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RECEIVED 04 February 2025

ACCEPTED 23 June 2025

PUBLISHED 09 July 2025

CITATION

Portugal-Toro A, García-Peñalvo FJ, Balderas Ruiz LA and Vences Esparza A (2025) Cognitive and affective processes in second language oral communication: a mixed methods research.
Front. Educ. 10:1571099.
doi: 10.3389/feduc.2025.1571099

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Cognitive and affective processes in second language oral communication: a mixed methods research

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Introduction: The current global context highlights the development of skills that enable individuals to work together to address common challenges in our society. The interaction of people to try to solve together the situations that concern us all as a society. Knowing how to communicate in English, widely recognized as a lingua franca, is a skill that facilitates effective interaction across diverse contexts. This article presents the results of a study aimed at identifying the relationship between cognitive-affective processes and the achievement of oral communication proficiency in English as a foreign language.

Methods: A sample of 53 undergraduate students in elementary education participated in the study. A mixed methods research approach with a concurrent design was employed, utilizing two Likert-scale instruments administered to the entire sample, along with an open-ended questionnaire applied through interviews with a subset of participants. To evaluate the students' oral communication skills, a semi-structure interview guide was administered and coded according to a Cambridge assessment scale.

Results: The results indicate that certain cognitive-affective variables are associated with oral communication skills in English: (a) in affective processes, risk-taking and motivation are variables that are highly correlated with oral communication; (b) within cognitive processes, the learning variable shows a strong positive correlation with oral communication; (c) some affective and cognitive variables are positively interrelated, suggesting the importance of studying these factors in conjunction; (d) the qualitative findings both complement and reinforce the quantitative results.

Discussion: This article offers a distinct contribution to English language teaching by integrating multiple variables that influence students' ability to communicate effectively in English, offering insights that may inform more holistic approaches to developing student's communicative skills. The findings of this study prove valuable for researchers focusing on English language acquisition and educators seeking effective strategies to help students achieve language proficiency.

KEYWORDS

cognitive processes, affective processes, EFL, oral communication, English language

1 Introduction

The 21st century has been a time of great changes in technology, business, science and, of course, interpersonal communication. We transitioned from an industrial society to a consolidated knowledge society (García- Peñalvo et al., 2018). Communication has long been a part of human existence and society, driving individuals to continually explore and develop different methods that foster mutual understanding. The world has been transformed into a global village (Su, 2021) in which people who speak different languages find English as common ground that allows them to conduct business, engage in research, study abroad and pursue other personal, academic or professional endeavors. English proficiency is widely recognized as a valuable asset for securing employment, scholarships and other academic or career opportunities. As a result, speaking is often regarded as the most significant skill to be learned when attending a language class (Robert and Meenakshi, 2022). However, effectively communicating ideas in a non-native language presents a considerable challenge for many learners (Amoah and Yeboah, 2021), and teaching English communication skills in an EFL context is perceived as particularly challenging for teachers (Ibna Seraj and Habil, 2021).

The process of acquiring English as a second language involves various factors that can either hinder or facilitate a learner's commitment and enthusiasm to continue learning (Kim et al., 2024). These factors could be cognitive or affective. Learning English as a foreign language takes into consideration both, cognitive and affective characteristics of learners (Chen and Hwang, 2020). Nevertheless, interactions between emotion and cognition are known to be complex (Oxford and Gkonou, 2021). Positively, recent research in ESL has increasingly focused on the cognitive and affective factors influencing skills such as reading (Chow et al., 2021) and speaking (Portugal-Toro et al., 2023). Understanding these dynamics between cognitive and affective factors can directly impact learners' progress and perseverance in language acquisition.

Previous research has focused on investigating one or two variables along with the oral communication (Alam et al., 2022; El Shazly, 2021; Jalleh et al., 2021; Chen et al., 2022; Wang and Lin, 2015), while others have focused on affective variables (Lee and Hsieh, 2019), others have studied variables and their effects on or their relations to other variables (Kruk, 2022; Aljuaid, 2022) or have focused on strategies related to language learning or speaking in English (Rayati et al., 2022; Getie, 2020; Manzano, 2018). The purpose of this study is to investigate cognitive processes (perception, attention, learning, and memory) and affective processes (willingness to communicate, anxiety, risk-taking, and motivation) to identify their relationship with oral communication among learners of English as a foreign language. By analyzing the correlations between these interrelated processes and learners' oral performance, this research provides a holistic view of second language acquisition, treating cognitive and affective factors as inseparable and mutually influential. The findings offer practical insights by highlighting which processes are most closely associated with effective oral communication in EFL learners. The findings help identify the variables in the cognitive-affective processes that may influence students' oral communication skills in English, providing guidance for English teachers in the design of personalized learning strategies. They also support learners in recognizing the role of cognitive and emotional factors involved in language acquisition and in understanding oral communication as a continuous, non-linear

process influenced by multiple aspects. This research is also methodologically useful because two instruments were designed and validated to jointly measure cognitive-affective variables (Portugal-Toro et al., 2023). Based on these results, it is possible to formulate pedagogical proposals that frame English language learning as an experiential process, where cognitive and emotional play a central role in communication.

1.1 Cognitive factors in second language learning

Some of the key cognitive factors related to speaking English include learning, memory, attention and perception. The learning process involves not only building and modifying our knowledge, but also enhancing abilities, strategies, beliefs attitudes and behaviors (Schunk, 2012). Learning is considered to be inherently social, with learners building meaning through social interactions (Ellis and Barkhuizen, 2005; Lo, 2023; Vygotsky, 1978). Sociocultural learning theory emphasizes the social and cultural context of learning, proposing that cognitive development is not solely an individual process but it is fundamentally shaped through interactions within a social environment. Dialog, collaboration, and socially mediated activities play a critical role in constructing new knowledge (Morris, 2025). Thus, learning is a process influenced by multiple factors that need to be carefully considered in order to create an engaging and effective learning environment.

In the process of learning a foreign language, it is also essential that students become aware of and responsible for their own learning process (De Vrind et al., 2024). Concepts such as the zone of proximal development (ZPD), mediation, scaffolding, and regulation are central to the learning process. Recent research indicates that metacognition can function as a form of scaffolding, as it enables EFL learners to organize their thoughts and emotions while maintaining focus. Moreover, it allows learners to monitor their progress and adjust their methods or strategies during the learning process, thus engaging in reflective thinking about their cognitive and learning processes (Ahmadi and Motaghi, 2024). It is at this point that learners' prior knowledge, mediating strategies, and scaffolding are interconnected, with metacognitive strategies and self-regulation operating as integral components of the scaffolding process. Memory plays an important role in language acquisition, especially in vocabulary retention. Effective memory techniques can significantly enhance learner's ability to retain and recall new language (Teng, 2023; Hill, 2022). One of the most widely referenced models of information processing is the multistore model, which considers sensory memory, working memory and long-term memory. Sensory memory briefly holds information acquired through sensory input for one to 3 sec. Working memory is a short-term storage where small amounts of information are actively manipulated. In contrast, long-term memory serves as a permanent storage with unlimited capacity and duration (Duchesne et al., 2022). Memory plays an important role in the self-regulatory process of EFL learning as it involves metacognitive processes such as remembering rules, vocabulary, and previous experiences, as well as fostering awareness of one's learning strategies.

