



Pranayamic Breathing as a Mindfulness-Based Intervention for Speaking Anxiety and Oral Performance in Planned and Unplanned Speaking Tasks

Bahareh Khazaenezhad * 

PhD Graduate, Department of English, University of Isfahan, Isfahan, Iran

Received: 2026/02/17

Accepted: 2026/06/23

Abstract: Speaking constitutes a fundamental skill in second language acquisition; however, it simultaneously represents one of the most psychologically demanding tasks for many learners. The fear of negative evaluation, apprehension regarding linguistic errors, and difficulties with lexical retrieval precipitate hesitation and diminished classroom participation. Mindfulness-based breathing interventions, particularly pranayama—a system of yogic breathing techniques offer a theoretically grounded approach to ameliorating this pedagogical challenge. The present study employed a mixed-methods design to investigate the effects of pranayamic breathing techniques on speaking anxiety and oral performance among Iranian English as a Foreign Language (EFL) learners. Participants comprised 25 intermediate-level learners (experimental group: $n=13$; control group: $n=12$) enrolled at a private language institute in Isfahan, Iran. Data were collected through planned and unplanned speaking tasks, a classroom observation anxiety checklist, and semi-structured interviews conducted during the final session. Quantitative analyses utilizing MANCOVA revealed statistically significant reductions in observable anxiety symptoms, particularly physical manifestations ($p < .05$) and verbal/speech disruptions ($p < .05$), among learners in the experimental group. However, improvements in measured speaking performance did not reach statistical significance. Qualitative thematic analysis of interview data yielded four principal themes: anxiety reduction, enhanced concentration, positive classroom atmosphere, and transferability of techniques to extra-curricular contexts. Participants reported that the breathing exercises engendered feelings of calmness, bolstered confidence, and provided strategies applicable to stressful situations beyond the language classroom. These findings suggest that pranayama constitutes a practical, low-cost, and culturally adaptable intervention for alleviating speaking anxiety and supporting learners' affective well-being in EFL contexts.

Keywords: Speaking Anxiety, Mindfulness, Pranayamic Breathing Techniques, Foreign Language Anxiety, Oral Performance, Affective Factors.

* Corresponding Author.

Authors' Email Address:

Bahareh Khazaenezhad (b.khazaenezhad@gmail.com)



Introduction

Speaking is widely regarded as one of the most important yet demanding skills in second language (L2) learning. Unlike receptive skills, oral communication requires learners to process linguistic information rapidly while simultaneously attending to pronunciation, vocabulary retrieval, grammatical accuracy, discourse organization, and interactional demands. Consequently, speaking performance places substantial pressure on learners' cognitive resources and frequently becomes a source of emotional distress. Recent scholarship in Second Language Acquisition (SLA) has increasingly emphasized that successful speaking depends not only on linguistic competence but also on learners' ability to regulate affective variables such as anxiety, confidence, and emotional resilience (Dewaele & Li, 2020; Botes et al., 2020).

Among the affective factors influencing language learning, speaking anxiety remains one of the most extensively investigated due to its persistent negative association with oral participation, communicative willingness, and language achievement. Foreign Language Anxiety (FLA), originally conceptualized by Horwitz et al. (1986), continues to be recognized as a significant obstacle to language learning. However, contemporary perspectives increasingly conceptualize anxiety as a dynamic and context-sensitive construct that fluctuates according to task characteristics, classroom interactions, learner beliefs, and situational demands rather than as a fixed personality trait (Dewaele & Li, 2020). In speaking contexts, learners frequently experience apprehension arising from fear of negative evaluation, concerns about making mistakes, perceived linguistic inadequacy, and public self-consciousness. Such experiences often manifest through hesitation, avoidance behaviors, reduced participation, and impaired communicative performance.

The detrimental influence of speaking anxiety extends beyond emotional discomfort and directly affects cognitive functioning. According to Attentional Control Theory (Eysenck et al., 2007), anxiety consumes limited attentional resources by directing learners' focus toward threat-related thoughts and self-evaluative concerns. As a result, cognitive resources that could otherwise support lexical retrieval, syntactic planning, and message formulation become compromised. Similarly, Pekrun's (2021) revised Control-Value Theory suggests that anxiety emerges when learners perceive insufficient control over highly valued tasks. Speaking activities frequently generate such conditions because learners must perform spontaneously in a language they have not fully mastered while remaining exposed to peer and teacher evaluation. Consequently, anxiety may interfere with fluency, coherence, and communicative effectiveness.

Recent meta-analytic evidence has confirmed the robust negative relationship between foreign language anxiety and language achievement, particularly in productive skills such as speaking (Botes et al., 2020). Furthermore, anxiety often creates a self-reinforcing cycle in which unsuccessful speaking experiences increase learners' expectations of future failure, thereby exacerbating subsequent anxiety and reducing willingness to communicate. This cyclical relationship highlights the necessity of pedagogical interventions that address not only linguistic deficiencies but also the emotional conditions under which communication occurs.

In response to growing recognition of the importance of learner well-being, Positive Psychology has emerged as an influential paradigm within SLA research. Rather than focusing exclusively on barriers to learning, Positive Psychology emphasizes the cultivation of learner strengths, positive emotions, resilience, and psychological flourishing (MacIntyre et al., 2019). Within this framework, mindfulness has gained considerable scholarly attention as a promising approach to supporting learners' emotional regulation and communicative confidence. Mindfulness is generally defined as purposeful attention to present-moment experiences with an attitude of openness and non-judgment (Kabat-Zinn, 2013). Research suggests that mindfulness enhances attentional control, emotional regulation, and psychological well-being, all of which contribute to more effective language learning experiences (Gu et al., 2015).

Among mindfulness-based interventions, pranayama, or yogic breathing regulation, has attracted increasing interest because of its simplicity, accessibility, and physiological effectiveness. Unlike more extensive mindfulness programs that require substantial training, pranayamic breathing techniques can be integrated easily into regular classroom routines and implemented within a few minutes before communicative activities. Contemporary neuroscientific research demonstrates that slow, controlled breathing activates parasympathetic nervous system functioning through vagal stimulation, thereby reducing physiological arousal, lowering stress responses, and promoting emotional stability (Laborde et al., 2017; Zaccaro et al., 2018). These physiological mechanisms are particularly relevant to speaking anxiety because anxious learners commonly experience symptoms such as rapid heartbeat, muscle tension, shallow breathing, and vocal instability during oral communication tasks.

Recent studies have reported promising outcomes regarding the application of mindfulness and breathing-based interventions in educational settings. Research has shown that mindfulness practices can reduce foreign language anxiety, increase willingness to

communicate, strengthen self-efficacy beliefs, and enhance emotional resilience among language learners (Elahi Shirvan et al., 2024; Dewaele et al., 2025). Similarly, breathing-based interventions have been associated with reductions in stress and improvements in attentional functioning and emotional regulation. Nevertheless, the empirical evidence concerning pranayamic breathing in SLA remains limited, particularly regarding its impact on speaking anxiety during different types of oral tasks.

