. Students with high LS have strong confidence and persistent in listening tasks, reducing the negative impact of perfectionism on anxiety (Bandura and Walters, 1977). Research suggests that interventions targeting LS can enhance learners' listening comprehension skills and alleviate anxiety-related symptoms (e.g., Graham, 2011; Rahımı and Abedını, 2009). For instance, Seo (2008) discovered that self-regulation mediated the link between perfectionism and academic procrastination. Similarly, Wan et al. (2022) found self-regulation as an important mediator between perfectionism and anxiety. In addition, in the academic and educational setting, self-efficacy was considered as an important protective factor to reduce the negative effects of different psychological constructs and play as an important mediator (Ampuero-Tello et al., 2022; Samuel and Burger, 2020).

Cross-cultural research reveals that LS plays a critical mediating role in diverse cultural and technological contexts. For instance, learners in Hong Kong and the United Kingdom exhibit different levels of LS due to variations in educational practices (Lo, 2024). Additionally, incorporating AI tools has been identified as a promising approach to fostering LS by providing personalized feedback and reducing learners' fear of failure (Lo et al., 2024). Thus, understanding the mediating role of LS can provide insights into the cognitive and motivational processes underlying the interplay between LA and perfectionism in EFL learners.

2.7 Mediating role of self-regulated learning

In the SRL classroom, all students actively engage in different tasks and monitor their learning progress continually (Zimmerman, 2000). Within the scope of language education, SRL has been recognized as a crucial determinant of academic achievement and language proficiency (Ghonsooly and Ghanizadeh, 2013). English language learners who employ effective SRL strategies demonstrate greater autonomy, persistence, and adaptability in their learning endeavors (Stefanou et al., 2013). Moreover, SRL has been recognized as a potential mediator between perfectionism and language learning outcomes (Movafaghardestani, et al., 2024). Perfectionistic tendencies, characterized by rigid standards and fear of failure, may undermine learners' capacity for self-regulation in their learning effectively, resulting in increased levels of anxiety and decreased learning motivation (Haraldsen et al., 2020). In contrast, EFL learners who indicate strong self-regulation ability are better equipped to manage perfectionistic tendencies and cope with challenges in the language learning process (Mahmoodi-Shahrebabaki, 2017).

Recent researches have highlighted the interplay between perfectionism, SRL, and attainment in language learning. For instance, Mahmoodi-Shahrebabaki (2017) found that perfectionistic concerns were negatively associated with self-regulatory strategies among EFL learners, leading to heightened levels of anxiety and reduced academic performance. Similarly, Movafaghardestani et al. (2024) reported that self-regulation mediated the connection between perfectionism and LA among a group of Iranian EF learners. Moreover, Lin and Wang (2018) discovered that goal orientation typically correlates positively with the implementation of SRL techniques among both adult and traditional learners. Additionally, studies by researchers such as Amini Farsani et al. (2019) and Bursali and Oz (2018) indicate that self-regulated learners exhibit heightened metacognitive awareness, enabling them to evaluate their learning processes and make necessary adjustments.

Recent studies emphasize the role of cultural differences in SRL strategies. For example, cross-cultural research comparing learners in Hong Kong and the United Kingdom suggests that socio-cultural factors significantly shape SRL approaches and their effectiveness in reducing perfectionism-induced anxiety. Moreover, AI-driven learning environments have been shown to enhance SRL by supporting metacognitive awareness and adaptive learning strategies. These insights highlight the need for culturally responsive and technology-enhanced interventions to strengthen SRL among EFL learners.

2.8 Proposed model

This study sets out to investigate how the conceptual model of perfectionism and SRL mediate in predicting learners' LA. Initially, the study examined the relationships among various variables. Then, it analyzed both the indirect and direct impact of each predictor variable. With the aim of reaching these objectives, the study utilized SEM to develop a theoretical model. To provide a comprehensive perspective, the proposed model integrates findings from cross-cultural studies and research on technological interventions in language learning. For instance, the role of generative AI in reducing anxiety and enhancing self-efficacy is considered alongside cultural differences in perfectionistic tendencies and SRL approaches (Lo, 2022, 2024; Chan et al., 2025). Future research could further validate this model by applying it in diverse educational and cultural contexts.

The diagram below shows a clear picture of how different variables (i.e., the observed & latent variables) in the SEM framework are interconnected (Figure 1).

To test the hypothetical model, the subsequent research questions were formulated:

> *Q1*: Is there a statistically significant relationship among perfectionism, LS, SRL, and L2 learners' LA?
>
> *Q2*: Does learners' perfectionism have a significant direct impact on their LA?
>
> *Q3*: Does students' LS have a significant direct impact on their LA?
>
> *Q4*: Do students' SRL skills have a significant direct impact on their LA?
>
> *Q5*: Does learners' perfectionism, with LS as a mediator, have a significant indirect effect on LA?
>
> *Q6*: Does learners' perfectionism, with SRL as a mediator, have a significant indirect effect on LA?

3 Methodology

3.1 Participants

The study involved EFL students enrolled in various language institutes in Tehran, Iran, during the autumn semester of the 2022–2023 academic year. A total of 350 learners, aged between 20 and

