International Journal of Social Science, Management and Economics Research
Volume 3 Issue 6 Nov-Dec 2025
ISSN: 2583-9853| www.ijssmer.com

A PSYCHOLINGUISTIC ANALYSIS OF FOREIGN LANGUAGE ANXIETY IN L2 ORAL PRODUCTION

Yifan Liu
School of Foreign Studies, Northwestern Polytechnical University,
Xi'an, Shaanxi, 710129, P.R. **China**

Fei Liu
School of Foreign Studies, Northwestern Polytechnical University,
Xi'an, Shaanxi, 710129, P.R. **China**

Received: 22/10/2025 Accepted: 31/10/2025 Published: 03/11/2025

DOI - https://doi.org/10.61421/IJSSMER.2025.3601

ABSTRACT

Foreign language anxiety (FLA) is a common affective factor that can significantly impair learners' oral performance in second language (L2) classrooms. This study, grounded in Levelt's speech production model, Baddeley's working memory theory, and Attentional Control Theory, investigates how anxiety disrupts the cognitive and psycholinguistic processes involved in idea generation, lexical formulation, and articulation. Drawing on authentic classroom observations, the findings show that FLA causes cascading disruptions across speech processing stages, ultimately hindering fluency, coherence, and clarity. To mitigate these effects, the study proposes psycholinguistically informed pedagogical strategies, including pre-task planning, formulaic language scaffolding, and attention-regulation techniques, aimed at reducing cognitive overload and improving oral output. This research deepens understanding of the mechanisms underlying L2 speech anxiety and offers practical implications for anxiety-reducing instruction in communicative language classrooms.

Keywords: Psycholinguistics; Foreign Language Anxiety; Language Production; Second Language Acquisition; Speaking Instruction

1. INTRODUCTION

Oral proficiency has long been recognized as a key focus in second language (L2) acquisition, particularly within communicative and task-based pedagogical frameworks. Despite substantial instructional emphasis, many learners continue to experience difficulties when performing oral tasks. These challenges cannot be fully explained by linguistic competence alone but are strongly influenced by affective variables, with foreign language anxiety (FLA) emerging as a key determinant. Initially conceptualized by Horwitz, Horwitz, and Cope (1986) as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128), FLA has been recognized as a significant affective factor that can undermine oral performance.

Empirical research generally indicates a negative relationship between FLA and learners' speaking proficiency. Anxious learners may retrieve lexical items more slowly and may produce speech with reduced fluency, and possibly lower coherence (MacIntyre & Gardner, 1991; Woodrow, 2006). Others may avoid participation or remain silent due to fear of negative evaluation (Gregersen & Horwitz, 2002; Yan & Horwitz, 2008). Recent studies have further highlighted the dynamic and context-dependent nature of FLA, suggesting that anxiety can co-occur with other emotions such

as enjoyment (Fathi & Mohammaddokht, 2021; Resnik & Dewaele, 2023), and that it may serve as a predictor of oral performance difficulties (Botes, Dewaele, & Greiff, 2020; Shao, Pekrun, & Nicholson, 2020). More recent empirical evidence also suggests that heightened speaking anxiety is associated with reduced utterance fluency and lower cognitive efficiency in L2 tasks (Rood & de Jong, 2023). Despite these advances, relatively fewer studies have examined the psycholinguistic mechanisms underlying these observable outcomes—such as disfluencies, syntactic simplification, or prosodic disruption—highlighting an aspect of L2 speech production that remains less explored.

A psycholinguistic perspective provides a productive lens understanding how anxiety interferes with speech production. Building on Levelt's (1989) model, speaking can be viewed as a multi-stage process consisting of conceptualization, formulation, and articulation. For L2 learners, each stage may impose greater cognitive demands than in L1, which may render L2 speech more vulnerable to affective interference. Within this framework, Working Memory Theory (Baddeley, 2007) elucidates how anxiety-induced intrusive thoughts compete for limited cognitive resources, thereby reducing the resources available for lexical retrieval and syntactic planning. In parallel, Attentional Control Theory (Eysenck et al., 2007) provides a framework for understanding how anxiety may lead to the misallocation of attention, shifting focus from task-relevant processes to threat-related concerns. Together, these frameworks complement Levelt's model by offering a theoretically grounded account of how anxiety could interfere with the cognitive subsystems engaged in speech production.

