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Assessing the Contribution of EFL Learners' Motivation, Enjoyment, and Self-Regulation to their Aural Vocabulary Knowledge

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ABSTRACT

Vocabulary knowledge is a central component of language competence, yet the aural dimension of vocabulary and its psychological correlates remain underexplored in English as a Foreign Language (EFL) contexts. Addressing this gap, this study examined whether Iranian EFL learners' second language (L2) motivation, foreign language enjoyment (FLE), and self-regulatory capacity in vocabulary learning predict their Aural Vocabulary Knowledge (AVK). A total of 122 undergraduate EFL students at Hakim Sabzevari University as a specific EFL context completed four instruments: the Motivation Questionnaire (Taguchi et al., 2009), the Foreign Language Enjoyment Scale (Dewaele & MacIntyre, 2014), the Self-Regulation Scale (Tseng et al., 2006), and the AVK test (Taguchi & Kaya, 2019). Multiple regression and path analyses were conducted using Statistical Package for the Social Sciences (SPSS, Version 25). The results showed that enjoyment and self-regulation were significantly correlated with AVK, whereas L2 motivation was not. In the regression model, only self-regulation significantly predicted AVK, highlighting the pivotal role of learners' self-regulatory capacity in aural vocabulary development. Path analysis further revealed a significant indirect effect of enjoyment on AVK through self-regulation, indicating that enjoyment facilitates AVK primarily by enhancing learners' self-regulatory behaviors. These findings suggest that pedagogical interventions aimed at improving EFL learners' AVK should explicitly foster self-regulatory capacity (e.g., through strategy training in goal-setting and metacognitive monitoring) and incorporate enjoyable, engaging listening activities designed to promote positive emotional experiences, thereby supporting aural vocabulary development and overall listening proficiency.

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Introduction

Vocabulary knowledge has garnered substantial scholarly attention recently (Alharthi, 2020; Amirian et al., 2022; Azari Noughabi et al., 2021; Han & Qian, 2024; Janebi Enayat & Amirian, 2020, Janebi Enayat et al., 2018), particularly due to its critical role in aural language processing and speech production (Hunt & Beglar, 2005). Native speakers are exposed to extensive amounts of contextualized spoken input, enabling them to identify, comprehend, and analyze sequences of words in related speech with relative ease (Ellis, 2002). In contrast, this is often not the case for many second-language listeners (Field, 2008). Inadequate exposure to the target language may result in suboptimal Aural Vocabulary Knowledge (AVK) among second language (L2) learners; specifically, these learners may struggle to recognize words in spoken discourse that they can recognize when presented in written form (Goh, 2000).

According to Matthews and Cheng (2015), AVK encompasses the ability to recognize the auditory form of a word, access existing knowledge pertaining to that word, and articulate it within time constraints. AVK is regarded as a fundamental component of vocabulary knowledge, which can facilitate effective communication and enhance listening comprehension (Milton et al., 2010). Nevertheless, acquiring a sufficient vocabulary in a target language is a labor-intensive endeavor that requires significant effort and time. Consequently, learners must be motivated to seize every opportunity to broaden their vocabulary repertoire.

Previous research has indicated that positive emotions, such as enjoyment, play a beneficial role in the learning process. In contrast, negative emotions, including boredom and despair, are detrimental to learning outcomes (Pekrun et al., 2017). Positive academic emotions may bolster motivation and encourage the use of adaptable learning strategies and self-regulation, thus contributing to improved academic performance (Yu, 2022) and facilitating the acquisition of AVK. Furthermore, positive emotions such as enjoyment may enhance learning efforts by promoting self-regulation (Wolters et al., 2011), increasing task focus (Fredrickson, 2001; Meinhardt & Pekrun, 2003), and fostering receptiveness to flexible problem-solving strategies (Pekrun et al., 2002).

While prior research has extensively documented the role of motivation in shaping language learning behaviors and outcomes (Boo et al., 2015; Dörnyei, 2005; Jodaei et al., 2018, 2021), and has separately highlighted the significance of positive emotions like enjoyment (Yuan & Liu, 2025) and self-regulatory strategies (Tseng et al., 2006), these constructs have rarely

been integrated into a coherent model to explain a specific language learning outcome. This is a critical oversight, as these factors likely operate in concert rather than in isolation. Drawing on established educational psychology theories (e.g., Pekrun, 2006; Zimmerman, 2002), a logical sequence can be proposed: L2 motivation provides the initial direction and energy for learning; this engaged state can foster positive affective experiences like Foreign Language Enjoyment (FLE) in the classroom. Enjoyment, in turn, is theorized to broaden cognitive and behavioral repertoires (Fredrickson, 2001), creating conditions conducive to the deployment of effortful, self-regulatory strategies—such as goal-setting, metacognitive monitoring, and persistence. It is precisely these self-regulatory strategies that are paramount for mastering challenging, incremental tasks like acquiring aural vocabulary knowledge (AVK), which requires sustained, focused listening practice and deliberate strategy use.