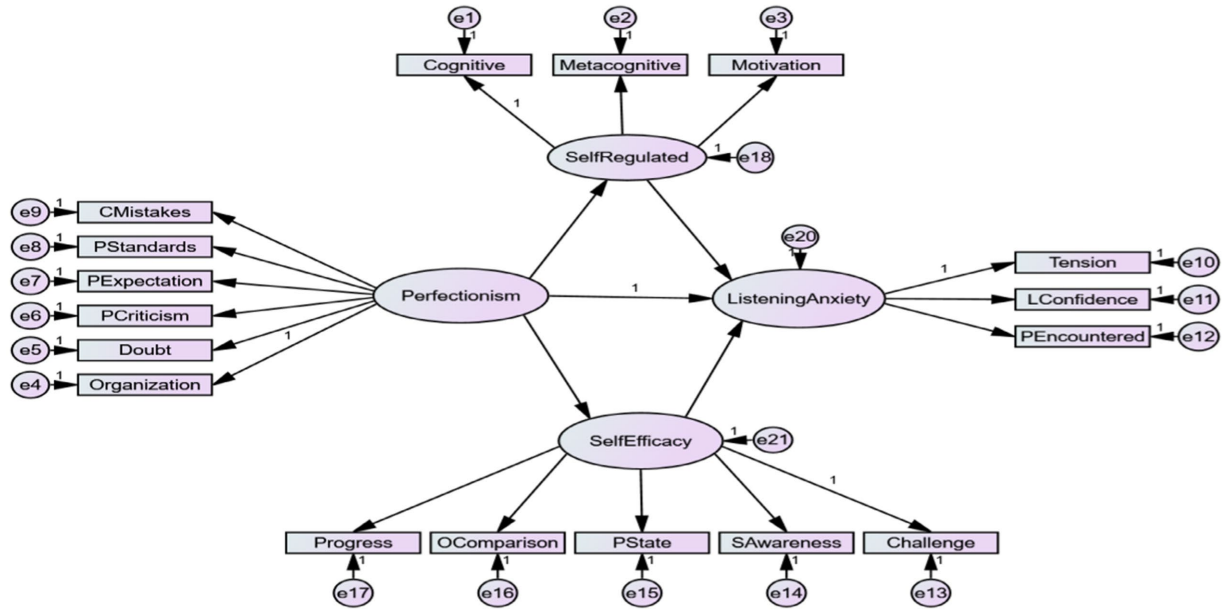

FIGURE 1
Conceptual diagram of structural model (mediation model).

33, were selected as the primary sample group using a cluster random sampling technique. These participants, comprising both male and female students, had 5–8 years of prior language acquisition experience. Additionally, they shared the same cultural background and native language (Persian), minimizing potential variability related to cultural and linguistic diversity. To ensure a representative and diverse sample, language institutes in Tehran were grouped into clusters based on geographic location (central, suburban, and peripheral areas), institute size (small, medium, and large based on student enrollment), and accreditation status (only officially recognized institutes were included). A randomization process was then applied to select a subset of institutes from each cluster, ensuring all eligible institutes had an equal chance of inclusion. Within each selected institute, students were randomly chosen, with the number of participants proportionate to the institute's size to maintain representativeness. This detailed sampling method ensured that the sample accurately reflected Tehran's EFL learner population. The sample size of 350 is appropriate for Structural Equation Modeling (SEM), adhering to the recommended guideline of 10–20 participants per estimated parameter, thereby ensuring the reliability and statistical power of the study's findings.

3.2 Instruments

3.2.1 Listening anxiety scale

To evaluate the participants' LA, Kim's (2000) pre-designed questionnaire was utilized. This instrument comprises 33 items and includes three dimensions. Participants rated their agreement with each statement on a 5-point Likert scale from 1 to 5. The questionnaire underwent validation and reliability testing in a pilot study involving 90 participants, resulting in a high overall reliability coefficient of 0.93 (alpha). Subscale reliabilities were also assessed: encountered problems (0.92), lack of confidence (0.85), and tension and worry (0.89).

3.2.2 Multidimensional perfectionism scale

To assess the degree of perfectionistic tendencies among learners, a validated questionnaire created by Frost et al. (1990) was administered. This 35 item survey includes six subscales and contains a 5-point scale. Each subscale's reliability was determined by Cronbach's Alpha: Doubts about Actions (0.77), Concern over Mistakes (0.88), Personal Standards (0.83), Parental Expectations (0.84), Organization (0.93), and Parental Criticism (0.84), the overall internal consistency of the scale, as assessed in a pilot study with 90 participants, was 0.83.

3.2.3 Listening self-efficacy questionnaire

To evaluate participants' second language LS, the study used a questionnaire developed by Kassem (2015). This 40-item scale uses a 5-point Likert format and covers five subscales: progress, observational comparison, physiological states, strategic awareness, and challenge. These subscales address different facets, such as perception of progress, peer comparison, physiological responses during listening, strategic abilities, and willingness to engage in listening tasks. Responses ranged from 1 to 5, where higher scores reflected greater self-efficacy. The overall scale's reliability index was high (alpha = 0.94) in a pilot study with 90 participants. Additionally, the reliability coefficients for the subscales were as follows: Progress = 0.86, Observational comparison = 0.78, Physiological states = 0.90, Strategic awareness = 0.78, and Challenge = 0.87.

3.2.4 Self-regulatory questionnaire

To assess learners' self-regulation, an updated version of Bouffard et al.'s (1995) five-point Likert scale was employed, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). This 14-item scale

evaluates self-regulation through three components: cognitive strategies (5 items), metacognitive strategies (6 items), and motivation (3 items). Participants responded based on their behavior in a specific class. The overall reliability of the scale was high, with Cronbach's alpha for the full scale calculated at 0.86 in a pilot study involving 90 participants. Subscale reliability indices were also satisfactory, with metacognitive strategies at 0.86, cognitive strategies at 0.76, and motivation at 0.73, all exceeding the acceptable threshold of 0.70.

In addition to reliability, the study assessed construct validity using measures such as Average Variance Extracted (AVE) and discriminant validity. AVE values for each subscale exceeded 0.50, indicating that the items within each construct explained a sufficient proportion of variance. Discriminant validity was confirmed through the Fornell-Larcker criterion, ensuring that each construct was distinct from the others. Furthermore, cross-loading analyses were performed during SEM to verify that all items loaded significantly on their intended factors without substantial overlap with unrelated constructs. These findings affirm the robustness and validity of the self-regulation scale as a measurement tool in this study.