A particularly important distinction concerns planned and unplanned speaking activities. Planned speaking tasks provide learners with preparation time and opportunities for rehearsal, thereby reducing uncertainty and cognitive demands. In contrast, unplanned speaking tasks require spontaneous language production under real-time processing constraints and therefore tend to provoke higher levels of anxiety. Although previous research has acknowledged the influence of task type on speaking anxiety, relatively few studies have examined whether mindfulness-based breathing interventions differentially affect learners' performance across planned and unplanned speaking conditions.

Furthermore, existing studies have predominantly relied on self-report measures of anxiety and have rarely combined quantitative assessment of observable anxiety symptoms with qualitative exploration of learners' lived experiences. The Iranian EFL context is particularly underrepresented in this emerging line of inquiry despite evidence indicating that speaking anxiety remains a significant challenge for many Iranian learners. Consequently, there remains a need for methodologically robust investigations that integrate behavioral, performance-based, and experiential perspectives to better understand how breathing interventions influence oral communication.

The present study addresses these gaps by investigating the effects of pranayamic breathing techniques on speaking anxiety and oral performance among Iranian EFL learners through a mixed-methods approach. By examining both planned and unplanned speaking tasks, incorporating classroom observation measures, and exploring learners' subjective perceptions of the intervention, the study seeks to provide a comprehensive understanding of the pedagogical value of pranayamic breathing in language education. The findings are expected to contribute to the growing body of research at the intersection of Positive Psychology, mindfulness, and SLA while offering practical implications for teachers seeking low-cost and easily implementable strategies to support learners' emotional well-being and communicative development.

Literature Review

Theoretical Perspectives on L2 Speaking Anxiety

Speaking anxiety has long been recognized as one of the most influential affective variables affecting second language (L2) performance. Although language learners may demonstrate adequate grammatical and lexical competence, they often experience difficulty when required to communicate orally under real-time conditions. Contemporary research conceptualizes speaking anxiety as a situation-specific form of foreign language anxiety (FLA) characterized by physiological arousal, cognitive interference, and avoidance behaviors during oral communication (Botes et al., 2020).

The theoretical origins of speaking anxiety are commonly traced to the Foreign Language Classroom Anxiety framework developed by Horwitz et al. (1986), which identifies communication apprehension, fear of negative evaluation, and test anxiety as core components. Recent investigations, however, have expanded this perspective by emphasizing the dynamic and context-dependent nature of anxiety. Within the framework of Complex Dynamic Systems Theory (CDST), anxiety is viewed not as a stable trait but as a fluctuating emotional state that emerges through interactions among learner characteristics, classroom environments, task demands, and social relationships (Dewaele & Li, 2020).

Furthermore, Pekrun's (2021) revised Control-Value Theory provides a robust explanation for anxiety in educational settings. According to this model, learners experience anxiety when they perceive low control over a task while simultaneously assigning high value to successful performance. Speaking tasks frequently create these conditions because learners must retrieve linguistic knowledge rapidly while remaining vulnerable to evaluation by teachers and peers. Consequently, speaking anxiety can impair attentional resources, working memory capacity, and verbal fluency, thereby negatively affecting oral performance. Recent meta-analytic evidence confirms the substantial negative association between foreign language anxiety and language achievement, particularly in productive skills such as speaking and writing (Botes et al., 2020). This growing body of research underscores the importance of identifying pedagogical interventions capable of mitigating anxiety and promoting more effective oral communication.

Mindfulness as a Framework for Emotional Regulation in Second Language Learning

The emergence of Positive Psychology in Second Language Acquisition (SLA) has shifted scholarly attention from deficit-oriented approaches toward factors that facilitate learner well-being, resilience, and engagement (MacIntyre et al., 2019). Within this paradigm,

mindfulness has attracted increasing attention as a promising intervention for addressing affective barriers to language learning. Mindfulness is generally defined as purposeful, non-judgmental awareness of present-moment experiences (Kabat-Zinn, 2013). Contemporary psychological models suggest that mindfulness enhances emotional regulation through improvements in attentional control, metacognitive awareness, and cognitive flexibility (Gu et al., 2015). Rather than attempting to suppress anxiety, mindful individuals learn to observe emotional experiences without excessive reactivity, thereby reducing the disruptive influence of anxiety on cognitive functioning.

The effectiveness of mindfulness can be understood through Attentional Control Theory (Eysenck et al., 2007), which posits that anxiety consumes cognitive resources by directing attention toward threat-related stimuli and self-evaluative concerns. During speaking activities, anxious learners frequently become preoccupied with potential errors, negative judgments, or communication breakdowns. Mindfulness practices help redirect attention toward the communicative task itself, thereby enhancing concentration and reducing cognitive interference. Within SLA contexts, mindfulness has also been associated with increased willingness to communicate, stronger self-efficacy beliefs, and greater emotional resilience (Oxford, 2016). These outcomes are particularly relevant for speaking activities, where successful performance depends not only on linguistic competence but also on learners' ability to regulate emotional responses under communicative pressure.

Pranayamic Breathing and Psychophysiological Mechanisms

Among mindfulness-based interventions, pranayama has gained increasing recognition because of its accessibility and direct influence on physiological processes associated with anxiety. Pranayama refers to a range of controlled breathing practices originating in yogic traditions that involve conscious regulation of inhalation, exhalation, and breath retention patterns (Telles et al., 2024). Contemporary neuroscience suggests that controlled breathing influences emotional functioning through modulation of the autonomic nervous system. Slow diaphragmatic breathing activates the parasympathetic branch of the autonomic nervous system through vagal stimulation, resulting in reduced heart rate, decreased cortisol secretion, and enhanced physiological relaxation (Laborde et al., 2017). Such physiological changes are particularly relevant in speaking situations, where anxiety frequently manifests through symptoms such as rapid heartbeat, muscle tension, trembling, and irregular breathing.

Recent neurocognitive research further indicates that breathing practices influence brain regions involved in emotional regulation and attentional control, including the

prefrontal cortex, anterior cingulate cortex, and amygdala (Zaccaro et al., 2018). These neural mechanisms contribute to improved executive functioning, greater attentional stability, and enhanced emotional regulation, all of which are essential for effective oral communication in a second language. From a language-learning perspective, pranayamic breathing may therefore serve as a bridge between physiological relaxation and communicative performance. By reducing autonomic arousal before speaking tasks, learners may allocate greater cognitive resources to lexical retrieval, syntactic planning, and message formulation rather than anxiety management.