Another cognitive process directly related to memory is attention. For the information we receive to be retained and used, it is necessary to pay attention to it. When attention is paid to the information, it

moves into working memory; otherwise, it fades away. Attention is considered to focus on three components: the ability to pay attention, called sustained attention; the ability to focus on relevant details and inhibit distractors, referred to as selective attention; and the ability to shift the focus of attention when necessary, referred to as adaptive attention (Duchesne et al., 2022). The brain requires sustained attention to effectively connect old information to existing one (Goleman, 2013). Paying attention is considered a dimension of engagement, which refers to as a state heightened attention and participation, in which cognitive, social, behavioral, and affective dimensions are reflected (Philp and Duchesne, 2016). Attention is fundamental in the language learning process (Gass et al., 2013) as learners must remain focused despite internal and external distractors.

Lastly, learners' perceptions of learning and speaking English also influence the learning process. These perceptions could be shaped by prior experiences, personal beliefs, backgrounds and emotions, all of which can impact learning outcomes (Oxford and Gkonou, 2021). The process of acquiring a second language is complex, gradual, non-linear, dynamic, social and variable (Larsen-Freeman, 1997). According to the Dynamic Systems Theory (DST) cognitive development occurs as individuals actively engage with their physical and social environments (Verspoor et al., 2008). The DST allows us to understand that cognitive, linguistic, affective, and contextual factors are interconnected and subject to change. Therefore, an individual's ability to communicate orally in English will depend on the interaction of these factors. When analyzing cognitive processes as factors involved in learning English as foreign language, it is essential to recognize that these are inherently internal processes; therefore, their study relies on observable students' learning performance and their ability to communicate through language.

1.2 Affective factors in second language learning

Various affective processes also intervene in the learning of English as a foreign language. Emotions, in particular, play an important role in learning, as they can be managed, regulated and modified. These emotional characteristics allow learners to take an active role in their own learning (Oxford, 2015). However, the absence of practice environments often leads learners to experience feelings of anxiety, distress and even depression (Chen and Hwang, 2020). In addition to emotions, Learners' attitudes and feelings also influence the language learning process (Al Momani and Al-Ogla, 2021). These perspectives highlight that affective factor such as motivation, willingness to communicate, anxiety and risk-taking can influence learners in diverse ways. Among these factors, anxiety is widely studied in ESL contexts. Second language anxiety is a term that describes the anxiety commonly experienced by students when learning, performing or using the language (Papi and Khajavy, 2023). Language anxiety is considered by some researchers as a factor that could not only hinder language learning (Xethakis et al., 2024; MacIntyre, 2017), but also impact learners' academic, cognitive and social development (Papi and Khajavy, 2023). Anxiety is understood as an emotion that fluctuates across different time scales and negatively impacts motivation, perceptions of competence, and the willingness to communicate (Dewaele and Alfawzan, 2018). Anxiety is closely associated with negative affective experiences, and language anxiety is

inversely proportional to language acquisition. That is, lower levels of anxiety are linked to better language acquisition, while higher levels of anxiety hinder it (Bao and Liu, 2021).

Motivation is another crucial factor that has been extensively researched in ESL/EFL contexts. It can be extrinsic, influenced by external factors, where learners recognize the potential benefits of learning English, such as gaining scholarships, job promotions, or travel opportunities; or intrinsic, which is driven by personal enjoyment and interest, with learners believing that English will offer long-term personal benefits (Lamb, 2017). Motivation is considered one of the decisive factors when acquiring another language (Wu et al., 2022). Language learning takes place in diverse environments, and various factors—such as the context, teachers, family members, and the community—can have a profound effect on supporting students' motivation. The motivation for language learning has been explored through the lens of Self-Determination Theory (SDT), which posits that when students' basic psychological needs for autonomy, competence and relatedness are fulfilled, they are more likely to sustain intrinsic motivation toward learning and using a new language (Noels, 2023). In SDT, autonomy refers to the sense of initiative and ownership over one's actions, supported by experiences that foster interest and value, and undermined by external control, such as rewards or punishments. Competence relates to the feeling of mastery and the belief in one's ability to achieve success and growth. Relatedness pertains to the sense of belonging and connection with others, facilitated by expressions of respect and affection (Ryan and Deci, 2017). When students maintain intrinsic motivation, they are more likely to be engaged, satisfied, and to enjoy learning a second language without reliance on external rewards.

Willingness to communicate (WTC) is another commonly studied factor in ESL. It reflects a learner's intention to engage with the language, which reflects in their attitudes toward language learning (Alam et al., 2022). WTC is considered the final stage in preparing language learners for authentic interaction; it represents the probability that a student will actually use the target language in an authentic interaction with another person. According to MacIntyre's model, however, this interaction to communicate can be influenced by multiple interrelated factors (MacIntyre et al., 1998): I. Communicative behavior: the actual opportunity or act of communication in a given context. II. Willingness to communicate: the learner's perception of a safe environment, the development of self-confidence, motivation, low levels of anxiety, and a sense of sufficient proficiency based on prior experiences. III. Situated communication antecedents: factors arising from the desire to communicate with a particular individual, involving interindividual and intergroup motivation, communicative self-confidence, perceived competence, and reduced anxiety. IV. Motivational propensities: interpersonal and intergroup motivations that form the affective and social foundations of the motivation to communicate, shaped by the learner's communicative confidence—the belief in their ability to communicate adaptively and effectively—, communicative competence, previous experience, and the interlocutor's personality traits also influence this confidence. V. Affective and cognitive context: the learner's accumulated experiences, attitudes, and general motivation toward communication. VI. Social and individual context: broader intergroup relations and individual personality traits that indirectly prepare the learner for communication in a second language, although they are less directly linked to immediate WTC. In summary, multiple

interconnected variables act as enhancers of an individual's willingness to communicate in a second language, serving as a preliminary step to actual oral communication.

Finally, risk-taking is considered an essential trait of successful language learners due to the ability of making intelligent deductions (Brown, 2014). Learners who are willing to take some risks are more likely to succeed in the language acquisition process (Wang and Lin, 2015; Zafar and Meenakshi, 2012). Linguistic risk-taking is beneficial not only from a sociopsychological perspective, but also in terms of enhancing linguistic competence. Engaging in risk-taking behaviors raises learners' awareness of the tension and anxiety they may encounter, encourages reflections on these challenges, and fosters a positive attitude toward difficult linguistic and social situations (Slavkov, 2023). A linguistic growth mindset can promote a greater tendency to take linguistic risks, which, in turn, can foster WTC. Students who hold growth-oriented beliefs regarding their ability to develop linguistic skills, are more likely to initiate communication in class and to take risks not only with familiar language forms, but also by experimenting with new or less familiar ones. Furthermore, students who adopt a growth mindset are more inclined to engage in communication when they perceive the learning environment pleasant and supportive (Sadoughi and Hejazi, 2024). Facilitating learners' effective management of their cognitive and affective processes is fundamental for fostering a learning environment that promotes a sense of safety, confidence, and motivation to achieve their language learning goals.

2 Method

The present study employed a mixed-methods approach with a concurrent design, integrating both quantitative and qualitative data collection. This design allowed for the collection and separate analysis of both types of data, followed by a comparison of findings to determine whether they confirmed or contradicted each other (Creswell and Creswell, 2018). Quantitative data were gathered using two Likert-scale questionnaires: (a) The PALM Scale, assessing cognitive processes related to oral communication in English, which included 24 items measuring the variables: perception, attention, learning and memory, and (b) the WARM Scale, assessing affective processes related to oral communication in English, which included 22 items measuring the variables: willingness to communicate, anxiety, risk-taking and motivation. Both instruments were administered to a sample of 53 undergraduate students enrolled in a Primary Education Bachelor's program. Expert validation of these scales yielded a content validity coefficient of 0.971 and a Cronbach's alpha of 0.905 for the PALM scale, and a content validity coefficient of 0.983 and a Cronbach's alpha of 0.806 for the WARM scale.