However, this potential chain of influence—from motivation and enjoyment, through self-regulation, to AVK—remains largely hypothetical and untested, representing a significant gap in the literature. Previous studies have examined pairs of these variables (e.g., motivation and general vocabulary: Sarani & Shirzaei, 2016; Yousefi & Mahmoodi, 2022; enjoyment and self-regulation: Amirian & Azari Noughabi, 2018) or have focused on outcomes like general proficiency or written vocabulary. Crucially, the unique and combined contributions of these three key psychological variables to the development of AVK, a foundational yet distinct component of listening comprehension, are unknown. This gap is particularly salient in English as a Foreign Language (EFL) contexts like Iran, where learners often struggle with listening skills due to limited authentic input (Ghorbani Nejad & Farvardin, 2022). Here, traditional instruction often prioritizes grammar and reading over listening skills, and learner motivation is frequently driven by extrinsic, exam-oriented goals (the "Ought-to L2 Self") within a setting with limited opportunities for authentic L2 use. This unique configuration likely increases the demands on learners' self-regulatory capacity to seek out aural practice and amplifies the importance of positive affective experiences (enjoyment) within the classroom as a counterbalance to external pressures. Consequently, the relationships between motivation, enjoyment, self-regulation, and AVK may differ from those found in contexts with more immersive, communication-focused instruction, making this an imperative setting in which to test the proposed integrated model.

Understanding which internal, teachable factors—motivational orientations, classroom enjoyment, or self-regulatory capacity—most powerfully predict AVK is essential for designing targeted and effective

pedagogical interventions. Therefore, to move beyond fragmented insights, this study investigates an integrated model. It uniquely juxtaposes L2 motivation, FLE, and self-regulation not as competing or isolated predictors, but as a theoretically linked set of constructs to determine their direct and indirect relationships with AVK. This approach allows us to test whether self-regulation acts as the key mechanism (mediator) through which more distal factors like motivation and enjoyment influence aural vocabulary growth. By doing so, the study addresses a clear empirical and theoretical gap, offering a more holistic understanding of the psychological pathways to successful auditory vocabulary learning in an under-researched context.

Literature Review

Aural Vocabulary Knowledge (AVK)

Successful listening comprehension in second language acquisition (SLA) is fundamentally tied to learners' vocabulary knowledge, particularly their aural vocabulary knowledge (AVK) (Cheng & Matthews, 2016; Han & Qian, 2024; Vandergrift & Baker, 2015). AVK refers to the vocabulary a learner can recognize and understand through auditory input, as measured by aural-specific assessments (Masrai, 2020). It is a critical component enabling learners to effectively parse and interpret spoken language in real time (Vandergrift & Baker, 2015). A growing body of empirical research has cemented the unique and predictive role of AVK in listening comprehension, demonstrating that it often correlates more strongly with listening success than written vocabulary knowledge does (Bozorgian et al., 2025; Chen et al., 2025; Li, 2024; Matthews & Lange, 2024; Milton et al., 2010). For instance, Taguchi and Kaya (2019) found a significant positive correlation between AVK and listening skills among Japanese EFL learners, while Vandergrift and Baker (2015) identified AVK as the strongest single predictor of L2 listening comprehension in their path model. Recent investigations continue to affirm this; Masrai (2020) confirmed AVK as a reliable predictor, and Cheng et al. (2023) further delineated the specific contributions of different types of aural lexical knowledge. Han and Qian (2024), using advanced auditory measures, provided contemporary evidence on how the breadth and depth of AVK underpin listening comprehension among EFL learners.

Despite this well-established importance for a core language skill, research has primarily focused on AVK's direct relationship with listening outcomes. The psychological and self-regulatory variables that may drive its development remain comparatively underexplored, creating a significant gap

in understanding how to pedagogically foster AVK. This review, therefore, shifts focus to key learner-internal factors theoretically and empirically linked to language learning success, examining their specific potential role in the aural lexical domain.

Theoretical and Empirical Foundations of Predictor Variables

The development of AVK, a complex skill requiring sustained, focused effort and exposure, is likely influenced by a confluence of motivational, affective, and cognitive self-management factors. This section reviews the key theoretical frameworks and empirical evidence for three central constructs hypothesized to be precursors to AVK.

Language Learning Motivation

Motivation is a critical determinant of engagement and achievement in language acquisition (Dörnyei, 2005). This study operationalizes L2 motivation through the lens of the L2 Motivational Self System (L2MSS; Dörnyei, 2005). The L2MSS (Dörnyei, 2005) provides a dominant contemporary theoretical framework, emphasizing learners' self-perceptions—specifically their *Ideal L2 Self* (the learner they wish to become), *Ought-to L2 Self* (attributes they believe they should possess), and *L2 Learning Experience*. Thus, the L2MSS provides a nuanced theoretical basis for hypothesizing how different motivational orientations might relate to AVK. Empirically, motivation within this framework has been linked to various learning outcomes and behaviors (Amirian & Komesh, 2018; Li & Zhang, 2021; Wang & Wu, 2025). More specifically, studies have established a positive association between motivation and vocabulary learning. For instance, Sarani and Shirzaei (2016) found that highly motivated Iranian EFL learners employed more diverse and effective vocabulary learning strategies than their less-motivated peers. However, the specific empirical link between L2 motivation, particularly as conceptualized by the L2MSS, and aural vocabulary knowledge is not well-established. Motivation may provide the initial impetus for engagement with listening materials, but its direct predictive power for the specific skill of auditory word recognition remains an open question.

Foreign Language Enjoyment (FLE)

Moving beyond traditional focus on negative emotions like anxiety, positive psychology in SLA has highlighted the crucial role of positive academic emotions, chief among them Foreign Language Enjoyment (Dewaele & MacIntyre, 2014, 2016). FLE is defined as a complex, positive emotion encompassing feelings of pleasure, intellectual focus, and a sense of

accomplishment in the language classroom (Boudreau et al., 2018). Theoretically, it aligns with Pekrun's (2006) Control-Value Theory, which posits that enjoyment arises from appraisals of high controllability and value in learning activities. Empirically, FLE has been consistently associated with better language performance and higher proficiency (Dewaele & Alfawzan, 2018; Dewaele et al., 2025; Jiang & Dewaele, 2019; Tsang & Dewaele, 2024; Wang, 2025). Its role in vocabulary acquisition has been explored in specific contexts; for example, Ebrahimzadeh and Alavi (2016) identified e-learning enjoyment as a predictor of game-enhanced vocabulary acquisition. Enjoyment is theorized to broaden cognitive and behavioral repertoires (Fredrickson, 2001), potentially making learners more receptive to challenging tasks like extensive listening. Nevertheless, empirical research has yet to directly examine how FLE, as a sustained positive academic emotion, contributes specifically to the development of aural vocabulary knowledge.