3.3 Procedure

This research was conducted in two distinct phases using the Structural Equation Modeling (SEM) method. The pilot phase aimed to assess the reliability of the instruments with a sample of 90 EFL learners who shared similar characteristics with the main research participants. In the main phase, four pre-existing and validated scales were adapted and combined into a unified electronic document. These scales were carefully translated into Persian through a rigorous translation and back-translation process. Initially, the scales were translated into Persian by two bilingual experts in the field of applied linguistics. Next, a back-translation into English was performed by another independent expert unfamiliar with the original instruments. Discrepancies between the original and back-translated versions were resolved collaboratively to ensure semantic and cultural equivalence.

The finalized electronic questionnaire was uploaded to Porcelain, a widely used and reliable Iranian database for collecting academic data. It was then disseminated through various social media platforms, including WhatsApp and Telegram, to reach the participants. Respondents first provided demographic information, including gender, optional name, educational degree, language learning experience, and age, before proceeding to the questionnaire it.

To ensure data validity, confidentiality protocols were emphasized, and necessary controls were implemented. A meticulous review of the responses identified 21 invalid questionnaires: five were incomplete, twelve showed signs of hurried completion (e.g., filling one code across 60 successive items), and four lacked demographic data. After this review, 329 valid responses were retained, yielding a response rate of 94% (329 out of 350 distributed questionnaires). The collected data underwent a comprehensive analysis, ensuring the accuracy and reliability of findings while addressing potential issues related to missing or erroneous entries. This two-phase approach and rigorous translation process enhanced the credibility and cultural appropriateness of the research instruments.ms. On average, participants required approximately 39 min to complete the survey.

Confidentiality protocols were emphasized, and necessary controls were implemented to ensure data validity. Following the administration of the questionnaires, a meticulous review was undertaken to identify invalid responses. The criteria for invalid responses included:

- Incomplete questionnaires: Defined as missing responses to more than 10% of the items.
- Hurried completion: Identified by response times significantly below the average completion time (e.g., less than 15 min), combined with uniform responses across consecutive items (e.g., consistently selecting one option for 60 successive items).
- Missing demographic data: Questionnaires submitted without completing the demographic section were excluded.

Data cleaning and analysis were conducted using SPSS for identifying invalid responses and descriptive statistics and AMOS for SEM analysis. This scrutiny revealed that 21 questionnaires were invalid: five were incomplete, twelve displayed hurried completion patterns, and four lacked demographic data. After data cleaning, 329 valid responses were retained, yielding a response rate of 94% (329 out of 350 distributed questionnaires). This two-phase approach, combined with rigorous data cleaning and analysis using industry-standard software, ensured the credibility and accuracy of the findings.

3.4 Data analysis

After gathering data, the analysis progressed through multiple stages. Pearson correlation analysis examined the relationships among variables. The model's fit was apprised using serval indicators like the chi-square to degrees of freedom ratio (χ^2/df) and comparative fit index (CFI). Additionally, SEM was tested and the influence and predictive capacity of the variables (i.e., latent &observed variables) were calculated by standardized and unstandardized regression coefficients. Needless to say, before running the main investigation, the Cronbach's Alpha reliability of the scales was evaluated during the pilot study.

4 Results

4.1 Normality assumption

Structural equation modeling necessitates that observed variables exhibit univariate and multivariate normality (Kline, 2016). Upon finding that the kurtosis and skewness results fell within the ranges of ±2, the assumption of univariate normality was confirmed (George and Mallery, 2020). In addition to individual observed variables, SEM requires that linear combinations of these variables also demonstrate normality, known as multivariate normality. This assumption is evaluated using Mardia's index, and with a result of −5.107, which is less than ±272, indicating that the data showed multivariate normality (Khine, 2013).

4.2 First question

To look into the connections among SRL, perfectionism, LS, and LA, Pearson correlations were used. Table 1 illustrates the connections among the various variables in the study.

The correlation analysis in Table 1 reveals several important relationships among the variables of anxiety, self-efficacy, perfectionism, and self-regulation. A notable negative correlation is observed between anxiety (LA) and self-efficacy (SE) ($r = -0.279$, $p < 0.01$). This indicates that higher self-efficacy is associated with lower anxiety levels. In other words, students who feel more confident in their abilities to manage tasks and challenges tend to experience less anxiety. Similarly, a moderate negative correlation exists between anxiety (LA) and perfectionism (P) ($r = -0.266$, $p < 0.01$). This suggests that students who exhibit higher perfectionism tend to experience lower anxiety, although this relationship is still relatively weak. A negative correlation is also observed between anxiety (LA) and self-regulation (SR) ($r = -0.237$, $p < 0.01$), indicating that students with better self-regulation strategies tend to experience less anxiety. This highlights the importance of self-regulation in managing learning-related stress. On the other hand, the analysis shows positive correlations between self-efficacy (SE) and perfectionism (P) ($r = 0.288$, $p < 0.01$), as well as between self-efficacy (SE) and self-regulation (SR) ($r = 0.263$, $p < 0.01$). These findings suggest that students who have higher self-efficacy are more likely to exhibit both perfectionistic tendencies and stronger self-regulation abilities. Similarly, perfectionism (P) and self-regulation (SR) are positively correlated ($r = 0.254$, $p < 0.01$), indicating that perfectionistic individuals are also more likely to possess effective self-regulation skills.

In terms of relationships with learning anxiety, self-regulated learning (SRL) and life satisfaction (LS) both show a negative correlation with anxiety (LA). This suggests that students who are more self-regulated and satisfied with their lives tend to experience lower levels of anxiety related to learning. Conversely, perfectionism (P) is positively associated with anxiety, meaning that higher levels of perfectionism are linked to increased learning anxiety.