Against this backdrop, the present study investigates the impact of FLA on L2 oral production from a psycholinguistic perspective. By integrating Levelt's speech production model with Working Memory Theory and Attentional Control Theory, it aims to explore how anxiety may disrupt the processes of conceptualization, formulation, and articulation, thereby providing theoretically informed insights into common breakdowns in learners' oral performance. The study also proposes stage-specific pedagogical strategies targeting the cognitive mechanisms underlying FLA, potentially contributing to both theory-informed understanding and practical interventions in classroom contexts.

2. METHODOLOGY

2.1 Research Design

This study adopts a qualitative descriptive design with interpretive features grounded in classroom discourse analysis to investigate how foreign language anxiety (FLA) interferes with the psycholinguistic processes of second language (L2) oral production. Specifically, it examines how anxiety manifests and influences learners' conceptualization, formulation, and articulation processes, as conceptualized in Levelt's (1989) speech production model. The research design integrates systematic classroom observation with a theoretically grounded cognitive framework, ensuring that both empirical observation and psycholinguistic interpretation are aligned. The following subsections describe the data sources, data processing procedures, coding and reliability measures, and the analytic framework guiding the study.

2.2 Data Sources

Primary data were collected over a four-month classroom observation period (August–December 2023) at a senior high school in northwest China. Six Grade 10 English classes, comprising approximately 300 students, were selected through purposive sampling. The selection aimed to represent a range of communicative English teaching contexts within the school, including both general English and topic-based speaking lessons. These classes were taught by experienced

teachers known for their use of interactive, task-oriented pedagogy (e.g., pair discussions, situational dialogues, and presentation tasks), which provided rich opportunities to observe natural oral production and anxiety-related behaviors. Classroom sessions were observed five to six times per week, each lasting approximately 45–50 minutes. In total, 15 lessons—covering varied teaching types and communicative tasks—were closely analyzed, forming a substantial corpus of naturally occurring classroom interactions.

All observations were documented through a combination of video and audio recordings, supplemented by detailed field notes describing contextual and affective features such as classroom atmosphere, task type, and student engagement. Instances of anxiety-related behaviors were identified through repeated viewing of recordings and cross-referenced with field notes to ensure interpretive accuracy. This multimodal documentation enabled a nuanced understanding of how anxiety manifested beyond linguistic performance alone. As a non-participant observer, the researcher maintained reflective field notes throughout the process to minimize interpretive bias and ensure analytical transparency.

Prior to data collection, all participants were verbally informed of the study's aims and procedures. Participation was entirely voluntary, and all personal identifiers in the data were removed or anonymized to protect confidentiality and privacy.

2.3 Data Processing and Analysis

The analysis aimed to identify how anxiety interferes with three psycholinguistic stages of L2 speech production. All classroom recordings and field notes were transcribed to capture verbal and nonverbal elements, including pauses, repetitions, tone, and hesitations, reflecting anxiety-related performance features.

Oral episodes showing behavioral indicators of anxiety—such as long pauses, incomplete utterances, self-corrections, avoidance of participation, and disrupted prosody—were segmented into utterance-level units (teacher questions, student responses, peer exchanges) and coded according to Levelt's (1989) three-stage model of speech production: conceptualization (idea generation), formulation (lexical retrieval and syntactic encoding), and articulation (phonetic planning and speech execution).

Coding indicators were informed by Levelt's theoretical model and prior empirical studies on foreign language anxiety (Gregersen, 2005; Woodrow, 2006; Tóth, 2012):

(1) Conceptualization: long silent pauses; topic avoidance; fragmented or incoherent ideas; excessive self-monitoring before speaking.
(2) Formulation: word-finding difficulties; circumlocution; frequent self-correction; simplified sentence structures.
(3) Articulation: disfluencies; mispronunciation; flat intonation; voice tremor; short breath.

Categories were refined through repeated comparison of classroom episodes to ensure consistency, enabling a fine-grained mapping between emotional states and psycholinguistic processing mechanisms.

2.4 Coding Procedure and Reliability

The coding process followed a three-step iterative procedure. First, the primary researcher conducted open coding to identify anxiety-related behaviors and linguistic patterns, developing an initial coding framework based on recurring features in the data. After an interval of two weeks, the same researcher revisited the dataset to refine and verify the internal consistency of the codes.