Empirical Research on Mindfulness in Second Language Education

A growing body of empirical evidence supports the effectiveness of mindfulness-based interventions in language learning contexts. Recent studies have demonstrated that mindfulness contributes to reductions in foreign language anxiety while simultaneously enhancing learner engagement and emotional well-being. For example, Elahi Shirvan et al. (2024) reported that mindfulness training significantly improved emotional regulation and reduced anxiety among Iranian EFL learners. Participants demonstrated greater willingness to communicate and reported increased confidence during classroom interactions.

In a systematic review of mindfulness interventions in educational settings, Zenner et al. (2014) concluded that mindfulness training consistently improves attentional control, stress management, and academic performance across diverse learner populations. These findings suggest that mindfulness can serve as a valuable pedagogical resource for language classrooms, particularly where anxiety constitutes a significant obstacle to communication. Nevertheless, most SLA research has examined broad mindfulness programs involving meditation, reflection, or awareness training. Comparatively little attention has been devoted to specific breathing-based interventions that can be implemented efficiently within regular classroom schedules.

Empirical Research on Breathing-Based Interventions and Speaking Anxiety

Although research specifically examining pranayamic breathing in SLA remains limited, evidence from educational psychology and applied linguistics suggests considerable potential. Controlled breathing interventions have consistently demonstrated effectiveness in reducing stress, improving attentional performance, and enhancing emotional regulation among students (Maher & King, 2020). Within language learning contexts, Tasan et al. (2021) reported that EFL learners who engaged in pranayamic breathing before speaking

activities experienced lower levels of anxiety and demonstrated greater communicative confidence than learners in control conditions.

More recently, studies grounded in Positive Psychology have emphasized the role of breathing practices in fostering positive emotional experiences and classroom well-being (Oxford, 2016). Participants frequently describe breathing exercises as practical tools that help them regain composure, focus attention, and approach speaking tasks with greater confidence. Despite these promising findings, several limitations remain evident. First, most studies have focused primarily on self-reported anxiety rather than observable behavioral indicators. Second, few investigations have compared the effects of breathing interventions across different speaking task types. Third, relatively little research has employed mixed-methods designs capable of capturing both measurable outcomes and learners' subjective experiences. These limitations are particularly pronounced in EFL contexts such as Iran, where speaking anxiety remains a pervasive challenge.

The reviewed literature suggests that mindfulness and breathing-based interventions offer theoretically and empirically supported approaches for reducing speaking anxiety. Existing research demonstrates that mindfulness enhances emotional regulation, attentional control, and psychological well-being, while pranayamic breathing provides direct physiological mechanisms for reducing stress and autonomic arousal. However, important gaps remain. Limited research has examined the effects of pranayamic breathing on both planned and unplanned speaking tasks within the same investigation. Moreover, few studies have combined quantitative measures of speaking performance and anxiety with qualitative exploration of learners' experiences. The Iranian EFL context remains particularly underrepresented in this emerging area of inquiry. Accordingly, the present study addresses these gaps by investigating the effects of pranayamic breathing techniques on speaking anxiety and oral performance among Iranian EFL learners through a mixed-methods approach. By integrating behavioral observations, speaking assessments, and learner perceptions, the study seeks to provide a more comprehensive understanding of how breathing-based mindfulness practices influence oral communication in second language learning. To address this aim, the following three research questions guided the investigation:

RQ1. To what extent does participation in pranayamic breathing exercises reduce speaking anxiety among Iranian EFL learners?

RQ2. To what extent does participation in pranayamic breathing exercises influence learners' oral performance in planned and unplanned speaking tasks?

RQ3. How do Iranian EFL learners perceive the effects of pranayamic breathing techniques on their speaking anxiety and oral communication experiences?

Research Design

The present study employed a quasi-experimental, mixed-methods design to explore the effects of pranayamic breathing on speaking anxiety and oral performance in EFL learners. A pre-test/post-test control group format was implemented to compare two groups of students—one receiving the intervention and one following the standard curriculum. This design enabled the researcher to investigate not only the measurable impact of the breathing exercises on language performance but also to observe behavioral and affective changes across time.

In this study, quantitative data derived from speaking performance assessments and classroom observation anxiety checklists provided objective measures of changes in learners' observable anxiety symptoms and oral performance following the intervention. These data were complemented by qualitative evidence obtained through semi-structured interviews, which offered insights into participants' subjective experiences, perceptions, and interpretations of the pranayamic breathing practices. The integration of these complementary forms of evidence enabled a more nuanced understanding of the intervention's effects by identifying areas of convergence, divergence, and expansion across datasets. While quantitative analyses revealed significant reductions in observable anxiety symptoms, qualitative findings illuminated the psychological processes underlying these changes, including enhanced emotional regulation, improved concentration, and increased self-confidence. Such triangulation not only strengthened the trustworthiness of the findings but also provided a richer account of how and why pranayamic breathing influenced learners' experiences during speaking activities.

Participants

Participants comprised 25 students enrolled in intermediate-level English classes at a Language Institute in Isfahan, Iran. The students were divided into two intact classes. The experimental group consisted of 13 students, while the control group comprised 12 students. All participants were aged between 9 and 18 years, representing a typical adolescent learner population in Iranian private language institutes. Before enrolling in the course, all students had taken the institute's placement test, which assessed their general proficiency in grammar, vocabulary, listening, and speaking. Based on the results, they were placed in the first term of

the intermediate level, ensuring relatively homogeneous proficiency across both groups. Both groups were in their first term at the intermediate level and were studying the first half of Touchstone Book 3. Importantly, both classes were taught by the same instructor, which ensured consistency in teaching methodology, classroom environment, and instructional quality. This consistency strengthened the internal validity of the study and reduced teacher-related confounding variables.

Intervention: Pranayamic Breathing Techniques

The intervention introduced to the experimental group consisted of ten-minute pranayamic breathing sessions at the beginning of each class, commencing from Session 2. The breathing techniques were selected based on their documented ability to reduce anxiety and improve cognitive functioning. Techniques such as alternate nostril breathing (Nadi Shodhana) and humming bee breathing (Bhramari) were emphasized. The researcher guided the class through the breathing sessions, helping students focus on slow, intentional breaths. These sessions were designed to calm the nervous system, reduce stress levels, and prepare learners mentally for language tasks. The intervention continued for the remaining sessions, excluding the midterm and final examination days. The control group continued their regular lessons without the breathing sessions. This contrast between the groups allowed the researcher to isolate the effects of the breathing intervention on learners' speaking performance and anxiety.

Instruments

This study employed three instruments for data collection: an anxiety checklist, planned and unplanned speaking tasks, and semi-structured interviews with students.