Among these relationships, the correlation between life satisfaction (LS) and learning anxiety (LA) ($r = -0.27$, $p < 0.01$) is the strongest, followed closely by the correlation between perfectionism (P) and learning anxiety (LA) ($r = -0.26$, $p < 0.01$), and the self-regulation (SR) and learning anxiety (LA) relationship ($r = -0.23$, $p < 0.01$). These findings underscore the significance of life satisfaction and perfectionism as key contributors to the experience of learning anxiety.

4.3 Second, third, and fourth questions

To assess the overall model fit, the mediating role of SRL and LS, and the effects of perfectionism, LS, and SRL on LA, various goodness-of-fit indices were examined. Initially, the standardized regression weights for the model were calculated through using SEM and are shown in Figure 2. In this figure, latent variables (unobserved constructs) are represented by circles, while observed variables (measured variables) are shown as rectangles. The mediating variable is indicated by an arrow that directs the effect from the independent (exogenous) variables to the dependent (endogenous) variable. The latent variables represent theoretical constructs that are not directly measurable, while the observed variables are those that have been directly measured and recorded in the data. The figure also demonstrates the hypothesized relationships between these variables in the mediation model.

When using the SEM formula, it is essential to report various indices, including RMSEA, χ^2/df, GFI, and TLI. For each of these indices, a preferred value was used for evaluation (Hair et al., 2020). Table 2 illustrates the fit indices results of mediation models for different variables in this study.

The data in Table 2 confirm that the mediation model demonstrates a good fit. The chi-square test for goodness-of-fit was non-significant (χ^2 (115) = 137.176, $p = 0.078$), and the chi-square/df ratio (1.193) was well below the critical value of 3, indicating a satisfactory fit. The Standardized Root Mean Square Residual (SRMR) value of 0.080 is within the acceptable threshold of 0.10, and the Root Mean Square Error of Approximation (RMSEA) was 0.000, with a 90% confidence interval ranging from 0.000 to 0.037, all well below the 0.10 threshold. The PCLOSE value of 1 and the Goodness-of-Fit Index (GFI) of 0.952, both exceeding their respective thresholds (0.05 and 0.90), further support the model's fit. Incremental fit indices, including the Relative Fit Index (RFI = 0.909), Tucker-Lewis Index (TLI = 0.989), Comparative Fit Index (CFI = 0.987), Incremental Fit Index

TABLE 1 Correlation among SL, perfectionism, LS, and LA.

		Anxiety	Self-efficacy	Perfectionism	Self-regulation
Anxiety	Pearson correlation	1	−0.279**	−0.266**	−0.237**
	Sig. (2-tailed)		0.000	0.000	0.000
	N	350	350	350	350
Self-efficacy	Pearson correlation	−0.279**	1	0.288**	0.263**
	Sig. (2-tailed)	0.000		0.000	0.000
	N	350	350	350	350
Perfectionism	Pearson correlation	−0.266**	0.288**	1	0.254**
	Sig. (2-tailed)	0.000	0.000		0.000
	N	350	350	350	350
Self-regulation	Pearson correlation	−0.237**	0.263**	0.254**	1
	Sig. (2-tailed)	0.000	0.000	0.000	
	N	350	350	350	350

Sig < 0.01 level.