Oral communication was evaluated through an interview conducted by a teacher other than the students' regular English course instructor. A pre-established semi-structured interview guide was used to assess students' comprehension, fluency, grammar, pronunciation and vocabulary in relation to the topics corresponding to the A1 level English course they completed. The evaluation was based on a Cambridge Assessment scale, where a score of zero indicates that the student does not demonstrate the

basic attributes for the respective indicators, followed by: poor (1), fair (2), good (3), very good (4) and excellent (5). Comprehension is defined as the "ability to understand questions and respond appropriately"; fluency as the "ability to speak quickly, naturally and without many pauses"; grammar as the "ability to use correct grammar and sentence structures"; vocabulary as the "ability to understand and use vocabulary words and phrases"; and pronunciation as the "ability to use correct stress, rhythm and intonation patterns" (Cambridge University Press, 2017).

For the qualitative data collection process, a convenience sample of 10 students was selected from the total sample of 53. This subsample included five students who advanced to the next level (A2) and five who did not pass their A1 level oral communication evaluation. The interviews were conducted face-to-face and recorded to analyze students' perceptions of the cognitive and affective processes they considered essential for effective oral communication in English. The interview guide was validated by experts, yielding a content validity coefficient of 0.977.

Quantitative data was conducted using SPSS to examine relationships among variables. Quantitative data did not follow a normal distribution; therefore, the Spearman's rank correlation test was employed to assess the correlations between variables (Ortiz and Romero, 2024). The qualitative data analysis involved coding the responses provided by students for each interview question. This analysis was performed using Atlas.ti software, focusing on predefined categories of cognitive and affective processes to systematically organize the information. Finally, the quantitative results were compared with the qualitative findings to verify whether there was an association between cognitive-affective processes and students' oral communication skills in English.

3 Results

3.1 Oral communication in English

First, the results of students' oral communication proficiency in English were analyzed following their participation in an A1 level English language course. The data in Table 1 indicate that, for most variables, both the mode and the mean are situated at the midpoint of the scale (1 to 5).

On the other hand, the data in Table 2 show that only 32% of the students (17 out of 53) were able to progress to the next proficiency level (A2), while 68% (36 out of 53) did not advance beyond the A1 level.

TABLE 1 Oral communication evaluation results.

Variables	Mean	Mode	Min	Max
Comprehension	3.06	3	1	5
Fluency	2.75	3	1	5
Grammar	2.19	2	1	5
Vocabulary	2.68	3	1	5
Pronunciation	2.94	3	1	5
Mean	2.72			

TABLE 2 Oral communication assessment results by achievement level.

Variable	Group by performance level	
	Passes level	Does not pass level
Comprehension	4.2	2.5
Fluency	3.5	2.4
Grammar	2.8	1.9
Vocabulary	3.4	2.4
Pronunciation	3.5	2.7
Mean	3.5	2.4
Number of students	17	36

3.2 Descriptive results of cognitive and affective processes

The analysis of students’ perceptions of cognitive processes is based on the mean of all variables, which was 3.4, with a standard deviation of 0.37, an upper limit of 3.80, and a lower limit of 3.06. The results show that, in terms of perception, students view English as a stimulating challenge to a high degree, though they also agree, to a lesser extent, with the notion that people who speak English feel more important. For the attention variable, two indicators are particularly significant, as reflected in the scores above the upper limit. Students highly value being aware of what is happening in class to actively participate whenever possible. They also emphasize the importance of listening attentively during English conversations. In terms of the learning variable, students recognize the importance of identifying areas where they need more practice to improve their English outside of class through resources like websites, apps, videos, music, games, and reading materials. Finally, regarding the memory variable, students find it important to retrieve prior knowledge when responding to questions in English. However, they report more difficulty in expressing themselves spontaneously in English and constructing simple sentences without frequent errors (See Table 3).

3.3 Analysis of student’s perceptions of affective processes

The analysis of students’ perceptions of their affective processes was based on the mean score across all variables, which was 3.5, with a standard deviation of 0.59, an upper limit of 4.09 and a lower limit of 2.91. According to the data in Table 4, for the willingness to communicate variable, students reported lower confidence in responding to questions in English, scoring below the lower limit. For the anxiety variable, students also reported low levels of comfort when responding in English and noted some kind of physical discomfort related to English communication. Similarly, the risk-taking variable shows a low score, indicating that students tend to avoid participating or speaking in English out of fear of making mistakes.

In contrast to the previous variables, most indicators within the motivation variable were significant for students. They reported high levels of motivation to learn new words and phrases in English, interest in participating actively in class, and an eagerness to perform well, driven by the prospect of achieving a good grade. Additionally, students

expressed motivation for learning English for personal reasons, such as understanding media content (e.g., series, movies, songs, or video games) and for the intrinsic pleasure of learning a new language. Finally, student’s value learning English for the practical benefits it may offer, including opportunities for certification, scholarships, travel, and improved communication skills (see Table 4).

3.4 Results of variable correlation

To conduct the quantitative analysis of variable correlations, we first assessed whether the data were normally distributed to select an appropriate statistical test. Based on these results, Spearman’s rho test was chosen. Unlike Pearson’s correlation, Spearman’s rank correlation does not require normal data distribution and assesses the relationship between two variables. This coefficient ranges from -1 to 1, indicating both, the magnitude and direction of the correlation (Ortiz and Romero, 2024). The interpretation of correlation magnitude, according to these authors, is as follows:

- r_s Value correlation strength.
- 0.0 < 0.1 No correlation.
- 0.1 < 0.3 Low correlation.
- 0.3 < 0.5 Moderate correlation.
- 0.5 < 0.7 High correlation.
- 0.7 < 1 Very high correlation.

3.4.1 Cognitive processes and oral communication in the English language

According to the data in Table 5, there is a moderate correlation between the variables of perception and memory and oral communication in English. Additionally, the variable of learning shows a high correlation with the English communication ability.

In the perception variable, a strong correlation was found between the students’ past experiences with the language and their oral communication skills. In the learning variable, the ability to remember previously studied topics and to self-evaluate the learning process also showed a high correlation with oral communication skills. For the memory variable, there was a moderate correlation between students’ ability to easily remember sentences and their ability to speak in English.

The information obtained during the interviews shows that students perceive the English language to be difficult to learn, they expressed:

- It is a little difficult for me, but... we are learning along the way.
- For me it is very difficult since I consider that I don't have the basic knowledge to feel that confidence and be able to speak in English.

Regarding their way of learning, the students expressed different ways of learning, some learned from mistakes, practiced with relatives or friends who speak English, used digital platforms and resorted to memory, mainly visual memory:

- Well sometimes when my relatives come from the United States. I try to talk to them.

TABLE 3 PALM scale results analysis.