Self-regulation in Language Learning

Self-regulation refers to learners' proactive, self-generated processes for setting goals, selecting and monitoring strategies, managing time and environment, and regulating emotions to achieve academic objectives (Zimmerman, 2002). In language learning, Tseng et al. (2006) developed a seminal framework specifically for vocabulary learning called Self-regulating Capacity in Vocabulary Learning (SRCvoc) scale, encompassing commitment, metacognitive, satiation, emotion, and environment control. Empirically, self-regulatory capacity is strongly linked to successful learning. In vocabulary acquisition, learners with higher self-regulation and self-efficacy employ more effective strategies and demonstrate greater vocabulary gains (Li & Wang, 2024; Wang et al., 2025; Yang & Song, 2024). Recent studies continue to affirm this relationship in various contexts (Alibeigi et al., 2025; Ayhan & Payan, 2023; Şahin Kızıl & Savran, 2018; Sunra, 2026; Yang et al., 2024). Self-regulation is arguably paramount for mastering incremental, effortful tasks like AVK development, which requires consistent, deliberate listening practice and strategy use. However, this body of empirical work has primarily concerned written or general vocabulary knowledge. The specific empirical relationship between learners' self-regulatory capacity, as measured by instruments like the SRCvoc, and their aural vocabulary knowledge remains strikingly underexplored.

Synthesizing the Gaps: Rationale for an Integrated Model

The preceding review reveals a convergent pattern of empirical gaps. More critically, it points to a theoretical imperative to study L2 motivation, FLE, and self-regulation not in isolation, but as an integrated system to explain AVK. Their interplay matters for a clear, theory-driven reason rooted in the sequential nature of the learning process.

We propose the following theoretical chain: First, a well-developed L2 Motivational Self System (Dörnyei, 2005), particularly a vivid Ideal L2 Self, provides the essential *directive and energizing* force that orients learners toward language engagement. This motivated engagement, when occurring in a supportive environment, fosters appraisals of high control and value over learning activities, which—according to Control-Value Theory (Pekrun, 2006)—are the precursors to positive academic emotions like Foreign Language Enjoyment (FLE). Enjoyment, in turn, is not merely a pleasant outcome; per Fredrickson's (2001) Broaden-and-Build Theory, it "broadens" learners' momentary thought-action repertoires, making them more cognitively flexible, persistent, and open to challenge.

This broadened state is precisely what facilitates the next crucial link: the deployment of self-regulatory strategies. Zimmerman's (2002) model of Self-Regulated Learning (SRL) posits that effective learning requires forethought, performance control, and self-reflection. The positive affect and cognitive openness generated by enjoyment make learners more likely to set specific goals for listening practice (commitment control), maintain focus on demanding aural input (metacognitive/satiation control), and manage frustration (emotion control)—the very SRL components measured by the SRCvoc scale (Tseng et al., 2006). Finally, it is this strategic, self-regulated effort that directly builds aural vocabulary knowledge (AVK) through deliberate, repeated exposure and practice.

Therefore, studying these constructs in isolation overlooks this functional sequence. The gap is not merely empirical but conceptual: we lack a model that tests whether AVK development is best predicted by a *direct* effect of motivation or enjoyment, or rather by an *indirect pathway* in which motivation and enjoyment create the conditions for enhanced self-regulation, which is the proximate driver of AVK gains. This study addresses this gap by proposing and testing such an integrated model. It positions self-regulation as the hypothesized central mechanism, investigating whether the influences of L2 motivation and FLE on AVK are mediated through learners' self-regulatory capacity. This approach provides a more holistic and theoretically

grounded investigation into the psychological pathways leading to aural vocabulary knowledge.

Purpose of the Study

As established in the preceding synthesis, while L2 motivation, foreign language enjoyment (FLE), and self-regulation have each been theoretically and empirically linked to successful language learning, their integrated and specific contribution to the development of aural vocabulary knowledge (AVK) remains unexamined. Previous research has largely investigated these constructs in isolation or focused on their relationship with general proficiency or written vocabulary, creating a fragmented understanding. This gap is particularly salient in EFL contexts like Iran, where developing listening skills—and by extension, AVK—is a major pedagogical challenge often hindered by limited authentic input.

Therefore, the primary purpose of this study is to test an integrated psychological model of AVK development. Specifically, it aims to investigate the unique and combined predictive power of L2 motivation, FLE, and self-regulation in explaining variance in Iranian EFL learners' AVK. Grounded in the theoretical interplay between these constructs, the study further seeks to examine the potential mediating role of self-regulation, testing the hypothesis that the effects of motivation and enjoyment on AVK may operate indirectly by enhancing learners' capacity for self-regulated learning behaviors essential for aural vocabulary acquisition.

To achieve this purpose, the present research is guided by the following questions:

(1)To what extent do L2 motivation, foreign language enjoyment, and self-regulation predict Iranian English as a Foreign Language (EFL) learners' aural vocabulary knowledge?