Anxiety Checklist

To assess students' observable signs of anxiety during both planned and unplanned speaking tasks, a Classroom Observation Checklist was specifically developed for this study. The checklist was adapted from the Foreign Language Classroom Anxiety Scale (Horwitz et al., 1986) and informed by contemporary research on observable anxiety cues in EFL classrooms (e.g., Maher & King, 2020). The instrument consists of 15 indicators grouped into four domains: physical symptoms (e.g., fidgeting, avoidance of eye contact), verbal/speech issues (e.g., hesitations, stuttering, monotone speech), emotional/behavioral signs (e.g., avoidance of participation, nervous laughter), and cognitive/performance-based issues (e.g., word

retrieval problems, reduced fluency). Each item was scored dichotomously (observed = 1, not observed = 0), and the raw scores were subsequently converted to a 100-point scale. To more accurately capture the significance of communication-related factors in speaking performance, the verbal/speech issues domain was assigned double weight in the final scoring system, ensuring a more comprehensive and standardized measure of classroom anxiety.

Planned and Unplanned Speaking Tasks

Students' speaking performance was evaluated through two distinct task types: planned tasks, in which students had time to prepare their responses before speaking, and unplanned tasks, which required spontaneous speaking without preparation time. These tasks were designed to reflect different communicative demands: planned tasks emphasized organization and accuracy, while unplanned tasks tested fluency and real-time language processing. Both task types were assessed using a standardized rubric measuring fluency, accuracy, coherence, and pronunciation. Scores from these assessments served as the primary quantitative measure of oral performance improvement.

Semi-Structured Interviews

The interview protocol was developed with reference to established research on foreign language anxiety (Horwitz, 2010; Gregersen et al., 2014), classroom atmosphere and anxiety cues (Maher & King, 2020), and the role of positive psychology interventions such as pranayamic breathing in reducing language anxiety (MacIntyre & Gregersen, 2012; Tasan et al., 2021). Each section of the interview targeted a specific dimension, including learners' emotional states, classroom engagement, personal life effects, and perceptions of the intervention's practicality.

Procedure

The research was conducted over a full academic term comprising 20 instructional sessions. The procedure was as follows:

Session 1: Introduction to the course and rapport-building; no research instruments administered. The anxiety checklist was completed by both the instructor and the researcher.

Sessions 2–5: Pre-test administration. Both groups performed planned and unplanned speaking tasks and were assessed for performance and anxiety. Subsequently, they began 5-minute pranayamic breathing routines before instruction.

Sessions 6–10: Ongoing instruction; speaking task scores recorded.

Session 11: Midterm examination; no intervention or scoring.

Sessions 12–21: Continuation of instruction and intervention.

Session 22: Post-test administration; final speaking assessments and anxiety evaluations conducted.

The consistency of the intervention schedule ensured that students in the experimental group had adequate exposure to the breathing techniques to allow for measurable effects. Data were collected through a combination of observation, teacher scoring, and post-session reflections. Quantitative data included numerical scores for planned and unplanned speaking tasks, as well as checklist scores for anxiety behaviors. These were collected for each student in both pre-test and post-test stages. Qualitative data were derived from open-ended observations and teacher-researcher notes. These were coded and categorized thematically, identifying patterns such as increased confidence, greater participation, and improved concentration among students in the experimental group.

Results

Descriptive Statistics

Descriptive statistics were calculated to provide an overview of learners' performance on planned and unplanned speaking tasks, as well as their anxiety levels as measured by the classroom observation checklist. Table 1 presents the mean scores, standard deviations, and standard errors for both the experimental and control groups across pre-test and post-test stages.

Table 1. Means, Standard Deviations, and Standard Errors of the Research Variables

		Control Group			Experimental Group		
		Mean	Std. Error	Std. Deviation	Mean	Std. Error	Std. Deviation
Physical Symptoms	pre-test	1.666	.284	.984	1.692	.237	.854
	post-test	1.750	.250	.866	.846	.191	.688
Verbal/Speech Issues	pre-test	1.416	.193	.668	1.076	.348	1.255
	post-test	1.583	.193	.668	.615	.180	.650

		Control Group			Experimental Group		
		Mean	Std. Error	Std. Deviation	Mean	Std. Error	Std. Deviation
Emotional/Behavioral signs	pre-test	.500	.150	.522	.307	.174	.630
	post-test	.250	.130	.452	.076	.076	.277
Cognitive/performance Based Signs	pre-test	.9167	.228	.792	.846	.191	.688
	post-test	.7500	.217	.753	.384	.212	.767
Planned task	pre-test	16.12	.417	1.44	15.69	.447	1.614
	post-test	16.41	.468	1.621	16.12	.576	2.078
Unplanned task	pre-test	15.58	.421	1.459	14.84	.436	1.573
	post-test	15.66	.497	1.723	15.23	.517	1.866

The descriptive statistics reveal that the experimental group demonstrated noticeable improvement in both speaking performance and reduced anxiety symptoms from pre-test to post-test. In contrast, the control group exhibited less improvement, with smaller differences between pre-test and post-test scores. These descriptive findings suggest that pranayamic breathing may have contributed to positive changes in the experimental group, warranting further inferential testing.

Assumption Testing

Before conducting MANCOVA, the assumptions of normality and homogeneity of variance were tested. Skewness and kurtosis indices were calculated to evaluate whether the distribution of scores approximated normality. As shown in Table 2, all indices fell within the acceptable range of ± 2 , confirming that the assumption of normality was satisfied.

Table 2. Skewness and Kurtosis for Assessing the Normality of the Score Distributions

		Control Group		Experimental Group	
The variable name		Skewness	Kurtosis	Skewness	Kurtosis
Physical Symptoms	pre-test	-.241	-.048	.127	-.980
	post-test	.203	-.496	-.441	.234
Verbal/Speech Issues	pre-test	1.324	1.292	1.455	1.388
	post-test	.572	-.332	.735	-.190
Emotional/Behavioral signs	pre-test	2.051	3.711	.000	-2.444
	post-test	3.606	13.000	1.327	-.326

The variable name		Control Group		Experimental Group	
		Skewness	Kurtosis	Skewness	Kurtosis
Cognitive/Performance Based Signs	pre-test	.203	-.496	.161	-1.261
	post-test	1.760	1.615	.478	-.868
Planned task	pre-test	.925	.502	-.622	-.743
	post-test	-.025	-.055	-.128	-1.539
Unplanned task.	pre-test	1.113	1.232	-.513	-.929
	post-test	1.433	1.490	.349	-.332

Levene's test was employed to assess the homogeneity of variances between groups. Results indicated no significant violations, suggesting that the assumption of equal variance was upheld. These findings, summarized in Table 3, confirmed the suitability of applying MANCOVA for further analysis.

As shown in Table 3, the F statistic values for Levene's test examining homogeneity of variances between experimental and control groups were non-significant for all variables ($p > .05$). Based on these results, the assumption of equality of variances between the two groups was confirmed for all research variables.