Variable	Indicators	Mean	Mean subgroup students did not pass level	Mean subgroup students passed level	Mann–Whitney Asymp. Sig. (2-tailed)
Perception	1. Ability to learn English.	3.28	3.0	3.8	0.01
	2. Ease as learning progresses.	3.47	3.3	3.9	0.00
	3. Belief of superiority by speakers of the language.	2.57	2.4	2.8	0.45
	4. Studying for fun rather than obligation.	3.36	3.2	3.7	0.20
	5. Consider learning English a simulating challenge.	3.96	3.9	4.1	0.30
	6. Positive experiences related to English language learning.	3.45	3.1	4.1	0.00
	7. Consider easy level A1 English oral assessments.	3.15	3.1	3.3	0.45
Attention	8. Understand when receiving instructions.	3.49	3.3	4.0	0.02
	9. Be attentive to what happens in class to try to participate whenever possible.	3.83	3.8	4.0	0.46
	10. Ask questions when instructions are not clear.	3.47	3.2	4.1	0.00
	11. Take notes during class.	3.58	3.6	3.5	0.81
	12. Maintaining eye contact when speaking in English.	3.66	3.5	4.0	0.12
	13. Listen attentively when having a conversation with another person.	3.89	3.8	4.2	0.11
Learning	14. Ability to carry out tasks due to previously seen material.	3.64	3.4	4.2	0.00
	15. Out-of-class language practice through websites, apps, videos, music, games, readings, etc.	2.89	2.8	3.1	0.39
	16. Enjoying practicing what has been learned with peers and others.	3.40	3.2	3.8	0.02
	17. Knowing which areas need more practice to improve.	3.98	3.7	4.5	0.00
	18. Self-evaluate the learning process to find solutions to difficult topics.	3.28	2.9	4.0	0.00
	19. Ability to put what has been learned into practice.	3.25	2.9	3.9	0.00
Memory	20. Ability to remember what has been explained in class.	3.45	3.3	3.8	0.02
	21. Ability to express spontaneously.	2.79	2.6	3.2	0.04
	22. Easily remembering learned phrases.	3.47	3.3	3.9	0.02
	23. Ability to produce simple sentences without making many mistakes.	3.02	2.9	3.2	0.31
	24. Ability to use information learned to try to answer a question correctly.	3.92	3.9	3.9	0.93

Light grey shade: Values below upper limit; Dark grey shade: Values above upper limit; Columns 4 and 5: significant difference.

(I practice) with my friends. I have friends who are in advanced levels, so when something was difficult for me, I would go and ask them.

Qualitative results show that students use visual memory, tried to recall what they had written about a specific topic, or relied on images stored in their memory:

I tend to remember situations or things. I'm very visual.
...I relate them (words or situations) to images.

I think I'm a lot about picturing the image in my head or imagining that the situation that I want to explain is happening, and also repetition; I'm all about learning from my mistakes...in my head I think: you had written it like that before, and do you remember it was wrong? (A1)

The qualitative information obtained from the interviews with the students indicate that some of the codes from the different categories of cognitive processes are associated. The findings suggest that the process of learning English as a foreign language is linked to the positive or negative perceptions that students have, as well as to an

TABLE 4 WARM scale results analysis.

Variables	Indicators	Mean	Mean subgroup students did not pass level	Mean subgroup students passed level	Mann–Whitney Asymp. Sig. (2-tailed)
Willingness to communicate	1. Feeling comfortable participating in class.	3.26	3.2	3.5	0.25
	2. Participation without fear of being ridiculed.	3.34	3.3	3.5	0.31
	3. Ability to participate or answer a question in English.	2.96	2.8	3.2	0.15
	4. Decision to participate despite insecurities.	3.15	2.9	3.6	0.02
	5. Answering in oral exams even if feeling insecure.	3.66	3.4	4.2	0.00
	6. Confidence to answer when someone asks a question in English.	2.81	2.5	3.5	0.00
Anxiety	7. Reassurance to respond in English.	2.75	2.4	3.4	0.00
	8. Feeling of physical discomfort when having to communicate in English.	2.34	2.4	2.1	0.31
	9. Nervousness when participating.	3.38	3.4	3.4	0.79
	10. Concern about progress being different from peers.	3.30	3.2	3.5	0.53
Risk-taking	11. Participation in English class.	3.32	3.0	4.0	0.00
	12. Speak and participate without fear.	2.75	2.4	3.5	0.00
	13. See mistakes as learning opportunities.	4.08	3.9	4.5	0.01
	14. Taking the initiative to practice the language.	3.62	3.4	4.1	0.01
	15. Confidence when interacting with strangers.	3.17	2.9	3.8	0.00
Motivation	16. Enthusiasm for understanding English	3.91	3.6	4.6	0.00
	17. Motivation to learn new words and phrases in English.	4.26	4.0	4.8	0.00
	18. Motivation to get good grades.	4.15	4.0	4.5	0.02
	19. Motivation for personal benefits.	4.26	4.1	4.7	0.01
	20. Pleasure of knowing another language.	4.21	4.0	4.6	0.06
	21. Motivation for the way the class is taught or conducted, the activities or the classroom environment.	3.89	3.6	4.4	0.00
	22. Motivation to obtain benefits such as certifications, scholarships, trips, etc.	4.45	4.3	4.8	0.03

Light grey shade: Values below upper limit; Dark grey shade: Values above upper limit; Columns 4 and 5: significant difference.

TABLE 5 Correlations of cognitive processes and oral communication.

Cognitive variables			Oral comm.
Spearman's rho	Perception (Questions 1–7)	Correlation coefficient	0.457**
		Sig. (2-tailed)	0.001
		N	53
	Attention (Questions 8–13)	Correlation coefficient	0.205
		Sig. (2-tailed)	0.142
		N	53
	Learning (Questions 14–19)	Correlation coefficient	0.552**
		Sig. (2-tailed)	0.000
		N	53
	Memory (Questions 20–24)	Correlation coefficient	0.362**
		Sig. (2-tailed)	0.008
		N	53

**Correlation is significant at the 0.01 level (2-tailed).

increase in their attention when activities are contextualized. In addition, according to the students' responses, visual memory plays a key role in learning English (See Figure 1).

3.4.2 Affective processes and oral communication

According to the data presented in Table 6, there is a moderate correlation between students' willingness to communicate and their oral communication ability in English. Furthermore, a strong correlation was observed between risk-taking behavior and motivation in relation to oral communication in this language.

Regarding the variable of willingness to communicate, a moderate correlation was observed between the students' self-reported tendency to answer oral exam questions despite feeling uncertain and their confidence in responding to questions when asked. The qualitative results showed that students' willingness to communicate in English is conditioned by the attitude of the interlocutor:

Let's say I am willing to learn, but not so much to participate because I don't feel confident yet.

No, I'm embarrassed, I'm afraid to make a mistake.

In the interview it was also made clear that most of the students feel nervous about having to communicate in the English language:

Sometimes I get nervous...it's the way I express myself how I feel if sometimes I get nervous ... yes, I tend to move my hands a lot.

I even got a stomachache because I was so nervous.

On one occasion I was shaking, and I was very embarrassed.

The above findings are also connected to risk taking. This variable demonstrates a strong association with oral communication in

English. Within its indicators, moderate correlations were observed in two specific aspects: regular participation in class and students perceiving mistakes as opportunities for learning. These aspects are associated with the ability to communicate effectively. Finally, among the affective processes' variables, motivation exhibits the strongest association with oral communication in English. The indicators with the highest correlations include students' enthusiasm to understand when asked a question in English and their motivation to learn new words in the language.