(2)To what extent does the hypothesized model, in which self-regulation mediates the relationships of motivation and enjoyment with aural vocabulary knowledge, fit the observed data?

Method

Participants

The participants were 122 Iranian undergraduate EFL students (36 males, 86 females) majoring in English at a state university in northeast Iran. A convenience sampling method was employed, recruiting students from

intact first-year, second-semester classes that were accessible to the researchers. From these available classes, participants were randomly selected to volunteer for the study. Their ages ranged from 19 to 25. These first-year, second-semester students were enrolled in introductory coursework covering reading comprehension, writing, speaking, listening, grammar, and vocabulary. All participants had completed six years of compulsory English language education in Iranian state schools. While the national curriculum aims to enhance communicative competence, classroom instruction in this context often prioritizes grammar and reading skills, resulting in limited exposure to authentic spoken English as noted earlier. Furthermore, the majority (83%) had supplemented their formal education with English classes at private language institutes, beginning their studies at various proficiency levels. It should be noted that the study did not include a standardized general English proficiency test (e.g., IELTS, TOEFL) as a control variable. This limitation is addressed in the discussion.

Instruments

The following instruments were employed. All self-report questionnaires were administered in Persian, using either previously validated Persian versions or translations that were back-translated and piloted for use with Iranian EFL learners to ensure conceptual and linguistic validity. The reliability coefficients (Cronbach's alpha) reported below for all instruments were calculated on the full study sample (N = 122).

Aural Vocabulary Knowledge (AVK) Test

Participants' aural vocabulary knowledge was assessed using the AVK Test developed by Taguchi and Kaya (2019). The test measures the ability to comprehend and produce 63 target words, categorized into three frequency levels based on the British National Corpus and the Corpus of Contemporary American English: 23 Level 1 words, 27 Level 2 words, and 13 Level 3 words. A sample item is: *"Her two favorite subjects at university were_____ and computer studies."*

The stimulus sentences averaged 9.76 words in length, with a duration of 3.03 seconds, resulting in a speech rate of 3.25 words per second—consistent with typical spoken conversation (Tauroza & Allison, 1990). Each sentence was followed by a four-second pause, and test-takers heard each sentence only once. To mitigate the potential impact of written production on test validity, a rubric based on peer-reviewed literature (Matthews et al., 2017) was used to standardize scoring. Full credit was given for target words with minor spelling errors, and partial credit (0.5 points) was awarded for

responses providing less direct but still compelling evidence of AVK. Omitted words were scored as zero. The test was deemed appropriate for the intermediate-level proficiency of our undergraduate participants, as the target words were drawn from high- and mid-frequency bands relevant to their level of instruction. As an objective test of aural recognition of English vocabulary, its validity is based on its direct operationalization of the target construct. For the present study, its reliability and suitability as a measurement tool for the Iranian EFL sample were confirmed by an excellent internal consistency coefficient (Cronbach's $\alpha = .85$).

To ensure consistency in scoring, particularly for partially correct responses, a clear rubric based on Matthews et al. (2017) was developed and all raters were trained prior to scoring. A random sample of 20% of the tests ($n = 24$) was independently scored by two trained raters. Inter-rater reliability was assessed using a two-way mixed-effects intraclass correlation coefficient (ICC) for absolute agreement. The resulting ICC was .94 (95% CI [.89, .97]), indicating excellent reliability (Koo & Li, 2016). Given this high agreement, the remaining tests were scored by a single rater. To prevent rater drift, weekly calibration sessions were held throughout the scoring process to discuss ambiguous responses.

Motivation Scale

The current study utilized the Persian version of the Motivation Questionnaire, which was translated and validated by Papi (2010), Taguchi et al. (2009), and Islam et al. (2013). This scale assesses dimensions of learners' motivation as informed by the L2 Motivational Self System (L2MSS) theory (Dörnyei, 2005). The L2MSS is apt for this study as it captures future self-guides (the *Ideal* and *Ought-to* L2 Selves) that can influence the sustained, goal-oriented effort required for incremental skill development like aural vocabulary acquisition. *A sample item from this questionnaire includes "I can imagine myself speaking English with international friends or colleagues."* The items measuring learners' motivation for English language learning were evaluated using five-point Likert scales, ranging from "very much" to "not at all." The internal reliability of the scale in the current study was good, with a Cronbach's alpha of 0.861.

Foreign Language Enjoyment (FLE) Scale

Dewaele and MacIntyre (2014) developed a 21-item FLE scale designed to assess FL learners' enjoyment within the FL classroom. The scale encompasses positive emotions directed toward peers, instructors, and the overall learning experience. In essence, the items represent various dimensions of FLE and contribute to fostering a positive atmosphere in the FL classroom. The items were specifically formulated to elicit reflection on

FLE. The questionnaire employs a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), with all items related to FLE framed in a positive manner. An example item from this questionnaire is "*In class, I feel proud of my accomplishments"*. The original scale was translated into Persian using a back-translation procedure and piloted. In the current study, the internal consistency of the scale was adequate for group-level analysis, with a Cronbach's alpha of 0.76. Additionally, eight items were included at the beginning of the questionnaire to collect demographic information.