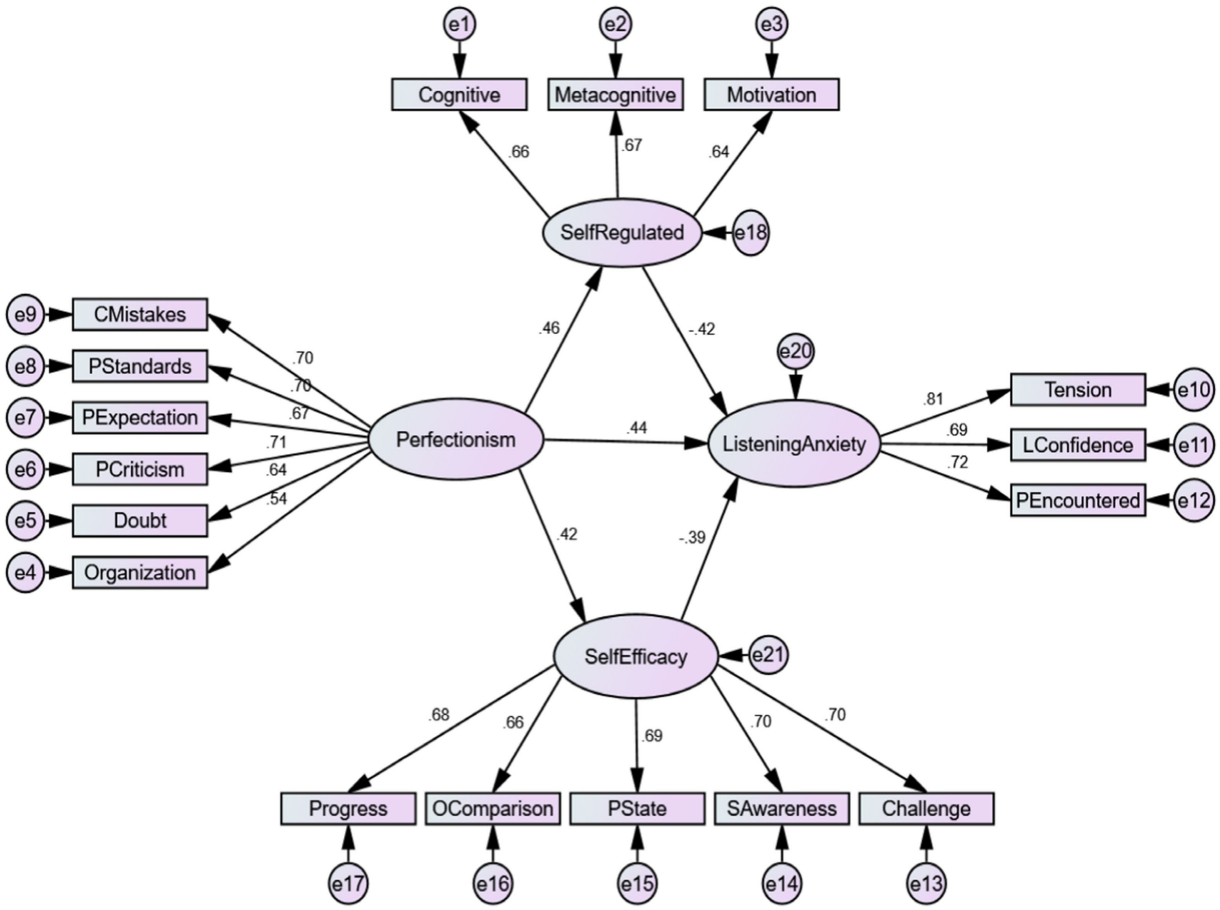

FIGURE 2
MAIN structural equation model (mediation model).

TABLE 2 Mediation model: fit indices.

Types	Indices	Self-regulation	Criteria	Fit
Absolute	X^2	137.176	---	---
	df	115	---	---
	p	0.078	> 0.05	G
	X^2 Ratio	1.193	< 3	G
	SRMR	0.080	<0.10	G
	RMSEA	0.000	<0.05	G
	REMSEA CI	[0.000, 0.037]	<=0.10	G
	PCLOSE	1	>0.05	G
	GFI	0.952	> = 0.90	G
Incremental	RFI	0.909	> = 0.90	G
	TLI	0.989	> = 0.90	G
	CFI	0.987	> = 0.90	G
	NFI	0.923	> = 0.90	G
	IFI	0.987	> = 0.90	G
Sampling Adequacy based on Hoelter G = Good	359	>200	Adequate	

(IFI = 0.987), and Normed Fit Index (NFI = 0.923), also surpassed the 0.90 threshold, providing additional evidence of model adequacy. The Hoelter index of 359, well above the 200 threshold, indicates that the sample size is sufficient for model estimation.

These indices adhere to standard SEM reporting practices, with all values falling within established thresholds for good model fit. Following validation of the model's fit, structural equation modeling (SEM) was used to calculate regression coefficients for the exogenous variables (self-regulation, learning strategies, and perfectionism) and the endogenous variable (learning achievement). The Standardized Regression Weights were then analyzed to assess the strength of relationships between variables, facilitating comparisons of their relative influence in the mediation model.

To assess the direct effects among the four constructs, standardized and unstandardized regression weights were calculated and findings illustrates in Table 3.

The findings reveal that SRL had a remarkable negative direct impact on LA ($B = -0.659$, $p = 0.001$), prompting the second null hypothesis to be rejected. This means that a one standard deviation increase in SRL corresponds to a 0.659 standard deviation decrease in LA. The negative standardized regression weight signifies that as SRL increases, LA decreases. Among the sub-components of SRL, metacognitive strategies ($B = 0.67$) had a stronger predictive effect on LA than motivation ($B = 0.64$) and cognitive strategies ($B = 0.66$).

Moreover, Perfectionism demonstrated a significant direct impact on LA ($B = 0.436$, $p = 0.000$), leading to the rejection of the third null hypothesis. This finding indicates that a one standard deviation increase in perfectionism corresponds to a 0.436 standard deviation increase in LA. Within the sub-constructs of perfectionism, concern over mistakes ($B = 0.696$), parental standards ($B = 0.702$), and parental criticism ($B = 0.707$) exhibited the highest predictive power regarding LA. The remaining sub-constructs, ordered by their predictive strength, included parental expectation ($B = 0.672$), doubt ($B = 0.638$), and organization ($B = 0.524$).

Furthermore, the results indicated that students' LS significantly impacted their LA ($B = -0.363$, $p = 0.000$), thus rejecting the third null hypothesis. The negative standardized regression weight indicates that as LS increases, LA decreases. Among the sub-constructs of LS, strategic awareness ($B = 0.70$), challenge ($B = 0.70$), and physiological states ($B = 0.69$) had the strongest predictive power on LA. Progress ($B = 0.68$) and observational comparison ($B = 0.66$) followed in their predictive strength.

4.4 Fifth and sixth questions

To determine if perfectionism, through the mediating roles of LS and SRL, has a noteworthy indirect effect on LA, the Sobel Test was employed. This specialized t-test determines if the impact of the independent variable is significantly reduced by the mediator, indicating a mediation effect. Table 4 displays the Sobel test results, estimating the indirect effect of LS and SRL on LA.

The results of the Sobel Test (-2.58, $p = 0.004$) revealed that learners' perfectionism, with the mediating role of LS, had a consequential indirect effect on LA, leading to the rejection of the fourth null hypothesis. Similarly, Sobel Test (-2.63, $p = 0.004$) demonstrated that learners' perfectionism, mediated by their SRL, also had a significant indirect effect on LA, resulting in rejection of the sixth null hypothesis.

5 Discussion

The dominant target of the current investigation was to inspect the interplay between Iranian EFL learners' perfectionism and LA, considering the mediating roles of LS and SRL. The results addressing the first research question highlighted several important findings regarding the relationships among these variables. Firstly, there was a statistically notable negative interrelation between EFL learners' SRL and their levels of LA. This proposes that as EFL students demonstrate higher levels of SRL behaviors, their LA tends to decrease. This uncovering is conformity with prior investigations (e.g., Kareshki et al., 2017; Wu et al., 2022) which show that students who utilize effective SRL strategies often feel more capable and assured in handling challenges, thereby reducing anxiety during language learning tasks, especially in listening comprehension activities. The findings can also be justified by self-regulation theories. According to self-regulation theories, individuals who involve in self-regulatory processes, such as monitoring, goal-setting, planning, and evaluating their learning are better equipped to manage the cognitive and emotional challenges of learning tasks (Rousseau et al., 2018). By actively controlling their learning processes and strategies, learners can enhance their sense of efficacy and reduce feelings of anxiety associated with uncertainty and perceived lack of control (Lord et al., 2010; Rousseau et al., 2018). This aligns with studies indicating that self-regulated learners tend to experience lower levels of anxiety across various educational domains.