3.4.3 Cognitive and affective processes correlations

On the other hand, it is important to describe the association between cognitive and affective variables. The analysis of Table 7 allowed us to establish the following correlations: students' willingness to communicate in English shows a very strong relationship with risk-taking, their perception of the English language, and memory. Willingness to communicate is also positively associated, with a moderate correlation with attention and learning.

An interesting finding is the moderately negative correlation between anxiety and memory. Although no direct relationship was found between anxiety and oral communication, it is noteworthy that the indicators associated with anxiety are related to memory.

Regarding the variable of risk-taking, a strong correlation was found with students' perceptions of the English language, learning and memory. Additionally, a moderate correlation was identified between motivation, risk-taking and learning.

Finally, although attention was not directly related to oral communication, moderate correlations were found with other variables, such as willingness to communicate, risk-taking, perception, and memory, which are directly related to the ability to speak English. The association between cognitive and affective processes is also evident in Figure 2, which displays the different categories and codes derived from the students' responses during the interviews.

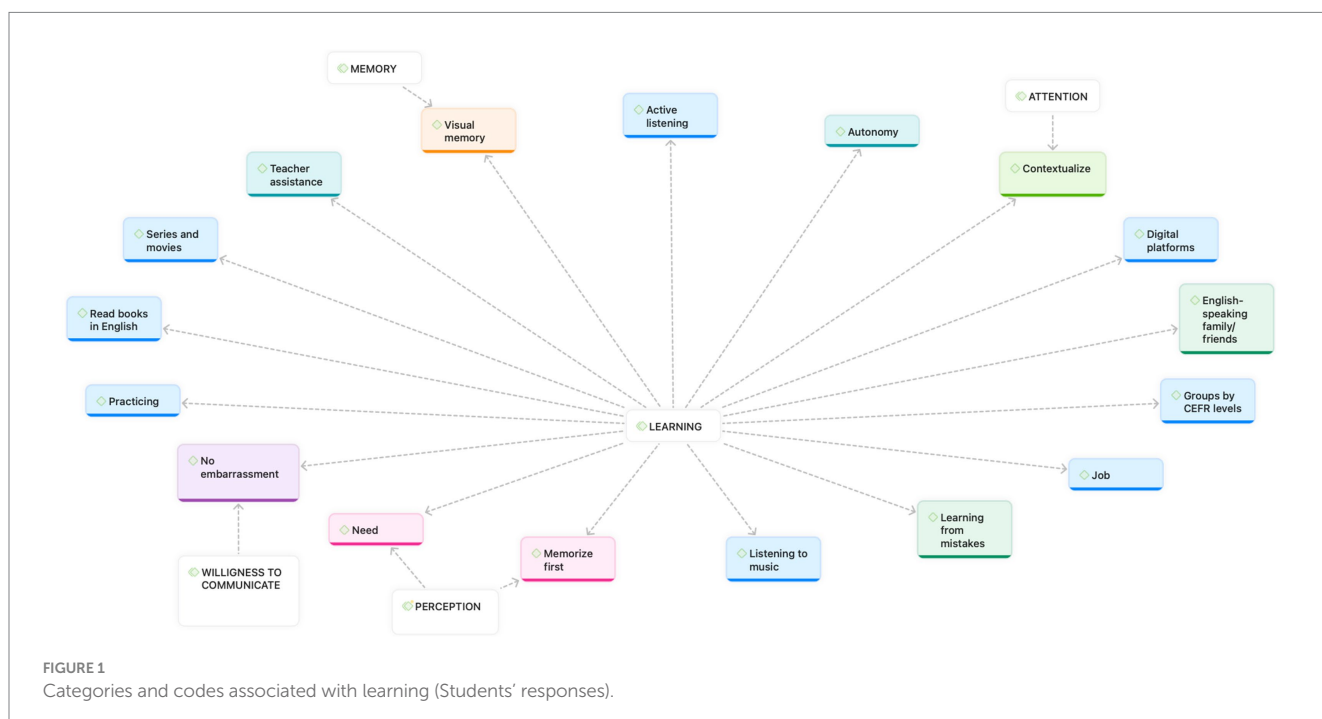


TABLE 6 Affective processes and oral communication correlations.

Affective variables			Oral communication
Spearman's rho	Willingness to communicate (Questions 1–6)	Correlation coefficient	0.416**
		Sig. (2-tailed)	0.002
		N	53
	Anxiety (Questions 7–10)	Correlation coefficient	0.083
		Sig. (2-tailed)	0.556
		N	53
	Risk-taking (Questions 11–15)	Correlation coefficient	0.546**
		Sig. (2-tailed)	0.000
		N	53
	Motivation (Questions 16–22)	Correlation coefficient	0.637**
		Sig. (2-tailed)	0.000
		N	53

**Correlation is significant at the 0.01 level (2-tailed).

4 Discussion

It is essential to begin this discussion by presenting the results of the oral communication assessment in English conducted with a group of students enrolled in an A1-level language course. The assessment considered five variables: comprehension, fluency, grammar, vocabulary, and pronunciation. The results allowed for the formation of two comparison groups: the first, comprising 32% of the students who successfully progressed to the A2 level, and the second, consisting of 68% who, by the end of the course, did not advance to the next level (see Table 2). Speaking is recognized as one of the core skills in English language learning, yet it remains among the most challenging to master (Robert and Meenakshi, 2022), as it is influenced by a variety of factors (Chen and Hwang, 2020), including cognitive and affective processes (Portugal-Toro et al., 2023). To understand why some students advance in their oral communication skills while others remain at the same level, it is necessary to analyze cognitive processes such as learning, perception, memory, and attention, alongside affective factors such as anxiety, willingness to communicate, risk-taking, and motivation.

This analysis of the cognitive processes exhibited by students begins with the variable of learning. The results reveal significant differences in the learning processes between students who advance to the next level of English proficiency and those who do not. Students who progress find it easier to complete activities because they recall class topics, enjoy practicing with their teacher or peers, identify areas where further practice is needed, self-assess their learning to independently address difficulties, and perceive themselves as better able to apply newly acquired knowledge (see Table 3). Qualitative findings corroborate the quantitative results; among the learning strategies reported, students who successfully advanced highlighted practicing with family members or friends. This finding is consistent with Vygotsky's theory of social learning (Vygotsky, 1978), which emphasizes that cognitive development is not an isolated process but is shaped by social interactions within a specific context (Morris, 2025). Moreover, it is evident that students who transition from A1 to A2 levels in English employ metacognitive strategies and self-regulation (Ahmadi and Motaghi,

2024) as essential mechanisms to recognize their strengths and address emerging learning needs. In the context of foreign language acquisition, fostering learner autonomy and self-regulation is critical for continued linguistic development (De Vrind et al., 2024). Therefore, it is recommended to focus on learning strategies that both teachers and students can implement to promote knowledge sharing and self-regulated learning.

Moreover, students' perceptions of the English languages are associated with their personal proficiency development, influenced by their prior academic experiences. The results show significant differences between students who progress to the next level of English proficiency and those who do not. Students who moved up to the next level consider themselves more capable of learning, find it easier to make progress in their learning, and describe their experiences as generally positive (see Table 3). In contrast, students who did not advance to the next level expressed, during the interviews, that they find learning difficult and feel they lack the basic knowledge needed, which prevents them from feeling fully confident when speaking in English. Beliefs about foreign language learning significantly influence student's progress, whether positively or negatively (Al Momani and Al-Oglah, 2021). Learners bring a unique combination of experiences, backgrounds, beliefs, and emotions to the classroom, all of which impact academic outcomes (Oxford and Gkonou, 2021). These findings underscore the importance of teachers understanding their students' learning histories, experiences, and needs. Such insights are crucial for designing effective instructional strategies, particularly for students who have encountered negative experiences that hinder their second language acquisition.