Self-regulating Capacity in Vocabulary Learning (SRCvoc) Scale

This study employed the SRCvoc (Tseng et al., 2006) to assess the self-regulation of EFL learners in vocabulary acquisition. The questionnaire comprised 20 items evaluated on a six-point Likert scale, ranging from 1 (strongly disagree) to 6 (strongly agree). These items were designed to estimate five factors of self-regulatory control: 1. Commitment control (items 4, 7, 10, and 13), which facilitates learners in maintaining and enhancing their original commitment to learning objectives; 2. Metacognitive control (items 5, 9, 11, and 16), which assists learners in monitoring their attention and mitigating any hindering factors; 3. Satiation control (items 1, 8, 18, and 19), which aims to prevent fatigue and sustain interest in the task; 4. Emotion control (items 2, 6, 12, and 15), which pertains to the regulation of emotional states or moods; and 5. Environment control (items 3, 14, 17, and 20), which enables learners to manage adverse environmental influences. A sample item from this questionnaire reads *"Once the novelty of learning vocabulary is gone, I easily become impatient with it"*. The Persian version of this scale, validated in prior Iranian EFL research (e.g., Amirian et al., 2015), was used. The reliability of the scale, as assessed through Cronbach's Alpha, was found to be 0.89.

Validity of Instruments

The validity of the employed instruments is supported by prior research. The Motivation Questionnaire (Papi, 2010) and the SRCvoc scale (Tseng et al., 2006) demonstrated strong construct validity in their original development and validation studies. The FLE scale (Dewaele & MacIntyre, 2014) has shown good construct and discriminant validity in numerous international contexts. Furthermore, in the present study, the theoretically expected and significant intercorrelations among the scales (e.g., between FLE and Self-regulation) provide additional evidence for their convergent validity within the Iranian EFL learner population.

Procedures

The study commenced with obtaining written informed consent from all participants, ensuring their voluntary participation and awareness of the research objectives. Following this, data collection involved administering three established questionnaires—the Motivation Questionnaire, the Foreign Language Enjoyment Questionnaire, and the Self-Regulatory Capacity in Vocabulary Learning Questionnaire—along with the AVK test. Participants were provided with clear and comprehensive instructions for each instrument and were encouraged to respond honestly and thoughtfully, ensuring the integrity of the data. The AVK test involved listening to target words within contextual sentences and filling in the missing word. Participants heard each item only once, requiring them to access and generate vocabulary knowledge under time constraints, a key aspect of listening comprehension (Hulstijn, 2003). The contextual sentences used higher-frequency words to minimize interference. A native English speaker recorded the stimuli for clarity and fluency.

The collected data underwent rigorous statistical analysis to address the research questions. This analysis included both multiple regression and path analysis, allowing for the examination of the predictive relationships between the independent variables (motivation, enjoyment, and self-regulation) and the dependent variable (AVK). Statistical Package for the Social Sciences (SPSS, Version 25) and Analysis of Moment Structures (AMOS) version 24 were used for data analysis. Preliminary analyses were conducted including checking for normality of data; the AVK test showed a normal distribution via a Q-Q plot. Multiple regression and path analysis were then conducted to examine the relationships between motivation, enjoyment, self-regulation, and AVK. The sample size (N=122) was deemed appropriate for multiple regression analysis based on Tabachnick and Fidell's (2013) criterion.

Data Analysis

Prior to main analyses, preliminary screening was conducted to check for missing data, outliers, and assumptions of normality. Pearson correlation coefficients were computed to examine bivariate relationships among the variables. To address the research questions, multiple regression analysis was conducted using SPSS version 25, with all three predictors (motivation, enjoyment, self-regulation) entered simultaneously using the enter method. Collinearity diagnostics (tolerance and VIF) were examined to assess multicollinearity.

Path analysis was conducted using AMOS version 24 to test the hypothesized mediation model (See Figure 1.) in which self-regulation mediates the effects of motivation and enjoyment on AVK. This model was specified based on the theoretical frameworks outlined in the Introduction, not derived from the data. Model parameters were estimated using maximum likelihood (ML) estimation. To assess model fit, multiple indices were examined: the chi-square statistic (χ^2), the chi-square/degrees of freedom ratio (χ^2/df; acceptable if < 3), the Goodness of Fit Index (GFI ≥ .90), the Comparative Fit Index (CFI ≥ .90), the Tucker-Lewis Index (TLI ≥ .90), and the Root Mean Square Error of Approximation (RMSEA ≤ .08) (Schreiber et al., 2006). To test the significance of indirect effects, bootstrapping was employed with 5,000 bootstrap resamples, generating bias-corrected 95% confidence intervals (BC 95% CI). An indirect effect is considered significant if the confidence interval does not include zero (Hayes, 2017).

Preliminary Analyses: Assumption Checking

Prior to conducting the main analyses, the data were screened to ensure they met the assumptions of multiple regression and path analysis (Tabachnick & Fidell, 2013; Field, 2024).

Normality: Skewness and kurtosis values for all variables were within the acceptable range of ±2 (skewness ranged from -0.42 to 0.38; kurtosis ranged from -0.51 to 0.44). Visual inspection of Q-Q plots further confirmed approximate normality of the distributions.

Linearity: Partial regression plots and scatterplots indicated linear relationships between each predictor and the dependent variable (AVK).

Homoscedasticity: Visual inspection of the plot of standardized residuals against standardized predicted values revealed a random scatter of points, indicating homoscedasticity.

Independence of residuals: The Durbin-Watson statistic was 1.92, which falls within the acceptable range of 1.5 to 2.5, indicating that the residuals were independent.

Multicollinearity: As reported in Table 2, tolerance values ranged from .65 to .82, and Variance Inflation Factors (VIF) ranged from 1.22 to 1.54, all well below the conservative thresholds (tolerance > .10; VIF < 10), indicating no problematic multicollinearity.

Outliers: Inspection of Mahalanobis distances and standardized residuals (cook's distance < 1) revealed no influential cases that would unduly affect the regression results.