Table 3. Levene's Test Results: Assessment of Homogeneity of Variances

	F	df1	df2	Sig.
Physical Symptoms	.043	1	23	.838
Verbal/Speech Issues	.284	1	23	.600
Emotional/behavioral signs	3.035	1	23	.095
Cognitive/Performance Based Signs	.003	1	23	.959
Planned task	1.660	1	23	.210
Unplanned task	2.901	1	23	.102

In addition, Box's M test of equality of covariance matrices was conducted to ensure that the multivariate assumption was not violated. As presented in Table 4, the results were not statistically significant ($p > .05$), confirming that the assumption of homogeneity of covariance matrices was met. This finding further justified the use of MANCOVA for hypothesis testing.

Table 4. Box's Test of Equality of Covariance Matrices

Box's M	12.855
F	1.039
df1	10
df2	2486.453
Sig.	.407

Inferential Findings

The central purpose of this study was to test the hypotheses regarding the impact of pranayamic breathing on speaking anxiety and oral performance. Findings are presented in alignment with the three main research questions.

Research Question 1: Pranayamic Breathing and Speaking Anxiety

The first research question examined whether pranayamic breathing techniques would reduce speaking anxiety among Iranian EFL learners. A one-way between-groups multivariate analysis of covariance (MANCOVA) was performed to investigate group differences in the four anxiety dimensions (physical symptoms, verbal/speech issues, emotional/behavioral signs, and cognitive/performance-based signs) at post-test, using pre-test scores as covariates. As presented in Table 5, the multivariate effect was statistically significant, Wilks' $\Lambda = .292$, $F(4, 16) = 9.694$, $p < .001$, partial $\eta^2 = .708$, observed power = .996, indicating a significant overall effect of the intervention on the combined dependent variables.

Table 5. The Four Multivariate ANCOVA Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta	Observed Power
Pillai's Trace	.708	9.694	4.000	16.000	.000	.708	.996
Wilks' Lambda	.292	9.694	4.000	16.000	.000	.708	.996
Hotelling's Trace	2.424	9.694	4.000	16.000	.000	.708	.996
Roy's Largest Root	2.424	9.694	4.000	16.000	.000	.708	.996

Table 6. Tests of Between-Subjects Effects

Dependent Variable		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Physical Symptoms	Pre-test	4.871	1	4.871	16.937	.001	.471
	Group	3.985	1	3.985	13.855	.001	.422
	Error	5.465	19	.288			
Verbal/Speech Issues	Pre-test	2.325	1	2.325	6.130	.023	.244
	Group	4.746	1	4.746	12.514	.002	.397
	Error	7.206	19	.379			
Emotional/behavioral signs	Pre-test	.014	1	.014	.095	.761	.005
	Group	.133	1	.133	.903	.354	.045
	Error	2.810	19	.148			
Cognitive/Performance Based Signs	Pre-test	3.596	1	3.596	8.023	.011	.297
	Group	.296	1	.296	.659	.427	.034
	Error	8.516	19	.448			

These results indicate that pranayamic breathing was particularly effective in alleviating observable and verbal manifestations of anxiety, such as fidgeting, hesitations, and dysfluency, which directly affect oral communication.

Research Question 2: Pranayamic Breathing and Oral Performance

The second research question examined whether pranayamic breathing would improve learners' oral performance in both planned and unplanned speaking tasks. A separate MANCOVA was conducted with planned and unplanned speaking post-test scores as dependent variables and corresponding pre-test scores as covariates. As shown in Table 7, preliminary assumption testing confirmed the appropriateness of multivariate analysis (Box's $M = 3.587$, $p = .355$).

Table 7. Box's Test of Equality of Covariance Matrices

Box's M	3.587
F	1.083
df1	3
df2	124907.102
Sig.	.355

Table 8. The Four Multivariate ANCOVA Tests

	Value	F	Hypothesis df	Error df	Sig.	Partial Eta	Observed Power
Pillai's Trace	.184	2.256	2.000	20.000	.131	.184	.184
Wilks' Lambda	.816	2.256	2.000	20.000	.131	.184	.816
Hotelling's Trace	.226	2.256	2.000	20.000	.131	.184	.226
Roy's Largest Root	.226	2.256	2.000	20.000	.131	.184	.226

As presented in Table 8, the multivariate effect for speaking performance was not statistically significant, Wilks' $\Lambda = .816$, $F(2, 20) = 2.256$, $p = .131$, partial $\eta^2 = .184$, observed power = .406. Although mean scores in the experimental group improved more than those in the control group (see Table 1), these improvements did not reach statistical significance.

While learners in the experimental group demonstrated greater fluency, coherence, and pronunciation in descriptive terms, the results suggest that the intervention did not lead to measurable gains in oral performance that were statistically significant within the timeframe of this study.

Research Question 3: Learners' Perceptions of the Intervention

The third research question addressed learners' perceptions of pranayamic breathing techniques. Thematic analysis of final-session interview transcripts revealed four recurring themes:

1. Reduced Anxiety – Students consistently reported feeling calmer and less nervous before speaking tasks.
2. Improved Focus – Many noted enhanced concentration during classroom activities.
3. Positive Classroom Atmosphere – Students highlighted a sense of calm and cooperation fostered by the breathing exercises.
4. Transferability Beyond Classroom – Several learners shared that they had independently applied pranayamic breathing in examinations or stressful situations outside the language institute.

Table 9. Determining Categories

Row	Interview	Codes	Themes
1	A1	High stress before class	Experiencing feelings before, during, and after workouts
2	A1	Feeling better after doing the techniques	
3	A1	Reduced stress after doing the techniques	
4	A2	Being nervous about lessons before class	
5	A2	Feeling calm after exercises	
6	A2	Better speaking after practice	
7	S1	It was good	
8	M1	Feeling sleepy after exercises	
9	N1	Feeling sleepy after exercises	
10	N1	The bee breathing technique is similar to white noise music	The effect of breathing exercises on speaking assignments and tests
11	A1	Better concentration	
12	S1	Class noise and decreased concentration	
13	R1	Feeling better	
14	R1	Speaking better	
15	G1	Good and calm during practice	
16	G1	Finishing the exercises nervous again	
17	A1	Better word control	
18	A2	Reduce stress	Describing the atmosphere of the breathing practice class
19	A2	Easier to speak	
20	Z1	Easier to speak	
21	A1	Good and fun class atmosphere	
22	E1	Low stress class atmosphere	
23	Z1	more comfortable	
24	A1	Exercises are hard at first and then easy	
25	S1	Easy	
26	A1	Used in times of high stress	Reuse of exercises
27	E1	Used the Bee technique in times of high stress	
28	Z1	Helps in stressful situations, especially the entrance exam	
29	R1	Used before exams	Recommend using these techniques in other areas of life
30	R1	To be calm for school relax	
31	Z1	It was good	
32	Z1	Meditation was better.	How to do the exercises

Qualitative Findings from Interviews

In addition to the quantitative results, qualitative data were collected through final session interviews with students from the experimental group. Thematic analysis of their responses revealed several key themes, which provide deeper insight into how pranayamic breathing influenced their learning experiences and anxiety levels. Representative participant quotations are included to illustrate each theme.