Another relevant cognitive process is memory, as it serves as a storage system for information that can be useful in acquiring a new language. Based on the results, significant differences were found between the two groups of students previously mentioned. For students who moved up to the next level of English proficiency, it is easier to recall what they have learned in class; they report that when they need to express themselves orally, they do so spontaneously and are aware that they can easily remember phrases they have learned (see Table 3). Qualitative results indicate that these students visualize information in the form of images, which helps them recall

TABLE 7 Cognitive and affective processes correlations.

Variables		WTC	ANX	R-T	MOT	PER	ATT	LEA	MEM
Willingness to communicate (WTC)	Coef. Correl.	1.000		0.739**		0.700**	0.473**	0.481**	0.657**
	Sig. (2-tailed)			0.000		0.000	0.000	0.000	0.000
	N	53		53		53	53	53	53
Anxiety (ANX)	Coef. Correl		1.000						−0.322*
	Sig. (2-tailed)								0.019
	N		53						53
Risk-taking (R-T)	Coef. Correl	0.739**		1.000	0.393**	0.623**	0.462**	0.721**	0.672**
	Sig. (2-tailed)	0.000			0.004	0.000	0.000	0.000	0.000
	N	53		53	53	53	53	53	53
Motivation (MOT)	Coef. Correl			0.393**	1.000			0.431**	
	Sig. (2-tailed)			0.004				0.001	
	N			53	53			53	
Perception (PER)	Coef. Correl	0.700**		0.623**		1.000	0.486**	0.496**	0.599**
	Sig. (2-tailed)	0.000		0.000			0.000	0.000	0.000
	N	53		53		53	53	53	53
Attention (ATT)	Coef. Correl	0.473**		0.462**		0.486**	1.000		0.412**
	Sig. (2-tailed)	0.000		0.000		0.000			0.002
	N	53		53		53	53		53
Learning (LEA)	Coef. Correl	0.481**		0.721**	0.431**	0.496**		1.000	0.486**
	Sig. (2-tailed)	0.000		0.000	0.001	0.000			0.000
	N	53		53	53	53		53	53
Memory (MEM)	Coef. Correl	0.657**	−0.322*	0.672**		0.599**	0.412**	0.486**	1.000
	Sig. (2-tailed)	0.000	0.019	0.000		0.000	0.002	0.000	
	N	53	53	53		53	53	53	53

WTC, Willingness to communicate; ANX, Anxiety; R-T, Risk-taking; MOT, Motivation; PER, Perception; ATT, Attention; LEA, Learning; MEM, Memory. **Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed). Grey shade: Significant correlation.

information more easily. These findings can be related to information-processing theory, which considers sensory memory, working memory, and long-term memory (Duchesne et al., 2022). Students’ ability to retrieve information and remember words or phrases already learned, suggests that they are accessing long-term memory and using it effectively in working memory, which facilitates more efficient communication in English.

Finally, another variable considered within the cognitive processes was attention. A key finding regarding attention is that, for most of the quantitative indicators analyzed, no significant differences were found between students who advanced to the next level and those who did not. Both groups reported paying attention to what happens during class in order to participate, taking notes on what is explained, and maintaining eye contact when speaking to someone English. However, two key differences were identified:

students who moved up to the next level understood instructions more clearly and asked questions when instructions were not clear (see Table 3). These students appear to exhibit focused attention directed toward the goal of acquiring a foreign language (Goleman, 2013), enabling them to inhibit distractions and concentrate more effectively on understanding their interlocutor. Attention is a core processes within the information-processing theory that is closely linked to sensory memory, working memory and the rehearsal process (Duchesne et al., 2022).

Regarding the correlations identified between cognitive processes (learning, perception, memory, and attention) and oral communication in English, a notable finding is that learning shows a strong relationship with oral communication, followed by perception and memory, both with moderate correlations (see Table 5). In this sense, students who find it easy to complete tasks, apply what they

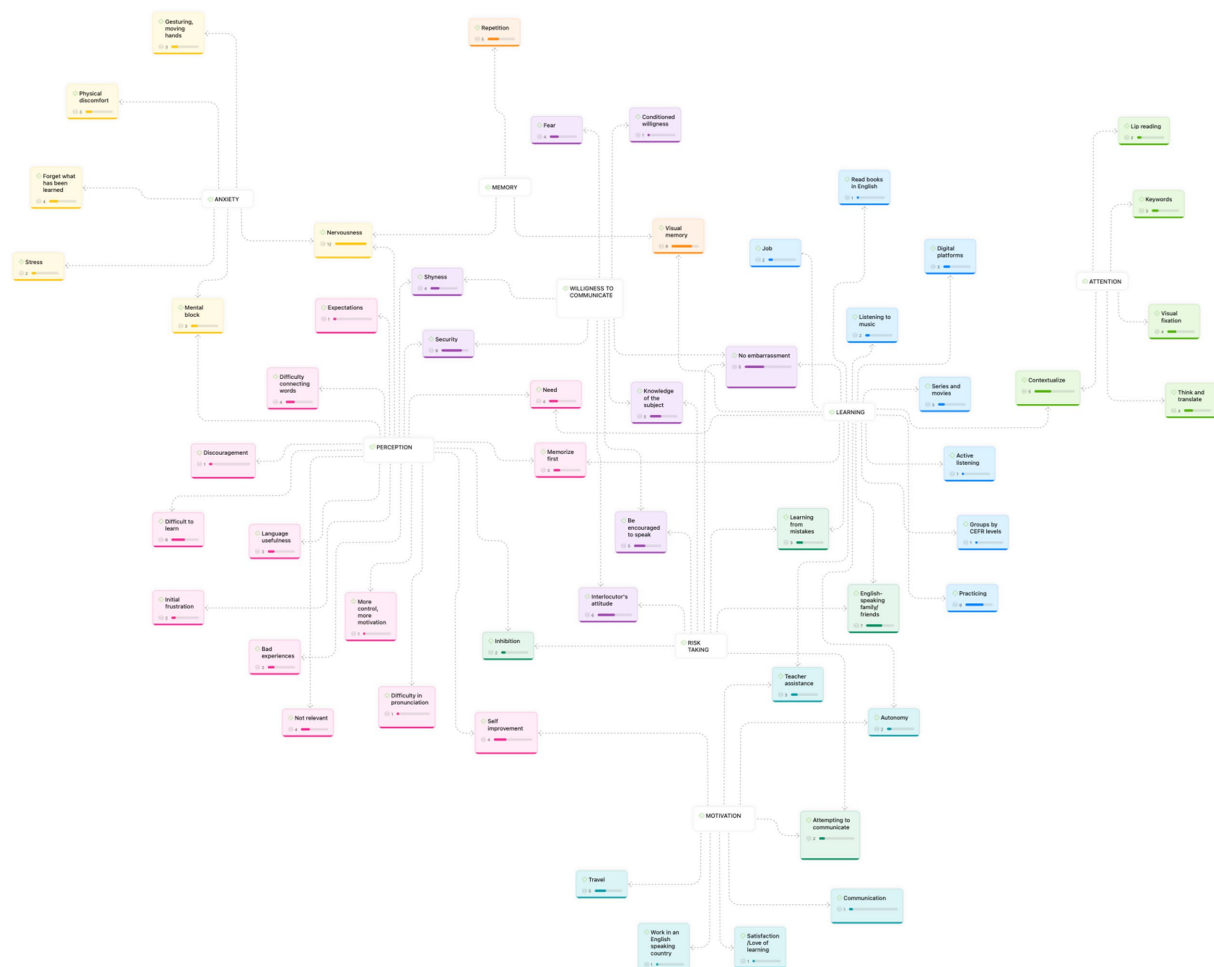


FIGURE 2
Cognitive and affective processes (students' responses).