Furthermore, the analysis unveiled a notable positive connection between perfectionism and LA among EFL learners. This finding infers that learners who display high-status of perfectionistic tendencies are prone to feeling more anxious when listening. This association underscores the possible harmful impact of perfectionism on learners' psychological well-being and performance outcomes within the language learning context (Osenk et al., 2020). Perfectionistic tendencies may manifest as excessive self-criticism, fear of making mistakes, and heightened sensitivity to perceived failures, all of which can contribute to heightened anxiety levels (Erozkan, 2016), particularly during demanding language tasks such as listening comprehension. This study confirms what other investigators (e. g., Flett et al., 2016; Sönmez and Kurtoğlu, 2021) have discovered. They believed that perfectionistic individuals often experience intense pressure to meet unrealistic expectations, deviation from perfection, and fear making mistakes, leading to heightened levels of anxiety during learning tasks. Thus, in the context of language learning, where communication involves risk-taking and vulnerability, perfectionistic tendencies may exacerbate anxiety by amplifying learners' concerns about language accuracy, performance evaluation, and social judgment.

Furthermore, a significant inverse interrelationship was observed between LS and LA. This investigation's results echo those of earlier investigators (e.g., Rahmat et al., 2020; Mills et al., 2006), who similarly perceived that high-ranking of LS are connected with lower anxiety levels. This proposes that students who have greater confidence in their

TABLE 4 Sobel test estimate of indirect effect with mediating role of LS and SRL.

Variable	*B*	Sig
Perfectionism with mediating LS on LA	−2.58	0.004
Perfectionism with mediating SRL on LA	−2.63	0.004

TABLE 3 Standardized and unstandardized regression weights for mediation model.

	Unstandardized	S.E.	C.R.	*p*	Standardized
SelfRegulated<---Perfectionism	0.670	0.116	5.759	0.001	0.458
LCSelfEfficacy<---Perfectionism	0.761	0.132	5.784	0.001	0.418
LAnxiety<---LCSelfEfficacy	−0.494	0.088	−5.607	0.001	−0.393
LAnxiety<---SelfRegulated	−0.659	0.124	−5.317	0.001	−0.421
LAnxiety<---Perfectionism	1.000			0.000	0.436

competence to comprehend spoken language tend to experience less anxiety during listening tasks (Teng and Zhang, 2018). This relationship can be explained by Bandura's SCT, which calls attention to the role of self-efficacy beliefs in creating individuals' cognitive, affective, and behavioral responses to challenging tasks. According to this theory, a person with higher self-efficacy has more tendency to do tasks with confidence and optimism, resulting in decreased anxiety levels and increased motivation to overcome difficulties (Liu et al., 2023).

For language learners, LS mirrors confidence in their skill to comprehend spoken language, despite potential challenges such as rapid speech, unfamiliar vocabulary, or accent variations. Learners who possess higher levels of LS may approach listening tasks with greater resilience and persistence, viewing them as opportunities for skill development and learning rather than sources of anxiety or threat.

Regarding the second question, the analysis revealed a significant direct impact of perfectionism on LA, indicating that high perfectionism are connected with high anxiety among participants. These findings align with preceding investigations (e.g., Movafaghardestani et al., 2024; Wang et al., 2018) that concluded perfectionism directly influences students' learning anxiety. The positive standardized regression weight suggests that students who exhibit higher levels of perfectionistic tendencies, characterized by excessively high standards, fear of failure, and self-criticism, are more likely to experience high anxiety when engaging in listening activities. One reason behand such findings can be due to pressure to perform something perfectly. Perfectionistic individuals place immense pressure on themselves to excel and meet unrealistic standards (Haraldsen et al., 2020). While learning language, this pressure to perform perfectly may create a sense of urgency and anxiety during listening tasks, as learners strive to meet unattainable expectations and avoid perceived failure or disappointment. Negative self-evaluation can be another reason behind such a finding. Perfectionism is associated with harsh self-criticism and negative self-evaluation. Perfectionistic individuals tend to focus on their flaws and shortcomings, leading to feelings of inadequacy and anxiety (Mahmoodi-Shahrebabaki, 2017). During listening tasks, perfectionistic learners may excessively scrutinize their performance, magnifying perceived errors or misunderstandings and fueling anxiety about their language abilities.

Digging deeper into perfectionism, the study indicated that the cognitive and emotional aspects of perfectionism, particularly related to concerns over mistakes, parental standards, and parental criticism, play a significant role in predicting LA. One way to explain these results is to say that individuals who are excessively concerned about making mistakes may experience heightened anxiety during listening tasks. This could be due to fear of judgment or failure, leading to increased stress and difficulty in concentrating on the task at hand (Horwitz et al., 1986). To justify the findings related to parental standards it can be said that individuals who perceive high expectations from their parents may internalize these standards and experience anxiety when they perceive themselves as falling short (Al-Mahrooqi et al., 2016). This could create pressure to perform well in listening tasks to meet or exceed parental expectations. With regard to findings related to parental criticism it can be said that individuals who perceive criticism from their parents regarding their performance may develop a fear of making mistakes or underperforming (Al-Mahrooqi et al., 2016). This fear of criticism can contribute to heightened anxiety during listening tasks, as individuals may anticipate negative feedback or judgment.