Results

Multiple Regression

Prior to addressing the research questions, preliminary analyses were conducted to ensure that the assumptions of multiple regression were met. Descriptive statistics for all variables are presented in Table 1, and the results of assumption checking (normality, linearity, homoscedasticity, independence of residuals, and multicollinearity) confirmed the suitability of the data for parametric analysis (See the Method section for full details.).

As shown in Table 1, several predictors were significantly intercorrelated (e.g., motivation and enjoyment: $r = .539$, $p < .001$; enjoyment and self-regulation: $r = .552$, $p < .001$). While such correlations are expected among theoretically related constructs, they necessitate an assessment of multicollinearity. Therefore, collinearity diagnostics were examined in the regression analysis. Tolerance values ranged from .65 to .82, and Variance Inflation Factors (VIF) ranged from 1.22 to 1.54, all well below the conservative thresholds of .10 for tolerance and 10 for VIF (Field, 2024). These results indicate that multicollinearity was not a problematic issue in the regression model.

A standard multiple regression analysis was conducted using the enter method to examine the predictive power of L2 motivation, foreign language enjoyment, and self-regulation for aural vocabulary knowledge (AVK). All three predictors were entered simultaneously. Preliminary analyses confirmed no violations of the assumptions of normality, linearity, and homoscedasticity.

The regression model was statistically significant, $F(3, 118) = 6.84$, $p < .001$, and accounted for approximately 14.8% of the variance in AVK ($R^2 = .14$, Adjusted $R^2 = .12$). As shown in Table 2, self-regulation emerged as the only significant unique predictor of AVK ($\beta = 0.34$, $t = 3.88$, $p = .001$). Neither enjoyment ($\beta = 0.12$, $t = 1.33$, $p = .186$) nor motivation ($\beta = 0.05$, $t = 0.57$, $p = .570$) made a significant unique contribution to the model. These results indicate that, when considered simultaneously with motivation and enjoyment, self-regulation remains the sole direct predictor of AVK. The non-significant unique effects of motivation and enjoyment suggest that their relationships with AVK, if any, may be indirect—a possibility explored in the subsequent path analysis.

Table 1.

Pearson correlation analyses among variables

	M	SD	1	2	3	4
1. Motivation	3.82	0.65	1			
2. Enjoyment	3.71	0.58	0.539**	1		
3. Self-regulation	4.23	0.71	0.275**	0.552**	1	
4. Aural vocabulary	42.36	8.94	0.113	0.255**	0.376**	1

Note. M = mean; SD = standard deviation. *p < .05, **p < .01, ***p < .001.

Table 2.

Summary of Multiple Regression Analysis for All Variables Predicting Aural Vocabulary Knowledge (N = 122)

Predictor	B	SE	B	t	P	95% CI for B	Tolerance	VIF
(Constant)	4.23	1.45		2.92	0.04	[0.88, 6.90]		
Self-regulation	0.31	0.08	0.34	3.88	< .001	[0.12, 0.44]	.65	1.54
Enjoyment	0.12	0.09	0.12	1.33	.186	[-0.10, 0.30]	.70	1.43
Motivation	0.04	0.07	0.05	0.57	0.570	[-0.10, 0.18]	.82	1.22

Note. B = unstandardized coefficient; SE = standard error; β = standardized coefficient; CI = confidence interval; VIF = variance inflation factor. Dependent variable: Aural Vocabulary Knowledge. R^2 = .148, Adjusted R^2 = .126, F(3, 118) = 6.84, p < .001. All predictors entered simultaneously using the enter method.

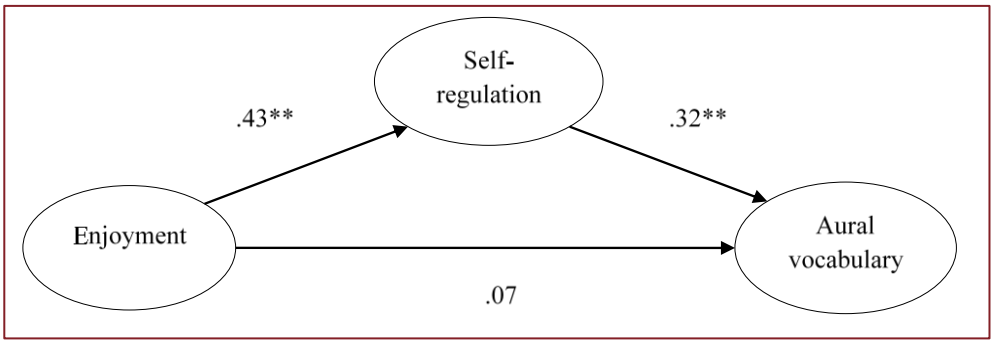
Path Analysis

The specific path model tested (See Figure 1.) was specified based on our theoretical framework and the preliminary correlation analyses. Given the non-significant correlation between L2 motivation and AVK, motivation was not included as a predictor in the path model to maintain parsimony and model stability (Kline, 2023). The model therefore focused on testing the hypothesized indirect pathway in which enjoyment influences AVK through the mediator of self-regulation. For the path analysis, we utilized several fit indices to assess the strength of the model fit: the goodness of fit index (GFI), adjusted goodness of fit index (AGFI), Tucker-Lewis Index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and the Chi-square degrees of freedom ratio ($\chi 2/df$).