have learned, recognize their areas for improvement, and self-regulate their learning processes are more likely to develop greater oral communication skills in English. However, students' perceptions about the language also play a key role, particularly their sense of self-efficacy. As students perceive themselves as more capable learners and accumulate positive learning experiences, they show greater ease in expressing themselves in English. Another important factor is memory: when students find it easy to recall what they learned in class, it indicates that they are accessing long-term memory, allowing them to speak more spontaneously in English. Remembering certain topics, recognizing areas where more practice is needed, self-assessing the learning process, and applying what is learned in class are indicators of the learning variable that are closely related to the ability to communicate orally in English (see Table 5; Figure 1). The greater the use of these strategies by students, the easier it becomes for them to progress in achieving the ability to express in English. In learning English as a foreign language, it is important for students to have a certain degree of autonomy and to learn to regulate their learning process (De Vrind et al., 2024). "Learning to be self-directed involves taking responsibility for the objectives of learning, self-monitoring, self-assessing, and taking an active role in learning" (Lee, 1998). Learning how to learn is a fundamental skill in the 21st century;

students must find the most effective learning strategies and integrate them with the teaching-learning strategies used in the classroom. This will facilitate their acquisition of English as a foreign language.

Another construct examined in this study was affective processes, specifically motivation, willingness to communicate, risk-taking, and anxiety. When comparing students who progressed to the next level with those who did not, motivation emerged as a key differentiating factor. Students who advanced reported greater enthusiasm for understanding the language, expressed motivation to learn new words and phrases, and demonstrated both intrinsic and extrinsic interests related to English language learning. These findings are supported by the quantitative results (see Table 4). The qualitative data further corroborate these results, with students expressing satisfaction with their progress in learning English and citing specific goals such as traveling, working in English-speaking countries, and effective communication (see Figure 3). These findings highlight the importance of both extrinsic and intrinsic motivation (Noels, 2023) in fostering a sense of achievement, competence, and enjoyment of learning. Contact with the target language, foreign language anxiety, language learning motivation, and self-efficacy are all important factors in L2 learning and acquisition (Wu et al., 2022). This finding highlights the importance of students maintaining comprehensive

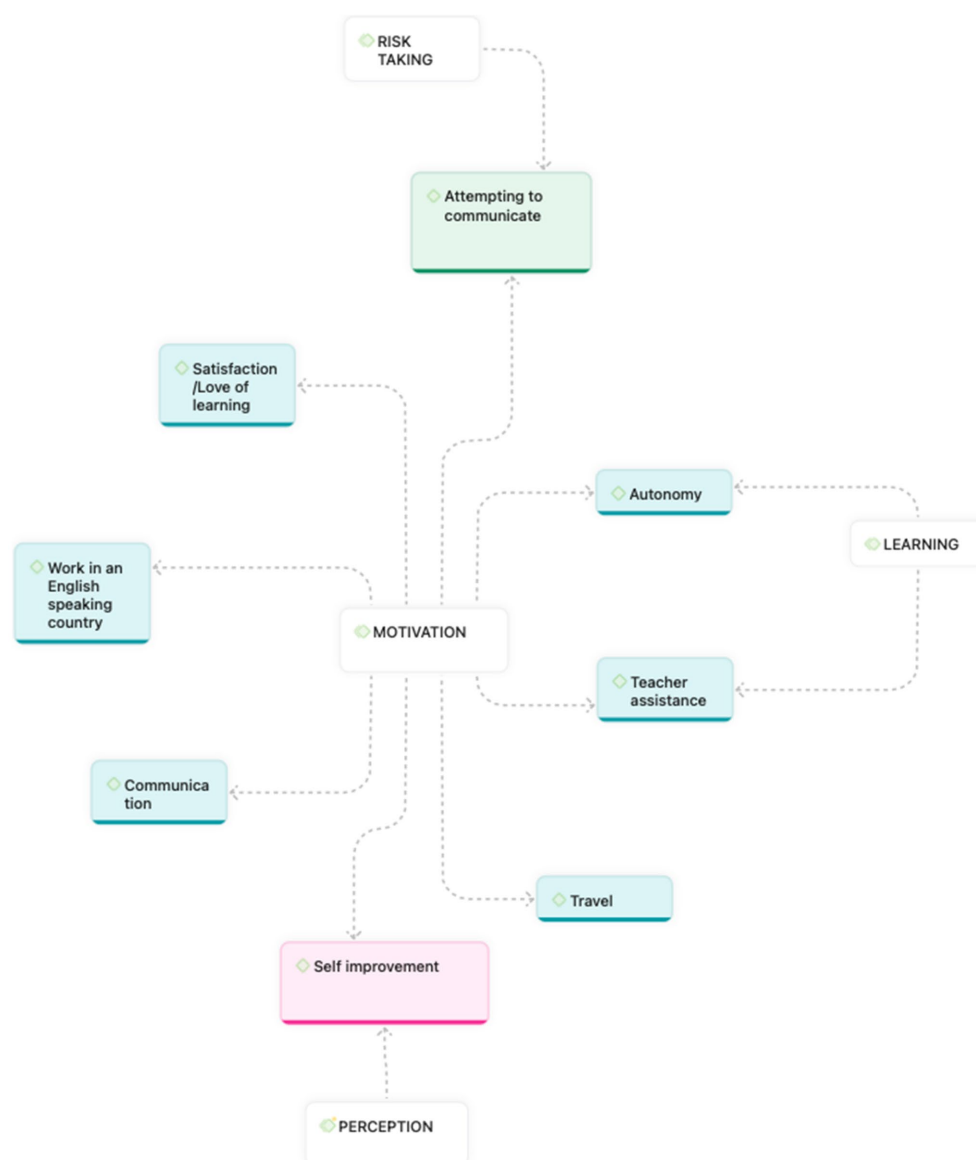


FIGURE 3
Categories and codes associated with motivation (Students' responses).

motivation, as it keeps them focused on the goal of effectively communicating in English.

Willingness to communicate also emerged as a significant affective factor related to oral communication. Students who advanced to the next level showed significantly greater willingness to participate, even when feeling insecure; they answered questions and felt confident during oral evaluations (see Table 4). However, it is important to note that the quantitative results did not fully align with the qualitative data. During interviews, most students, regardless of group, reported feeling nervous when speaking English. The key distinction lay in the willingness to engage despite experiencing negative emotions. Another relevant finding from the qualitative analysis was the role of the interlocutor's attitude as a condition influencing students' willingness to communicate. Willingness to communicate is shaped by multiple factors, including confidence, anxiety, previous experiences, motivation, beliefs, the interlocutor's personality, and broader social and individual contexts (Mac Intyre et al., 1998). To

foster greater willingness to communicate among learners, it is crucial to provide continuous opportunities and a safe environment for them to pursue and achieve their linguistic goals.