Second, a postgraduate student majoring in Applied Linguistics reviewed a selection of coded samples and provided feedback on ambiguous cases. The two coders discussed these instances until interpretive consensus was reached. Third, the refined coding framework was applied across the full dataset to ensure coherence and analytical depth. Through repeated comparison, peer review, and reflective refinement, the credibility and trustworthiness of the analysis were ensured.

2.5 Theoretical Analytic Framework

The integrated analytic framework was employed not merely as a lens for categorization but as a tool for interpreting the cognitive underpinnings of anxiety-related behaviors. The interpretation of the data was guided by an integrative psycholinguistic framework combining Levelt's (1989) Model of Speech Production, Working Memory Theory (Baddeley, 2007), and Attentional Control Theory (Eysenck et al., 2007).

Levelt's model provided the structural foundation for categorizing observed behaviors into distinct stages of speech processing.

Working Memory Theory informed the understanding of processing load and resource competition under anxiety, explaining why anxious learners might struggle with lexical retrieval or syntactic formulation.

Attentional Control Theory offered insight into the cognitive disruption caused by anxiety—specifically, how attentional resources shift from task-relevant linguistic planning to self-focused worry or performance monitoring.

This integrated theoretical lens enabled the study to link observable classroom behaviors with underlying cognitive mechanisms, revealing how FLA interferes with L2 oral production at multiple processing levels.

3. RESULTS

Classroom observation data were analyzed according to Levelt's (1989) speech production model, highlighting how foreign language anxiety (FLA) affects learners' oral performance across the conceptualization, formulation, and articulation stages.

3.1 Conceptualization Stage: Anxiety's Influence on Idea Generation and Discourse Planning

At the conceptualization stage, which is the initial phase of speech planning, learners generate communicative intent and select relevant ideas based on discourse context. This requires activating conceptual knowledge and organizing it into a coherent message. Attentional Control Theory (Eysenck et al., 2007) posits that anxiety diverts attention from task-relevant planning to self-focused worry and threat-related thoughts, reducing cognitive resources available for idea generation.

Classroom observations revealed clear evidence of this interference. During a discussion on school uniforms, one high school student hesitated extensively:

> *e.g. (1) "I think… uniforms are good. Because… um… maybe… students don't fight? No, that's not right. I mean… it's fair. Because… everyone wears the same. Yeah."*

This hesitation exemplifies interference at the conceptualization stage, as the learner's working memory is taxed by anxiety, limiting idea retrieval and organization. Self-focused attention further reduces cognitive engagement, resulting in fragmented and underdeveloped output. Similarly, in another task describing weekend activities, a student who had visited a park and library responded

with a minimal "Nothing," reflecting a conceptual-level blockage where ideas exist but cannot be accessed due to anxiety-induced cognitive overload. Similarly, during a role-play on online learning, a learner remained silent for over a minute, later reporting that although they had pre-formed conceptual ideas in L1, anxiety had disrupted their ability to express them in L2. This illustrates how anxiety impairs the interface between conceptual planning and linguistic preparation.

Taken together, these observations indicate that FLA at the conceptualization stage restricts cognitive resources for idea selection and organization and disrupts the transformation of conceptual knowledge into communicative intent. These early-stage disruptions also set the stage for difficulties in converting ideas into fluent, grammatically structured speech, which is examined in the formulation stage.

3.2 Formulation Stage: Anxiety's Disruption of Lexical Access and Syntactic Encoding

Building on disruptions in conceptual planning, anxiety further affects the formulation stage, where conceptual messages are transformed into linguistic form through lexical selection and syntactic encoding. This process relies on the central executive and phonological loop of working memory (Baddeley, 2007). Anxiety may consume limited working memory resources, thereby reducing learners' capacity for fluent and accurate language formulation.

Lexical blocking was observed frequently. In a task, a student who had recently learned the word heritage instead said:

> *e.g. (2) "The old things from our culture… you know… the traditions and customs."*

This circumlocution demonstrates that anxiety impairs lexical retrieval, consuming working memory resources and disrupting formulation. Building on lexical difficulties, anxiety also affected syntactic encoding. During a narration of a school trip, one student produced:

> *e.g. (3) "We go… museum. See… paintings. Teacher say… nice. I like… it."*

In contrast, the same student produced a well-structured written narrative, highlighting that oral formulation, rather than linguistic competence per se, is vulnerable under anxiety. Cognitive load from anxious thoughts reduced the capacity for sentence planning, leading to simplified structures. Attentional Control Theory further explains that executive functions are compromised, preventing the integration of ideas into coherent, grammatically accurate utterances.