A GFI value of 0.90 or higher is indicative of an acceptable model fit (Hoyle, 1995), while a CFI value of 0.90 or higher suggests an appropriate model fit (Hoyle, 1995). An RMSEA value of 0.05 or lower indicates a close fit, and a value of 0.08 or lower suggests an acceptable fit (Browne & Cudeck, 1993). Consequently, the data fit is considered excellent when GFI, AGFI, TLI, and CFI exceed 0.95 and acceptable when they do not fall below 0.90. For RMSEA, an excellent data fit requires a value below 0.06, and a

satisfactory fit necessitates a value below 0.08 (Schreiber et al., 2006). Additionally, the $\chi 2/df$ ratio should be statistically non-significant ($p > 0.01$).

Figure 1.
The effects of enjoyment on AVK via self-regulation



$\chi^2 = 3.79$, df = 2, $\chi^2/df = 1.89$, p = 0.150, RMSEA= 0.08, GFI = 0.98, AGFI = 0.94, TLI = 0.95, CFI = 0.97.

To investigate whether the effects of enjoyment on AVK were mediated by self-regulation, we employed mediation analysis. This analytical approach utilizes regression coefficients as part of a path analytic framework. Figure 1 presents the results of this analysis. The fit indices for the path analysis model indicated a good model fit, with the following statistics: χ^2/df ratio = 1.89, GFI = 0.98, TLI = 0.95, CFI = 0.97, and RMSEA = 0.08. The path coefficient from enjoyment to self-regulation was both significant and positive ($\beta = 0.43$, $p < 0.01$). Similarly, the path coefficient from self-regulation to AVK was significant and positive ($\beta = 0.32$, $p < 0.01$). However, the path coefficient from enjoyment to AVK was not significant, suggesting that enjoyment does not exert a direct effect on AVK.

Ultimately, the results of the mediation analysis (detailed in Table 3) indicated that the indirect effect of enjoyment on AVK through self-regulation was significant. Thus, the empirical data supports the hypothesis that self-regulation mediates the relationship between enjoyment and AVK.

Table 3.
Indirect effects of enjoyment on AVK

Indirect effect of enjoyment	95% CI		P
	Lower	Upper	
0.186	0.104	0.336	0.002

These path analysis results, summarized in Table 3, provide empirical support for the theoretical model in which self-regulation mediates the relationship

between enjoyment and aural vocabulary knowledge. The theoretical and pedagogical implications of these findings are discussed in the following section.

Discussion

This study investigated the relationships between AVK and L2 motivation, enjoyment, and self-regulation among Iranian EFL students. The findings revealed significant correlations between AVK and both self-regulation and enjoyment, while no significant relationship was found between motivation and AVK. More importantly, path analysis identified self-regulation as a significant direct predictor of AVK and as the mediator through which enjoyment exerts its indirect influence. These results offer nuanced insights into the psychological architecture of AVK in EFL contexts and invite a deeper theoretical discussion.

The Pivotal Role of Self-Regulation in Aural Vocabulary Development

The significant positive correlation and unique predictive power of self-regulation for AVK align robustly with models of self-regulated learning (SRL; Zimmerman, 2002) and underscore its domain-specific importance. AVK acquisition is a prime example of a learning task that benefits from the full SRL cycle. In the *forethought phase*, learners must set specific goals for listening practice and select appropriate strategies (e.g., focused listening for new words, using transcriptions). During the *performance phase*, they must monitor their comprehension, manage frustration when speech is too fast, and control their environment to minimize distractions—all metacognitive and satiation control functions outlined by Tseng et al. (2006). In the *reflection phase*, they must evaluate their progress and adapt strategies. Our finding suggests that learners who proactively engage in this cyclical process are far more effective at building their aural lexicon. This provides a compelling justification for why self-regulation, more than general motivation, is a direct driver of AVK: it represents the *executive control* applied to the very task of learning from auditory input. This extends prior research on SRL and written vocabulary (Ayhan & Payan, 2023; Hsu et al., 2023; Le, 2024; Ping et al., 2015; Sherafati & Mahmoudi Largani, 2023; Sun & Wang, 2020) into the critical aural domain, highlighting that self-regulation is not just a general academic strength but a specific set of skills essential for overcoming the unique challenges of listening comprehension.

Enjoyment as a Facilitator: The Indirect Pathway via Self-Regulation

The significant correlation between enjoyment and AVK, coupled with the mediation finding, provides strong empirical support for the theoretical links between positive emotion and self-regulated learning. This result can be convincingly justified through the lens of Fredrickson's (2001) broaden-and-build theory. Enjoyment in the FL classroom likely "broadens" learners' momentary thought-action repertoires. A student experiencing enjoyment is more likely to be cognitively open, creatively engaged, and willing to persist with challenging listening tasks. This broadened state directly "builds" personal resources—in this case, it enhances the capacity for self-regulation. An enjoying learner is more inclined to set a challenging listening goal (commitment control), maintain focus on an extended audio passage (metacognitive/satiation control), and manage minor confusions without anxiety (emotion control). Our path analysis empirically captures this sequence: enjoyment enhances the self-regulatory resource, which is then deployed to achieve AVK growth. This offers a powerful argument against viewing enjoyment merely as a pleasant by-product; instead, it is an affective catalyst that enables the strategic, effortful behaviors necessary for mastering aural language components. This clarifies and strengthens findings from prior studies that linked FLE to better outcomes (Amirian & Azari Noughabi, 2018; Dewaele & Alfawzan, 2018; Hsu et al., 2023) by identifying a key mechanism—self-regulation—through which this effect operates.