Another important affective process examined in this study was risk-taking. Significant differences were found across all indicators between students who advanced to the next level and those who did not. Students who advanced participated actively and spoke during English class, took the initiative to practice the language, felt confident answering questions from unfamiliar individuals, and viewed mistakes as learning opportunities (see Table 4). These findings are supported by the qualitative data, where students reported that they were willing to speak, learned from their mistakes, and frequently practiced with family and friends (see Figure 2). Studies by various researchers suggest that affective variables, including risk-taking, play an important role in students' willingness to communicate orally in a foreign language (Brown, 2014; Lee and Lee, 2020). The results of this research support the claim that affective variables influence students'

readiness to learn and communicate in English. Studies suggest that affective variables, including risk-taking, play an important role in students' willingness to communicate orally in a foreign language (Brown, 2014; Lee and Lee, 2020). The results of this research support the claim that affective variables influence students' readiness to learn and communicate in English.

Anxiety was also investigated as a key affective factor associated with English language learning. Notably, no significant differences were found between groups for most indicators related to anxiety; the only observed difference was that students who progressed reported feeling calmer when responding to questions in English (see Table 4). However, qualitative findings revealed that students who did not progress experienced higher levels of anxiety, describing symptoms such as nervousness, stomachaches, trembling, and embarrassment when speaking English (see Figure 2). Anxiety may negatively impact students' motivation and perceptions, thereby influencing their learning experiences. This potential interrelation among different affective and cognitive processes suggests a systems theory perspective, framing anxiety as a complex and dynamic variable (Papi and Khajavy, 2023).

According to the results, several correlations were identified between affective processes (motivation, willingness to communicate, risk-taking, and anxiety) and oral communication in English. One of the main findings was that motivation had a strong correlation with students' oral communication skills in English (see Table 6). To varying degrees, all indicators of this variable were associated with students' ability to communicate. Oral communication skills improved when students were enthusiastic about understanding the speaker, showed interest in learning new words or phrases, had personal or professional reasons to learn the language, and enjoyed English classes due to the teacher's instructional style, classroom activities, and learning environment.

Additionally, a strong correlation was found between risk-taking and students' oral communication ability. Oral communication skills increased when students regularly took risks in class, spoke without fear, took the initiative to practice the language, were willing to interact with unfamiliar people, and viewed mistakes as learning opportunities. Another relevant finding was the moderate correlation between willingness to communicate and oral communication skills (see Table 6). Only three out of the six indicators for this variable were related to oral communication. Specifically, higher levels of confidence in responding, willingness to answer in exams despite uncertainty, and active participation were associated with better oral communication performance in English. In contrast, no direct correlation was found between anxiety and oral communication. Only one indicator showed a moderate correlation: students who reported feeling calmer when responding to questions in English demonstrated stronger oral communication skills (see Table 6).

Although no direct relationship was found between attention, anxiety, and oral communication in English, evidence suggests that these variables are associated with other constructs directly influencing the development of speaking skills (see Table 7). A notable finding is the confirmation of correlations between cognitive and affective processes, as well as among variables within each process (see Figure 2). Within the affective processes, a positive correlation was observed between risk-taking, willingness to communicate, and motivation; notably, risk-taking was the only affective variable correlated with two other affective constructs. Regarding cognitive processes, perception was found to be associated with attention, memory, and learning. Similarly, attention correlated with perception and memory, while learning was related to both perception and

memory. Finally, memory showed positive associations with perception, learning, and attention.

Correlations between cognitive and affective processes reveal that all variables are interconnected. For example, motivation and learning—both strongly related to oral communication—were also positively correlated with one another. Risk-taking, which also demonstrated a strong relationship with oral communication, was additionally correlated with perception, attention, learning, and memory. Willingness to communicate was the only affective variable associated with all cognitive processes. Although anxiety was not directly related to oral communication, it showed an inverse relationship with memory, suggesting that lower anxiety may enhance memory capacity, or vice versa (see Table 7; Figure 2). These findings support the applicability of systems theory (Verspoor et al., 2008) in the analysis of cognitive-affective processes, emphasizing that these variables operate as an interdependent and dynamic system that is not easily separated.

5 Conclusion

The findings of this study indicate that there is an association between the cognitive-affective processes of a group of undergraduate students in primary education and their development of oral communication skills in English as a foreign language. The first objective established in this study was to assess the level of oral communication proficiency in English as a foreign language. The objective was achieved: to assess the level of proficiency in oral communication in English of a group of undergraduate students in primary education upon completing the basic level course of this language. The results show that a 67% of the students do not manage to consolidate the basic level by the end of their first English language learning course. This leads us to address the other objectives set at the beginning of the research.

An additional objective was established: to describe, based on students' perceptions and experiences, the relationship between cognitive processes (perception, attention, learning, and memory) and the development of oral communication in English as a foreign language among a group of undergraduate students in primary education. The results showed that there is a positive relationship between perception, learning, memory and students' ability to communicate in English as a foreign language. Therefore, we can state that if students have a positive perception (positive experiences) of learning English, use learning and self-regulation strategies, and employ memorization techniques, it will be easier for them to learn a second language and communicate effectively.

Another objective established at the beginning of the research was: to describe, based on students' perceptions and experiences, the relationship between affective processes (willingness to communicate, anxiety, risk-taking and motivation) and the development of oral communication in English as a foreign language among a group of undergraduate students in primary education. The findings provide evidence of the importance of students learning to take risks, the relevance of their participation in class even when mistakes are likely to happen, and the significance of both, intrinsic and extrinsic motivation. This demonstrates that the responsibility does not rest solely on the strategies employed by the teacher, but also on the affective processes internalized by the student.

The findings of this study offer significant contributions to the field of educational research by identifying key cognitive-affective processes that correlate with oral communication in English as a foreign language. This identification establishes a framework for future studies focused on intervention through practical activities, enabling the assessment of their impact and facilitating the adoption of diverse research methodologies. Furthermore, the study holds practical value for both educators and learners, as it highlights specific areas requiring intervention to enhance the development of communicative skills in English. These areas range from strengthening students' affective processes to implementing strategies for self-directed learning and process regulation. This research was limited by the sample size, which was drawn from a specific context involving the training of future teachers. Therefore, it is recommended that future studies use a larger and more diverse sample, including higher education students from different professional fields and contexts, to determine whether similar cognitive-affective processes are associated with the development of oral communication skills in English as a foreign language.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, upon reasonable request.

Ethics statement

Ethical approval was not required for the studies involving humans because there was no need since no human rights are violated. Permission from the school's principal was obtained as well as permission from all participants who were happy to do so. 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

AP-T: Conceptualization, Formal analysis, Investigation, Methodology, Resources, Validation, Writing – original draft,

Writing – review & editing. FG-P: Conceptualization, Supervision, Writing – review & editing. LB: Conceptualization, Supervision, Writing – review & editing. AV: Conceptualization, Supervision, Writing – review & editing.

Funding

The author(s) declare that financial support was received for the research and/or publication of this article. The authors gratefully acknowledge the financial support provided by Secretaría de Ciencia, Humanidades, Tecnología e Innovación.

Acknowledgments

The authors would like to thank the Benemérita Escuela Normal de Coahuila for providing the facilities to conduct this research and its students for their time and participation.

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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