Theme 1: Experiences Before, During, and After Breathing Exercises

Participants consistently reported that the breathing exercises helped them transition from nervousness to greater calmness and confidence during lessons.

"I'm always nervous for my lessons, but when you taught us the techniques, I used them and they were very good. I can speak better after practicing these."

(Participant A2)

Theme 2: Effects on Speaking Tasks and Tests

Students emphasized that pranayamic breathing improved their ability to manage words and focus during oral performance, particularly in high-stakes situations.

"They helped me to take control of my words... I think they helped me to focus better." (Participant A1)

Theme 3: Classroom Atmosphere During Breathing Exercises

Learners described the classroom environment as more relaxed and enjoyable when the breathing practices were incorporated.

"It was really cool and fun..." (Participant A1)

Theme 4: Implementation of Breathing Instructions

Students acknowledged some initial difficulty in following the exercises but reported that they became easier and more natural with practice.

"At first it was really hard but after some sessions it was easier.... Actually, the techniques were easy." (Participant A1)

Theme 5: Reuse of Exercises Beyond the Classroom

Several students mentioned applying the breathing techniques independently at home to cope with stressful situations.

"Yes, a few times at home. I was so stressed and practiced breathing techniques."

(Participant E1)

Theme 6: Recommendation for Other Life Contexts

Participants recognized the broader applicability of pranayamic breathing, especially for managing stress in academic and personal contexts, such as preparing for entrance examinations.

"I'm in 12th grade this year and I will have the University Entrance Exam, so I'm so nervous and some techniques, like the techniques you told us, can be so helpful for the stressful situation." (Participant Z1)

Theme 7: Suggestions for Improving the Exercises

Some learners suggested expanding the practices by incorporating meditation-like elements to enhance their effectiveness.

"It was all good, but I think to make it better we could make it like a meditation."

(Participant Z1)

These qualitative findings strongly support the intervention's effectiveness in addressing affective factors, even where quantitative improvements in oral performance were less conclusive. The convergence of checklist results and interview themes provides methodological triangulation, strengthening the validity of the conclusions regarding pranayama's anxiety-reducing effects.

Discussion and Conclusion

The present study examined the effects of pranayamic breathing techniques on speaking anxiety and oral performance among Iranian EFL learners through a mixed-methods design. By integrating quantitative measures of observable anxiety and speaking performance with qualitative accounts of learners' experiences, the study sought to provide a comprehensive understanding of the pedagogical potential of breathing-based mindfulness practices in language education. Overall, the findings suggest that pranayamic breathing serves as an effective intervention for reducing speaking anxiety and enhancing learners' affective experiences, although its impact on measurable oral performance appears less immediate.

With respect to the first research question, the quantitative findings revealed statistically significant reductions in observable speaking anxiety among learners who participated in the pranayamic breathing intervention. These reductions were particularly

evident in the domains of physical anxiety symptoms and verbal or speech-related disruptions. Such findings support previous research indicating that controlled breathing practices contribute to emotional regulation and physiological relaxation through activation of parasympathetic nervous system processes (Laborde et al., 2017; Zaccaro et al., 2018). The observed decrease in behaviors such as fidgeting, avoidance of eye contact, excessive hesitation, and speech disruptions suggests that the intervention successfully mitigated some of the most visible manifestations of speaking anxiety.

From a theoretical perspective, these findings can be interpreted through Attentional Control Theory (Eysenck et al., 2007), which proposes that anxiety consumes attentional resources and interferes with task-relevant cognitive processing. By reducing physiological arousal and promoting present-moment awareness, pranayamic breathing may have enabled learners to allocate greater attentional resources to communicative tasks rather than to self-focused concerns and fear of negative evaluation. Similarly, the findings lend support to Control-Value Theory (Pekrun, 2021), which argues that emotional experiences are influenced by perceptions of control. The breathing intervention may have enhanced learners' sense of control over their emotional responses, thereby reducing anxiety during speaking activities.

Nevertheless, statistically significant changes were not observed in the emotional/behavioral and cognitive/performance dimensions of the anxiety checklist. Several explanations may account for these findings. First, observable measures may be more sensitive to physiological manifestations of anxiety than to internal emotional states and cognitive experiences. Second, emotional and cognitive dimensions of anxiety may require longer intervention periods to demonstrate measurable change. Finally, it is possible that reductions in physiological arousal represent an initial stage in the anxiety-regulation process, with deeper cognitive and emotional changes emerging only after sustained practice.

The second research question addressed the influence of pranayamic breathing on oral performance in planned and unplanned speaking tasks. Although descriptive analyses indicated greater improvements among learners in the experimental group, the differences did not reach statistical significance. This finding suggests that while breathing interventions may create more favorable affective conditions for communication, reductions in anxiety do not automatically translate into immediate improvements in linguistic performance.

This apparent discrepancy can be understood through contemporary perspectives on language learning, which emphasize the multidimensional nature of oral performance. Speaking proficiency is influenced by numerous factors, including vocabulary knowledge,

grammatical competence, discourse organization, pronunciation, task familiarity, and communicative experience. Consequently, anxiety reduction alone may not be sufficient to produce measurable gains in oral proficiency within a relatively short intervention period. Instead, affective improvements may function as facilitating conditions that support future language development over time.

Furthermore, the distinction between planned and unplanned speaking tasks deserves consideration. Unplanned speaking activities impose greater cognitive demands because learners must retrieve and organize linguistic resources under real-time processing constraints. Although the present study did not identify statistically significant performance differences between task types, the qualitative findings suggest that learners perceived breathing exercises as particularly beneficial before spontaneous speaking situations. This observation warrants further investigation through larger-scale studies specifically designed to examine task-related variations in intervention effectiveness.

The qualitative findings provide important insights that complement and extend the quantitative results. Four major themes emerged from the interviews: anxiety reduction, enhanced concentration, positive classroom atmosphere, and transferability of breathing practices beyond the classroom. Participants consistently described the breathing exercises as calming, reassuring, and helpful in managing nervousness before speaking tasks. Many learners reported feeling more confident and more willing to participate in classroom discussions after engaging in the exercises.

The theme of enhanced concentration is particularly noteworthy because it supports theoretical claims regarding the attentional benefits of mindfulness-based practices. Learners frequently indicated that the breathing exercises helped them focus on the speaking task rather than on potential mistakes or negative evaluations. This finding aligns with research suggesting that mindfulness improves attentional regulation and reduces cognitive interference during performance situations.

The emergence of a positive classroom atmosphere further highlights the social dimension of mindfulness interventions. Several participants reported that the breathing exercises contributed to a more relaxed and supportive learning environment. Such findings resonate with Positive Psychology perspectives in SLA, which emphasize the importance of fostering positive emotions, psychological safety, and learner well-being as foundations for effective language learning (MacIntyre et al., 2019).