Re-contextualizing the Role of Motivation

The absence of a significant direct relationship between L2 motivation and AVK is an intriguing finding that requires careful and context-sensitive justification. This result does not imply motivation is unimportant but suggests its influence may be more distal or filtered through other variables in this specific learning domain. A convincing explanation lies in the nature of the motivational constructs potentially most salient in our context and the specificity of the outcome. Firstly, within Dörnyei's (2005) L2MSS, Iranian university students' motivation may be heavily weighted toward the "Ought-to L2 Self" (e.g., passing compulsory exams, obtaining a degree) rather than a vivid, integrative *Ideal L2 Self*. Such externally regulated motivation can initiate study but may not sustain the consistent, self-directed listening practice required for AVK development, which depends more on habitual self-regulation and immediate task engagement. Secondly, motivation is a high-level driver of general effort, while AVK is a specific skill. The pathway

from general effort to specific skill gain may be mediated by the quality of learning strategies and self-regulation—the very mechanism our study highlights. Thus, motivation's effect on AVK may be fully indirect, operating through its influence on enjoyment and, subsequently, self-regulation. This nuanced interpretation justifies the non-significant direct link while keeping motivation within the broader explanatory framework, aligning with complex models of motivated learning (Dörnyei, 2005).

These findings offer significant and specific implications by delineating the distinct roles of enjoyment and self-regulation. They reinforce and specify the call from previous correlational studies linking AVK to listening (Cheng et al., 2023; Matthews, 2018; Taguchi & Kaya, 2019) by identifying the learner-internal factors that predict AVK itself. Our results converge with studies emphasizing self-regulation in vocabulary learning (Ayhan & Payan, 2023; Şahin Kızıl & Savran, 2018; Lo, 2025; Teng et al., 2024) while offering a new, auditory-domain confirmation. The discrepancy with Mansouri and Mashhadi Heidar's (2019) null finding on self-regulation and vocabulary may be reasonably justified by methodological differences: their study measured general vocabulary knowledge and used a technology-focused peer-scaffolding intervention, which may have externalized the regulatory process, potentially masking the role of individual self-regulatory capacity measured in our study.

Conclusions and Implications

This study provides compelling evidence for a significant relationship between EFL learners' AVK and their enjoyment and self-regulation. The key finding is that while enjoyment has an indirect influence on AVK, self-regulation exerts a direct effect, and self-regulation appears to mediate the relationship between enjoyment and AVK. In essence, students who exhibit strong self-regulatory skills are more likely to enhance their AVK, and the enjoyment derived from language learning may foster the development of these very self-regulatory skills, which subsequently impact AVK.

The findings reinforce the importance of employing self-regulatory strategies to improve EFL learners' aural vocabulary knowledge. Learners who actively manage their vocabulary acquisition are better positioned to monitor their progress, adapt their learning techniques, and persevere through challenges (Zimmerman, 2002). By understanding and applying self-regulatory principles, learners can personalize their language learning approach and create more effective learning habits. This underscores the need for pedagogical interventions that promote self-regulation in vocabulary

learning. Building on prior research that has established the importance of AVK for listening comprehension (Cheng & Matthews, 2016; Masrai, 2020; Vandergrift & Baker, 2015), this study extends our understanding by highlighting the psychological factors that contribute to AVK development. The findings suggest that interventions aimed at enhancing self-regulation and fostering enjoyment can positively impact EFL learners' AVK, ultimately improving their listening skills and overall language proficiency.

This study has several limitations that warrant consideration. The first and the most significant limitation of this study is the absence of a standardized measure of general English proficiency. Proficiency is a colossal confounding variable in language learning research. It is possible that higher general proficiency, rather than (or in addition to) specific levels of motivation, enjoyment, or self-regulation, accounts for a significant portion of the variance in both AVK and the self-report measures. Our reliance on institutional enrollment (all participants being first-year majors) as a proxy for similar proficiency is insufficient to rule out this alternative explanation. Therefore, while our findings identify significant associations, they cannot firmly establish the unique contribution of the psychological constructs independent of general competence. Future research must prioritize including a robust proficiency measure as a covariate to isolate the specific effects of motivational, affective, and self-regulatory factors on domain-specific skills like AVK. Second, the reliance on self-report questionnaires, while standard for measuring psychological constructs, is susceptible to biases such as social desirability or inaccurate self-assessment. Future studies could incorporate behavioral measures or more objective tasks to triangulate findings.

Third, as noted by a reviewer, a mixed-methods design integrating qualitative interviews or learning journals would be highly valuable to complement the quantitative model tested here. Such an approach could provide deeper, nuanced insights into the personal experiences and contextual factors that shape learners' enjoyment, self-regulation, and aural vocabulary development, explaining the *how* behind the statistical relationships identified. Fourth, while the sample size was adequate for the statistical analyses conducted, future research would benefit from larger samples ($N > 200$) drawn from multiple institutions or diverse EFL contexts to improve the generalizability and stability of the path model.

Fifth, regarding the analytical model, the tested path analysis was intentionally parsimonious, focusing on the significant indirect effect of enjoyment through self-regulation. While this provides clear evidence for this specific mechanism, it represents a simplified view of potential relationships. A more complex model, perhaps including direct paths from enjoyment and

motivation to AVK or examining motivation as an antecedent to enjoyment, could be tested in future research with larger samples that provide sufficient statistical power for such comparisons. Sixth, the use of a convenience sample from a single university, despite random selection within that sample, limits the generalizability of the findings. Future research would benefit from multi-institutional sampling to enhance external validity. Finally, the cross-sectional design prevents causal inferences. Longitudinal or experimental studies are needed to establish the directionality of effects and test the efficacy of interventions designed to boost self-regulation and enjoyment to improve AVK.

Disclosure Statement

No potential conflict of interest was reported by the authors.

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