Considering third question, the findings from this investigation disclosed that students' LS was directly and significantly having effect on their LA, indicating that students who fell more confident understanding what they hear tend to experience less anxiety when listening. This result aligns with former investigations (e.g., Goh and Taib, 2006; Rahmat et al., 2020) demonstrating that learners with higher levels of LS have more confidence for doing different tasks and experience lower levels of anxiety. These findings can be justified by SCT positing that when people believe they can do something well (self-efficacy), they are less likely to be anxious about it (Bandura, 1999). Students with high levels of LS tend to perceive themselves as capable and competent listeners. This confidence in their abilities reduces feelings of uncertainty and vulnerability during listening tasks, leading to lower levels of anxiety. Students with greater LS approach listening tasks with a sense of assurance and optimism, which mitigates anxiety symptoms. Next reason can be due to attributions of success and failure. Self-efficacy beliefs influence learners' attributions of success and failure (Beatson et al., 2020). Learners with strong LS belief attribute successful listening outcomes to their own abilities and efforts, whereas failures are attributed to external factors that are perceived as controllable. This attributional style reduces anxiety by enhancing learners' sense of control over their listening performance and reducing feelings of helplessness or inadequacy.

Based on the findings, it's evident that certain sub-constructs of LS significantly influence the prediction of LA. Strategic awareness, challenge, and physiological states emerged as the most influential factors. This suggests that individuals who possess a heightened strategic awareness, perceive listening tasks as challenges rather than threats, and effectively manage their physiological responses are likely to experience less anxiety when listening English spoken language. Additionally, the research emphasizes the significance of progress and observational comparison in understanding LS and its relation to anxiety. Progress, in the next rank, indicates that individuals who perceive themselves as making strides in their listening skills may feel more confident and less anxious in listening contexts. Similarly, observational comparison suggests that comparing one's listening abilities to others may impact their level of LA, albeit to a slightly lesser extent than other factors. These findings emphasize the multi-dimensional nature of LS and its intricate relationship with anxiety. The results are in accordance with the principles of self-efficacy theory suggested by Bandura (1999) and other researchers (Kassem, 2015; Ürün Karahan, 2018), emphasizing the importance of strategic awareness, challenge appraisal, and physiological regulation in predicting anxiety. These findings are consistent with SCT, particularly Albert Bandura's concept of self-efficacy. In the context of listening, individuals with higher levels of LS approach tasks with confidence and competence, resulting in lower anxiety levels (Rahmat et al., 2020).

Concerning the fourth question, the findings showed a substantial direct negative effect of SRL on LA. This suggests that higher levels of SRL are linked to lower levels of LA among participants. These results are in consonance with prior investigation (e.g., Movafaghardestani et al., 2024), which suggests that increased SRL is associated with decreased LA. Effective stress management can be the logic behind such findings. Self-regulated learners are adept at managing stress and regulating their emotions during learning tasks (Trotter et al., 2023).

They have a stronger ability to recognize and manage signs of stress, such as feelings of frustration or overwhelm, through strategies such as relaxation techniques or positive self-talk. This ability to manage stress effectively mitigates the negative impact of anxiety on performance and facilitates a more positive learning experience.

The analysis of the sub-constructs of Self-Regulated Learning (SRL) revealed that metacognitive strategies have a stronger predictive power than motivation and cognitive strategies concerning EFL learners' listening anxiety (LA). This finding is supported by Nordahl et al.'s (2023) research, which suggests that metacognitive strategies are more influential than other constructs, such as cognitive strategies, in predicting anxiety symptoms. The underlying rationale for this outcome can be explained through metacognitive theory, which emphasizes the importance of learners' awareness and control over their cognitive processes (Flavell, 1979). Metacognitive strategies, such as planning, monitoring, and evaluating one's listening comprehension, enable learners to recognize and address potential difficulties before they escalate into anxiety. By fostering self-awareness and adaptability, these strategies allow learners to maintain control over the learning process, reducing feelings of helplessness that often accompany anxiety.

In contrast, cognitive strategies, although vital for processing and encoding information, do not offer the same level of self-regulation and emotional control as metacognitive strategies. Moreover, motivation, while crucial for initiating and sustaining learning, does not directly address the cognitive and emotional challenges that EFL learners face during listening tasks. Therefore, metacognitive strategies, through their ability to regulate both cognitive and emotional responses, provide a more effective mechanism for reducing LA and enhancing listening comprehension performance (e.g., Rahimirad, 2014; Sun et al., 2019).

Regarding fifth question, the findings of the Sobel Test corroborate evidence for the significant indirect impact of learners' perfectionism on LA, mediated by LS. This finding suggests that learners' perfectionistic tendencies influence their levels of LA indirectly through their beliefs in their own listening abilities. This agrees with investigation of Wan et al. (2022) who discovered that self-efficacy could have a mediated role between two personality trait and affective factors in language learning process. The reason behind such a finding can related to protective nature of self-efficacy. Given that self-efficacy can act as a protective factor (Ampuero-Tello et al., 2022; Samuel and Burger, 2020), LS may moderate the detrimental influence of perfectionism on anxiety. Learners who possess higher levels of LS possibly more capable of managing the pressures and expectations associated with perfectionism, leading to lower levels of anxiety overall. Believing in their ability to understand spoken language may buffer the effects of perfectionism, reducing feelings of inadequacy or failure. Motivational factors can be another reason. Listening self-efficacy is closely linked to motivation and engagement in listening tasks. Learners who possess self-belief to understand spoken language are more apt to engage listening activities with passion and persistence. This intrinsic motivation may counteract the negative effects of perfectionism on anxiety by fostering a positive and proactive approach to learning.