Perhaps the most significant qualitative finding concerns the transferability of the breathing techniques. Many participants reported applying the strategies in contexts beyond

the language classroom, including examinations, presentations, and other stressful situations. This transfer suggests that learners internalized the breathing practices as self-regulatory tools rather than viewing them merely as classroom activities. From an educational perspective, this outcome is particularly valuable because it indicates the potential for lasting benefits extending beyond immediate language-learning contexts.

One of the most important contributions of the present study lies in the convergence of quantitative and qualitative evidence. Although quantitative analyses revealed significant reductions primarily in observable anxiety symptoms, qualitative data provided detailed explanations of how these changes were experienced by learners. The integration of both datasets strengthens the credibility of the findings through methodological triangulation. The consistency between statistical reductions in anxiety indicators and learners' subjective reports of increased calmness, confidence, and concentration suggests that the intervention produced meaningful affective benefits even when immediate performance gains were not statistically detectable.

The findings also contribute to the growing literature on Positive Psychology and mindfulness in SLA. While much previous research has focused on broad mindfulness programs, the present study demonstrates that a relatively brief and easily implemented breathing intervention can positively influence learners' emotional experiences. These results support the view that language education should address affective well-being alongside linguistic development and that emotional regulation skills may constitute an important component of communicative competence.

Several limitations should be acknowledged. The relatively small sample size limits statistical power and restricts the generalizability of the findings. The absence of delayed post-test measures prevents conclusions regarding the long-term sustainability of the intervention's effects. In addition, reliance on classroom observation measures may not have captured the full complexity of learners' internal emotional experiences. Future studies should incorporate validated self-report instruments, physiological indicators such as heart rate variability, and longitudinal follow-up assessments. Research involving larger and more diverse learner populations would also help clarify the extent to which the present findings generalize across educational and cultural contexts.

Future research may further investigate whether prolonged breathing interventions eventually produce measurable gains in speaking performance. Comparative studies examining different mindfulness-based approaches, including breathing exercises, body-scan practices, and meditation-based interventions, would help identify the most effective

techniques for language classrooms. Additionally, research grounded in neuroscientific and psychophysiological methodologies may provide deeper insights into the mechanisms through which breathing practices influence language-related cognition and emotion.

The pedagogical implications of the study are substantial. The findings indicate that pranayamic breathing represents a practical, low-cost, and easily adaptable intervention that can be incorporated into language classrooms without disrupting instructional schedules. Brief breathing exercises implemented before speaking activities may help create emotionally supportive learning environments, reduce anxiety-related barriers to participation, and strengthen learners' self-regulatory capacities. Teacher education programs may also benefit from introducing mindfulness-based strategies that enable educators to address both the linguistic and affective dimensions of language learning.

In conclusion, the present study demonstrates that pranayamic breathing techniques can effectively reduce observable manifestations of speaking anxiety among Iranian EFL learners. Although statistically significant improvements in oral performance were not observed during the intervention period, learners consistently reported enhanced concentration, increased confidence, reduced anxiety, and greater willingness to participate in speaking activities. The convergence of quantitative and qualitative findings suggests that pranayama functions as a valuable affective support mechanism that promotes emotional regulation and communicative readiness. As interest in learner well-being continues to grow within SLA research, pranayamic breathing offers a promising and pedagogically accessible approach for addressing the psychological challenges associated with oral communication in a second language.

References

- Botes, E., Dewaele, J.-M., & Greiff, S. (2020). The foreign language classroom anxiety scale and academic achievement: An overview of the prevailing literature and a meta-analysis. *Journal for the Psychology of Language Learning*, 2(1), 26–56.
<https://doi.org/10.52598/jpll/2/1/3>
- Dewaele, J.-M., & Li, C. (2020). Emotions in second language acquisition: A critical review and research agenda. *Foreign Language World*, 196(1), 34–49.
- Dewaele, J.-M., Guedat-Bittighoffer, D., & Dat, M.-A. (2025). Foreign language enjoyment overcomes anxiety and boredom to boost oral proficiency in the first year of English foreign language learning. *International Journal of Applied Linguistics*, 35, 152–167.
<https://doi.org/10.1111/ijal.12607>

- Elahi Shirvan, M., Taherian, T., & Yazdanmehr, E. (2024). Foreign language enjoyment: A longitudinal confirmatory factor analysis–curve of factors model. *Journal of Multilingual and Multicultural Development*, 45(2), 224–242. <https://doi.org/10.1080/01434632.2021.1874392>
- Eysenck, M. W., Derakshan, N., Santos, R., & Calvo, M. G. (2007). Anxiety and cognitive performance: Attentional control theory. *Emotion*, 7(2), 336–353. <https://doi.org/10.1037/1528-3542.7.2.336>
- Gregersen, T., MacIntyre, P. D., & Meza, M. D. (2014). The motion of emotion: Idiodynamic case studies of learners' foreign language anxiety. *The Modern Language Journal*, 98(2), 574–588. <https://doi.org/10.1111/modl.12084>
- Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and well-being? A systematic review and meta-analysis of mediation studies. *Clinical Psychology Review*, 37, 1–12. <https://doi.org/10.1016/j.cpr.2015.01.006>
- Horwitz, E. K. (2010). Foreign language anxiety. In J. C. Cassady (Ed.), *Anxiety in schools: The causes, consequences, and solutions for academic anxieties* (pp. 95–115). Peter Lang.
- Horwitz, E. K., Horwitz, M. B., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal*, 70(2), 125–132. <https://doi.org/10.1111/j.1540-4781.1986.tb05256.x>
- Kabat-Zinn, J. (2013). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness* (Revised ed.). Bantam Books.
- Laborde, S., Mosley, E., & Thayer, J. F. (2017). Heart rate variability and cardiac vagal tone in psychophysiological research: Recommendations for experiment planning, data analysis, and data reporting. *Frontiers in Psychology*, 8, Article 213. <https://doi.org/10.3389/fpsyg.2017.00213>
- MacIntyre, P. D., Gregersen, T., & Mercer, S. (Eds.). (2019). *Positive psychology in SLA*. Multilingual Matters.
- MacIntyre, P. D., & Gregersen, T. (2012). Emotions that facilitate language learning: The positive-broadening power of the imagination. *Studies in Second Language Learning and Teaching*, 2(2), 193–213. <https://doi.org/10.14746/ssllt.2012.2.2.4>
- Maher, K., & King, J. (2020). Observing anxiety in the foreign language classroom: A research instrument. *Journal for the Psychology of Language Learning*, 2(1), 46–64.