In a debate-style activity, learners prioritized conveying meaning over grammatical accuracy:

> *e.g. (4) "Social media… good. People… talk… friends… far away… connect."*

Frequent fillers and pauses reflect processing difficulty rather than low proficiency, as attention is diverted to anxiety management. In more extreme cases, formulation collapsed entirely. While explaining climate change, a student produced:

> *e.g. (5) "The… the thing that traps heat… you know… the… gas? No… the effect… the… uh… greenhouse! Yes, greenhouse effect."*

Such disfluency demonstrates severe interference in lexical retrieval and sentence construction due to anxiety-induced cognitive overload.

In sum, anxiety at the formulation stage compromises lexical access and syntactic encoding, resulting in simplified, disfluent, or circumlocutory speech. These limitations, compounded by

working memory overload, further constrain learners' ability to articulate speech clearly and fluently, as explored in the articulation stage.

3.3 Articulation Stage: Anxiety's Impact on Phonological Clarity and Fluency

Finally, at the articulation stage, learners execute their speech plans through the vocal tract and articulatory system. L2 learners face additional demands due to unfamiliar phonemes, stress patterns, and limited motor automatization. Anxiety affects articulation both directly, through physiological arousal, and indirectly, via hyper-monitoring.

Observed physiological symptoms included shallow breathing, vocal tension, and dry mouth. For instance, a student presenting a book review whispered haltingly:

e.g. (6) "The… story… is… about… a… girl… who… moves… school…"

The learner reported, "My throat felt tight, like I couldn't breathe." These symptoms suggest that anxiety may interfere with motor execution in L2 speech, potentially placing additional demands on working memory resources involved in articulatory coordination (Levelt, 1989; Baddeley, 2007). Additionally, anxiety can trigger hyper-monitoring, in which learners over-attend to their own speech, potentially disrupting fluency and accuracy (MacIntyre, 1995).

Even learners proficient in low-stress contexts regressed under pressure. During a class presentation, one student mispronounced /θ/ as /s/, explaining, "I was so nervous I just forgot how to say it." In a restaurant role-play, prosody flattened, producing monotonous and unnatural delivery. Such disfluent articulatory behaviors exemplify performance breakdowns driven by anxiety-induced cognitive overload, often causing communication difficulties and avoidance. Disruptions in pronunciation and fluency demonstrate the cascading effects of anxiety on L2 speech execution.

Taken together, foreign language anxiety disrupts L2 oral production across all stages of Levelt's (1989) speech production model. At the conceptualization stage, attentional diversion and cognitive overload impair idea selection and message organization. These limitations cascade into the formulation stage, where reduced working memory and compromised executive control hinder lexical access and syntactic encoding. Finally, at the articulation stage, physiological arousal and hyper-monitoring degrade pronunciation, prosody, and overall fluency. Such disruptions interact to produce fragmented, simplified, or disfluent speech, reflecting performance failures driven by cognitive and emotional overload rather than deficits in linguistic competence. Recognizing these psycholinguistic mechanisms can help educators interpret learner behavior accurately and design targeted, supportive interventions.

4. IMPLICATIONS

Building on these observations, it is clear that FLA affects L2 speech across conceptualization, formulation, and articulation stages. These results highlight both pedagogical and cognitive implications, suggesting that effective intervention should target the underlying psycholinguistic mechanisms of anxiety rather than treating it solely as an emotional reaction.

4.1 Supporting Conceptualization: Encouraging Idea Generation in a Low-Threat Environment

At the conceptualization stage, learners generate ideas, select relevant content, and plan their messages. Anxiety at this stage often arises from task ambiguity, fear of peer evaluation, or a perceived lack of ideas. Attentional Control Theory (Eysenck et al., 2007) suggests that anxiety

impairs top-down attentional control, reducing focus on task-relevant information. Hence, pedagogical practices that reduce ambiguity and enhance pre-task planning can effectively mitigate anxiety at this stage.

One effective approach is the provision of brief silent planning time before speaking. When learners are allocated even 1–2 minutes to organize their thoughts—either in L1 or L2—they experience reduced pressure to formulate ideas and produce language simultaneously. In a high school speaking class, students preparing a two-minute speech on environmental protection produced more coherent and content-rich responses when given planning time, exhibiting fewer verbal signs of anxiety (e.g., pauses, fillers).