With regard to the last question, the results of the Sobel Test provide evidence for the significant indirect effect of learners' perfectionism on LA, mediated by SRL. This finding suggests that learners' perfectionistic tendencies influence their levels of LA indirectly through their self-regulatory behaviors and strategies. This finding are in line with findings of the researchers (e.g., Dias and Cadime, 2017; Movafaghardestani et al., 2024) who found that self-regulation could have a mediated role between two personality trait and affective factors in language learning. To justify such a finding, different logic can be presented. Coping and adaptation is the first logic. Self-regulated learners are adept at coping with challenges and adapting their learning strategies to fulfill the requirements of the task (Matthews et al., 2000). Perfectionistic tendencies may lead learners to engage in excessive planning, monitoring, and self-criticism, which can increase stress and anxiety levels. By mediating the relationship between perfectionism and anxiety, SRL may serve as a mechanism through which learners regulate their emotions and manage perfectionism-related stressors more effectively.

Goal orientation is another logic. Perfectionistic individuals often set unrealistically high standards and goals for themselves, leading to feelings of frustration and anxiety when those standards are not met. Self-regulated learners, however, are able to set attainable goals, keep track of their learning journey, and changed their learning method as needed (Lin and Wang, 2018). By mediating the relationship between perfectionism and anxiety, SRL may help learners maintain a balanced approach to goal setting and reduce feelings of anxiety associated with perfectionistic tendencies. Metacognitive awareness as the next logic can justify the finding of this study regarding the last question. Self-regulated learners possess greater metacognitive awareness, allowing them to contemplate their learning processes and adjust as needed (Amini Farsani et al., 2019; Bursali and Oz, 2018). Perfectionistic tendencies may lead learners to engage in negative self-talk and rumination, which can exacerbate anxiety symptoms. By moderating the impact of perfectionism on anxiety, SRL may help learners develop more adaptive coping strategies and regulate their negative thoughts and emotions more effectively.

Overall, the findings demonstrated that the Structural Equation Modeling (SEM) had a good fit index, validating the model for further analysis. While SEM provides robust insights into the relationships between variables, it is important to address potential biases that may arise from the data collection process, such as self-reporting bias and common method variance. Self-reporting bias could occur if participants provided answers that they perceived as socially desirable rather than true reflections of their attitudes or behaviors. To mitigate this bias, participants were assured of confidentiality, and they were encouraged to provide honest and thoughtful responses.

Additionally, common method variance (CMV) is a potential concern in studies that rely on self-reported data. To address this, Harman's single-factor test was conducted to assess the extent of CMV. The results indicated that the variance accounted for by the first factor was well below the threshold (e.g., 50%), suggesting that CMV did not significantly influence the data. These steps help ensure the validity of the findings and support the credibility of the SEM model used for further analysis.

6 Conclusion

This research explored the connection between perfectionism and listening anxiety (LA) among Iranian EFL learners. It specifically examined the role of listening self-efficacy (LS) and self-regulated learning (SRL) in mediating the relationship between perfectionism

and LA. Using structural equation modeling (SEM), the study found a negative correlation between SRL and LA, and a positive correlation between perfectionism and LA. The findings revealed that LS, SRL, and perfectionism all significantly influence LA, with perfectionism showing the strongest predictive power. The study concludes that addressing perfectionism in L2 listening classrooms could be pivotal. Stronger perfectionist tendencies were linked to increased LA, while stronger self-regulation and LS were associated with reduced anxiety levels. Furthermore, the research indicated an indirect effect of learners' perfectionism on LA, mediated by LS and SRL, with SRL demonstrating greater predictive power than LS.

These findings emphasize the complex nature of language learning anxiety and the intricate interplay between learners' psychological traits, cognitive processes, and emotional factors. By understanding these dynamics, teachers can create positive learning environments that help EFL learners overcome anxiety and enhance their language learning experience. Specifically, EFL instructors should focus on promoting self-regulation as a means to alleviate LA, while also addressing perfectionism as a psychological barrier in listening comprehension classrooms. To this end, language educators and material developers are encouraged to design interactive and engaging materials and activities that foster listening skills, SRL, and LS, which can assist learners in managing stress and overcoming emotional and cognitive barriers during listening tasks.

To further alleviate language learning anxiety, teachers can incorporate specific strategies that foster self-regulated learning (SRL) and listening self-efficacy (LS). For SRL, educators can encourage students to set specific, measurable, and achievable goals related to their listening skills, while promoting self-monitoring by having students track their progress over time. Reflection activities after each listening task can help learners assess their strengths and areas for improvement, fostering a growth mindset. To build LS, teachers can introduce guided listening exercises that gradually increase in difficulty, helping students gain confidence in their abilities. Additionally, self-assessment practices can be integrated, allowing students to evaluate their own performance and recognize their progress, thus boosting their autonomy and self-efficacy. These practical strategies can be seamlessly integrated into classroom activities to create a supportive learning environment that addresses anxiety and enhances listening comprehension skills.

However, it is important to recognize certain limitations in this study. One of the primary limitations is the focus on Iranian EFL learners, which may limit the generalizability of the findings to other cultural and linguistic contexts. The study's cultural context must therefore be considered when interpreting the results, and future research should explore cross-cultural validation to assess the broader applicability of the findings across diverse educational settings. Additionally, while this study relied on quantitative data, incorporating a qualitative phase in future research could provide richer insights into the underlying factors contributing to LA, thus enhancing the depth and generalizability of the findings. Further studies could also expand the scope by examining how perfectionism, LS, and SRL relate to anxiety in other language skills, such as speaking, writing, and reading, to gain a more comprehensive understanding of how these constructs impact language acquisition as a whole.

Finally, while this research focused on a sample size of 350 participants, time constraints limited the sample size, which could potentially influence the robustness of the results. Future studies may consider larger and more diverse sample populations to ensure more generalized findings. These directions will help expand our understanding of the complexities of LA and the role of individual learner characteristics in second language acquisition.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving humans were approved by the Institutional Review Board of the Islamic Azad University, Ayatollah Amoli Branch. The studies were conducted by the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

EM: Writing – original draft, Writing – review & editing. HB: Writing – original draft, Writing – review & editing. MD: Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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The authors declare that no Generative AI was used in the creation of this manuscript.

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