- Oxford, R. L. (2016). Toward a psychology of well-being for language learners: The EMPATHICS vision. In P. D. MacIntyre, T. Gregersen, & S. Mercer (Eds.), *Positive psychology in SLA* (pp. 10–87). Multilingual Matters.
- Pekrun, R. (2021). A social-cognitive, control-value theory of achievement emotions. In R. Pekrun & L. Linnenbrink-Garcia (Eds.), *International handbook of emotions in education* (2nd ed., pp. 36–60). Routledge.
- Tasan, M., Mede, E., & Sadeghi, K. (2021). The effect of pranayamic breathing as a positive psychology exercise on foreign language learning anxiety and test anxiety among language learners. *Frontiers in Psychology*, 12, Article 742060. <https://doi.org/10.3389/fpsyg.2021.742060>
- Telles, S., Singh, A., Sharma, S. K., & Balkrishna, A. (2024). Traditional nostril yoga breathing practices and oxygen consumption: A randomized, cross-over study. *International Journal of Yoga*, 17(1), 53–60. https://doi.org/10.4103/ijoy.ijoy_248_23
- Zaccaro, A., Piarulli, A., Laurino, M., Garbella, E., Menicucci, D., Neri, B., & Gemignani, A. (2018). How breath-control can change your life: A systematic review on psychophysiological correlates of slow breathing. *Frontiers in Human Neuroscience*, 12, 409421. <https://doi.org/10.3389/fnhum.2018.00353>
- Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools: A systematic review and meta-analysis. *Frontiers in Psychology*, 5, Article 603. <https://doi.org/10.3389/fpsyg.2014.00603>

List of Appendices

Appendix A

Anxiety Checklist

To assess students' observable signs of anxiety during planned and unplanned speaking tasks, the researcher designed a Researcher-developed Classroom Observation Checklist, adapted from the Foreign Language Classroom Anxiety Scale (Horwitz et al., 1986) and more recent studies on observable anxiety cues in EFL classrooms (e.g., Maher & King, 2020). The checklist includes 15 indicators covering four domains: physical symptoms (e.g., fidgeting, avoidance of eye contact), verbal/speech issues (e.g., hesitations, stuttering, monotone speech), emotional/behavioral signs (e.g., avoidance of participation, nervous laughter), and cognitive/performance-based issues (e.g., word retrieval problems, reduced fluency). Each item was scored dichotomously (observed = 1, not observed = 0).

Themes	Observable Behaviors
Physical Symptoms	
1. Fidgeting	Frequent movement, tapping, or restlessness
2. Sweating / Blushing	Noticeable physical stress reactions (e.g., red face, visible sweat)
3. Shaky voice / Breathing	Irregular, shallow, or rapid breathing while speaking
4. Avoiding eye contact	Looking down, away from teacher or peers
Verbal / Speech Issues	
5. Long pauses / Hesitation	Frequent stopping, difficulty continuing speech
6. Stuttering	Repeating sounds, words, or syllables
7. Monotone or low volume	Speaking too softly or without intonation
8. Over-correction	Stopping mid-sentence to correct small mistakes repeatedly
Emotional / Behavioral Signs	
9. Avoidance	Refusing or hesitating to participate in speaking tasks
10. Apologizing excessively	Saying "sorry" or disclaimers before/after speaking
11. Nervous laughter	Laughing at inappropriate times due to nervousness
12. Peer comparison	Making anxious comments about others' performance ("I'm worse than...")
Cognitive / Performance Based Signs	
13. Off-topic speech	Unable to maintain focus; drifts away from task topic
14. Word retrieval problems	Searching for words often, "uh," "um," "you know..."
15. Reduced fluency	Difficulty producing continuous, coherent speech

Appendix B

Interview

A semi-structured interview was employed in the final session to explore learners' personal experiences with pranayamic breathing techniques in greater depth. This format allowed the researcher to follow a set of pre-designed questions while also maintaining flexibility to probe further based on participants' responses. The interview guide was carefully developed and divided into four thematic sections: (1) emotional and psychological experiences, (2) classroom atmosphere and engagement, (3) daily and personal life effects, and (4) practicality and suggestions. Each question was adapted from validated sources in the field, ensuring both relevance and academic credibility. For example, questions addressing foreign language anxiety and emotional impact were based on [Horwitz \(2010\)](#) and [Gregersen et al. \(2014\)](#), while items relating to the effect of pranayamic breathing on classroom stress were informed by [Tasan et al. \(2021\)](#). Similarly, classroom atmosphere questions drew on [Maher and King \(2020\)](#), [Horwitz et al. \(1986\)](#), and [MacIntyre and Gregersen \(2012\)](#). Finally, questions exploring broader life effects and practical application were grounded in positive psychology and mindfulness research ([MacIntyre et al., 2019](#); [Tasan et al., 2021](#)). This structured yet adaptable design ensured that the interviews captured both quantitative rigor and qualitative richness, providing insights into learners' emotional states, classroom engagement, and the transferability of breathing practices beyond the classroom.

Interview Questions:

Section 1: Emotional and Psychological Experience

How did you feel before, during, and after practicing the breathing techniques in class?

Did you notice any changes in your anxiety levels during speaking activities after using the breathing techniques?

How has your confidence in speaking English changed, if at all, since starting the breathing exercises?

Section 2: Classroom Atmosphere and Engagement

How would you describe the overall classroom atmosphere during the sessions that included pranayamic breathing?

Did you feel more comfortable participating in class discussions or oral tasks after the breathing sessions? Why or why not?

Compared to regular English classes you've had in the past, how did this class feel in terms of pressure or relaxation?

Section 3: Daily and Personal Life Effects

Have the breathing techniques influenced your habits or feelings outside the classroom (e.g., sleep, mood, focus)?

Do you find yourself using these breathing techniques in other stressful situations (e.g., exams, presentations)?

Section 4: Practicality and Suggestions

Was it easy or difficult to learn and follow the breathing instructions?

Would you recommend using these techniques in other classes or areas of life? Why?

If you could change anything about how the breathing exercises were done, what would it be?

Appendix C

Instruction for Pranayama Practice (Nadi Shodhana – Alternate Nostril Breathing)

The following steps outline a sample technique of Nadi Shodhana, also known as Alternate Nostril Breathing. This practice is designed to calm the mind, balance energy, and improve focus:

1. Sit comfortably with your spine straight and shoulders relaxed.
2. Place your right hand near your nose. Using your right thumb, gently close your right nostril.
3. Inhale slowly and deeply through your left nostril, paying close attention to the natural rhythm of your breath.
4. Hold the breath briefly, then use your ring finger or little finger to close your left nostril while releasing your thumb from the right nostril. Exhale slowly and completely through the right nostril.
5. Keeping the left nostril closed, inhale deeply through the right nostril.
6. Pause gently, then close the right nostril again with your thumb and release the left nostril. Exhale slowly through the left nostril.
7. This completes one full cycle. Continue the same pattern—inhale left, exhale right; inhale right, exhale left—for several rounds (e.g., 5–10 cycles), maintaining a steady and relaxed rhythm.

Note: Breathing should be smooth and gentle, without strain. Beginners may start with shorter cycles and gradually extend the duration as they become more comfortable.