Visual supports, such as picture prompts, flowcharts, and vocabulary mind maps, further facilitate conceptual retrieval. For instance, before a discussion on holiday traditions, a teacher provided a visual organizer with categories for "holiday," "people," "activities," and "food." Learners who typically hesitated to speak were more willing to contribute when guided by these scaffolds. Such scaffolds help manage cognitive load and facilitate message planning during the early stages of speech production, in line with cognitive load theory (Sweller, van Merriënboer, & Paas, 1998) and working memory constraints (Baddeley, 2007).

Low-stakes peer discussions in small groups can also serve as effective warm-ups for higher-pressure tasks. Engaging first in a less evaluative setting enables learners to build conceptual fluency. In one observed lesson, students discussed the use of smartphones in class in pairs; following this, participation in the subsequent whole-class debate increased markedly. This layered activation promotes idea retrieval and reduces self-monitoring, a common source of anxiety, thereby supporting idea generation in line with Attentional Control Theory (Eysenck et al., 2007).

4.2 Easing Formulation: Scaffolding Lexical and Syntactic Encoding

During the formulation stage, learners select words and construct syntactic structures to convey their message. Anxiety can consume limited working memory, disrupting lexical retrieval and sentence encoding, consistent with working memory constraints (Baddeley, 2007) and evidence that affective factors such as foreign language anxiety interfere with L2 cognitive processing (MacIntyre, 1995; Eysenck et al., 2007). These effects often reduce accuracy and coherence, so pedagogical strategies should aim to lower cognitive load and support fluent lexical and syntactic production.

Sentence frames or structured starters are effective tools. For example, in persuasive speaking tasks, prompts such as "I believe that… because…" or "One reason is that…" guide learners' syntactic choices while activating pre-stored lexical patterns. In classroom trials, students utilizing sentence frames produced longer and more organized arguments compared with unstructured sessions, indicating enhanced formulation fluency.

Lexical pre-teaching further supports formulation. Prior introduction of key topic-related vocabulary, accompanied by opportunities for personalized practice, facilitates retrieval during oral tasks. For a travel-related task, students matched verbs (e.g., hike, explore) with nouns (e.g., mountains, cities) and created example sentences. Pre-task lexical activation can facilitate lexical retrieval and reduce hesitation during oral tasks, helping learners produce more fluent and coherent speech.

Teaching chunked expressions and formulaic sequences also alleviates formulation pressure. Familiar collocations (e.g., "take a break," "make a decision") and speech routines (e.g., "Let me think…," "What I mean is…") provide ready-to-use units for expression, allowing learners to

maintain speech continuity even when uncertain. Integrating writing into speaking preparation is another effective strategy: composing short paragraphs before oral delivery offers a low-stakes rehearsal platform, enhancing syntactic processing and discourse cohesion, consistent with working memory limitations described by Baddeley (2007).

4.3 Enhancing Articulation: Building Confidence and Control in Phonological Output

At the articulation stage, anxiety can interfere with speech production through attentional diversion and hyper-monitoring, potentially affecting fluency, accuracy, and prosodic control (MacIntyre, 1995). Therefore, instructional strategies that enhance motor control and speaking confidence are critical.

Pronunciation-focused warm-ups, including choral reading, minimal pair drills, and shadowing, promote articulatory habituation within supportive, rhythmic contexts. Prior to role-play activities, students engaging in short tongue twister exercises followed by group repetition of key phrases reported feeling better prepared and less nervous. Such repeated practice is widely recognized as a means to automatize L2 phonetic production, thereby reducing the attentional demands of articulation and improving fluency (Derwing & Munro, 2015).

Recording and playback tasks also mitigate articulation anxiety. In university settings, learners who recorded short oral tasks, reviewed their performance privately, and submitted a polished version reported reduced affective load and increased confidence. Breath control and posture training—adapted from public speaking techniques—support stable vocal production. Incorporating brief vocal warm-ups, such as breathing exercises and pitch variation drills, can improve vocal projection and expressiveness in classroom presentations, helping students speak with greater confidence.

Feedback should emphasize strengths and areas for improvement post-task rather than interrupting fluency during speech. Learners reported feeling more comfortable speaking when immediate correction was avoided. By strengthening articulatory habits, building confidence, and reducing physiological tension, learners achieve more fluent and controlled L2 speech, addressing the cascading effects of anxiety on articulation as described in Levelt's (1989) model.

4.4 Integrated Strategies: Mapping Anxiety-Reduction onto the Speech Process

While stage-specific strategies are useful, integrated interventions that address the full speech production chain can yield broader benefits. One such approach is the "low-to-high stress progression" model, where speaking tasks gradually increase in complexity and pressure. A lesson might begin with silent brainstorming (conceptualization), proceed to pair rehearsal with sentence starters (formulation), and conclude with a short presentation (articulation). This scaffolding allows learners to build confidence step by step.

Task repetition is an effective integrated strategy. In one classroom, students completed the same speaking task three times—alone, in pairs, and finally in front of the class—showing gradual improvements in fluency, confidence, and articulation clarity. Such repeated practice may support proceduralization of speech routines, enhancing automaticity and reducing cognitive demands on working memory (Segalowitz, 2010).

Peer support mechanisms, such as "conversation partners" or peer feedback checklists, also reduce the isolating effects of speech anxiety. Learners who feel emotionally supported are more likely to take risks, persevere through disfluencies, and remain engaged in speaking tasks.

Importantly, all of these strategies depend on teacher sensitivity and classroom atmosphere. A supportive environment—where making mistakes is normalized and progress is celebrated—can

transform anxiety from a debilitating barrier into a manageable challenge. Anxiety in L2 speaking is not simply an emotional issue but a cognitive one that interferes with the mechanisms underlying fluent language production. By applying a psycholinguistic lens to teaching practice, educators can design interventions that align with the stages of speech processing: conceptualization, formulation, and articulation. Silent planning, lexical scaffolds, pronunciation warm-ups, and progressive task design are not merely classroom techniques—they are cognitive supports that directly counteract the effects of FLA. When these strategies are grounded in real classroom contexts and informed by theory, they not only alleviate anxiety but also empower learners to speak with greater clarity, control, and confidence.

5. CONCLUSION

This study examined the impacts of foreign language anxiety (FLA) on L2 oral production through a psycholinguistic lens, drawing on Levelt's (1989) speech production model and complementary frameworks such as Working Memory Theory (Baddeley, 2007) and Attentional Control Theory (Eysenck et al., 2007). By analyzing the stages of conceptualization, formulation, and articulation, the findings illustrate how anxiety constrains idea generation, burdens working memory, and disrupts phonological output. Classroom observations from both secondary and tertiary contexts provided authentic evidence of these processes, highlighting how FLA manifests as hesitation, lexical blocking, syntactic reduction, and disrupted articulation.

The central insight of this study is that FLA constitutes not only an affective response but also a cognitive barrier that permeates the speech production system. The disruptions observed at different processing stages underscore that breakdowns in anxious speech should be understood as performance limitations under affective strain, rather than as mere linguistic deficiencies.

Pedagogically, the study underscores the importance of aligning instructional strategies with the stages of speech production. Pre-task planning and visual scaffolds can support conceptualization; sentence frames and lexical priming can ease formulation; and pronunciation-focused warm-ups and breathing techniques can strengthen articulation. These strategies are cognitive in their function and demonstrate that targeted interventions can alleviate the disruptive impact of FLA while fostering learner confidence and fluency.

The implications of this research are twofold. Theoretically, it advances a more integrated understanding of how affective and cognitive factors interact in L2 speech production, contributing to psycholinguistically informed accounts of language learning. Practically, it invites educators to embed anxiety-sensitive practices into speaking pedagogy as a core component rather than a peripheral supplement.

Several limitations should be acknowledged. The analysis relies primarily on qualitative observations and theoretical interpretation, without experimental or statistical validation. Future research could adopt longitudinal or mixed-method designs to test these claims across diverse learner populations and instructional settings. Moreover, individual differences such as personality traits, motivation, and cultural background may moderate the relationship between FLA and speech processing, warranting further investigation.

Despite these limitations, the study contributes to a more nuanced understanding of the cognitive underpinnings of FLA in oral production and points to pedagogical practices that can support learners more effectively. By recognizing the internal constraints behind anxious silence or disrupted utterances, educators can design classroom environments that both reduce anxiety and empower learners to communicate with greater fluency, control, and confidence.

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