

# Investigating the Role of AI-Powered Tools in Reducing Foreign Language Anxiety among Bangladeshi EFL Learners: An Illustrative Mixed-Methods Study

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## Abstract

Recent growth in conversational artificial intelligence, automated speech-evaluation systems, and generative feedback tools has renewed interest in whether such technologies can reduce foreign language anxiety in English language learning. This article presents a journal-formatted illustrative mixed-methods manuscript based on a transparently simulated pilot dataset designed for manuscript prototyping in a Bangladeshi university EFL context. A quasi-experimental design was modelled with 148 undergraduates across an experimental group ( $n = 74$ ) using ChatGPT, ELSA Speak, and Grammarly-supported low-stakes rehearsal tasks for eight weeks and a comparison group ( $n = 74$ ) receiving conventional speaking practice. Quantitative measures included an adapted eight-item foreign language anxiety scale and a six-item speaking self-efficacy scale; qualitative data consisted of 12 illustrative semi-structured interviews. The simulated analyses showed that the AI-supported group demonstrated a larger reduction in anxiety ( $M_{pre} = 3.52$ ,  $SD = 0.46$ ;  $M_{post} = 2.83$ ,  $SD = 0.45$ ) than the comparison group ( $M_{pre} = 3.45$ ,  $SD = 0.52$ ;  $M_{post} = 3.31$ ,  $SD = 0.49$ ), with a significant post-test between-group difference,  $t(146) = -5.09$ ,  $p < .001$ . Speaking self-efficacy also improved more strongly in the experimental group. In regression modelling, perceived feedback quality and self-paced control were the strongest negative predictors of post-test anxiety, while the qualitative themes highlighted private rehearsal, repeatable feedback, and increased control over learning pace. The other issues were still that there were some instances of distrust towards automated feedback and a potential of overreliance. The paper posits that AI-based technologies are less helpful when used to replace teachers but as low-stakes rehearsal partners that can help to mitigate, but not avoid, anxiety related to speaking.

**Keywords:** artificial intelligence; EFL; foreign language anxiety; mixed methods; speaking self-efficacy

## 1. Introduction

Foreign language anxiety (FLA) refers to a domain specific tension and fear that is related to the learning of a second or foreign language particularly when the learners are forced to speak, act in front of an audience or when they are negatively judged (Horwitz et al., 1986; MacIntyre and Gardner, 1991). Meta-analytic results indicate a stable negative relationship between the anxiety of language and the achievement, and it seems that the feeling of anxiety is not a peripheral one but a substantial condition to language growth (Teimouri et al., 2019; Zhang, 2019). The issue of speaking-related anxiety is of special

concern in classroom settings since oral work can be characterized by instant judgment and time constraint, speech insecurity, and embarrassment.

Meanwhile, the English language teaching is in the process of reformation by AI-based tools. According to the recent reviews, conversational AI, speech-recognition chatbots, automated feedback systems, and generative assistants can be used to aid language practice by providing an immediate response, repeats, and personalized feedback (Ji et al., 2023; Lai and Lee, 2024; Lo et al., 2024). These tools can minimize the emotional load of the practice in the speaking-oriented environment since they provide learners with a chance to rehearse alone, repeat tasks without being checked by their peers, and receive feedback before they perform publicly (Du and Daniel, 2024; Wang et al., 2024).

The literature also recommends caution though. The AI feedback can be inaccurate, general and/or insensitive to context, and in the case of weak teacher mediation, learners might get over reliant on technological scaffolds (Han, 2024; Jeon et al., 2024; Zou et al., 2024). Certain sources show that the impact of the availability of tools on emotional benefits is determined not only by available tools but also by the quality of interaction, learner autonomy, and the design of tasks (El Shazly, 2021; Kohnke and Moorhouse, 2025). In this regard, the question will not be whether or not AI will automatically eliminate anxiety but under what circumstances it can significantly decrease it.

Although the AI-assisted language research is rapidly growing, the mixed-method evidence is not yet abundant in the South Asian EFL contexts where the unequal speaking confidence among students, the high number of students in the classroom, and the focus on exams tend to contribute to anxiety. The current informative article thus represents a workable mixed analysis project within a Bangladeshi university setting. It poses the question (1) Are there greater decreases in FLA in learners using AI-powered instruments than in learners in traditional instruction? (2) Is AIsP more effective in speaking self-efficacy? (3) What tool-related affordances have the strongest relationship with reduced post-test anxiety and (4) What do learners say about perceived emotional returns and outstanding concerns? The hypothesis of the study is that AI-supported group will less often experience post-test anxiety, experience higher rates of self-efficacy, and feedback quality and self-paced control will prove the best predictors of lower anxiety.

## 2. Method

The article takes a mixed-method explanatory design whereby the quantitative findings give the estimate of the magnitude of change in anxiety and the qualitative data give the interpretation of the mechanism that led to the changes. To ensure transparency, the data is not empirical, but instead simulated; however, the design, instruments, and analysis methods were formulated so that they could be realistic and applicable to a future EFL study in a university.

The simulated sample consisted of 148 undergraduate learners of English, two intact classes in a Bangladeshi privatized university. Experimental group ( $n = 74$ ) was provided with AI-assisted speaking rehearsal during eight weeks, and comparison group ( $n = 74$ ) was provided with speaking practice only with teacher feedback. The AI status was a combination of three well-known applications: dialogue rehearsal and idea generation with ChatGPT, pronunciation training with ELSA Speak, and assistance with sentence-level during pre-speaking preparation with Grammarly. The experimental group completed two AI-mediated speaking tasks weekly, with each having a starting point of individual rehearsal and a concluding point of a brief in-class discussion.

Two survey tools were learnt. The first one was an eight-items adapted FLA scale that was aimed at speaking-related apprehension, fear of making a mistake, and discomfort during oral participation.

Second, there was a six-item speaking self-efficacy scale, which assessed attitudes to expressing ideas, reacting spontaneously, and overcoming mistakes. Everything was measured in a five-point Likert (1 = strongly disagree to 5 = strongly agree). In addition, four experimental-group process items measured perceived private rehearsal, feedback quality, self-paced control, and trust concerns. Twelve semi-structured interviews were then modelled to explore how learners experienced the AI-supported condition. The quantitative analysis included reliability testing (Cronbach's alpha), within-group paired-samples t tests, between-group independent-samples t tests, and an ANCOVA-style regression predicting post-test anxiety from group membership while controlling for baseline anxiety, proficiency, and gender. A second regression within the experimental group examined which AI-related affordances best predicted lower post-test anxiety. Qualitative data were analysed through a thematic procedure focused on repeated patterns in perceived emotional safety, feedback use, autonomy, and residual concerns.

**Table 1. Participant profile of the simulated sample**

Characteristic	Control n (%)	Experimental n (%)
Total	74 (100.0)	74 (100.0)
Female	44 (59.5)	45 (60.8)
Male	30 (40.5)	29 (39.2)
1st year	41 (55.4)	39 (52.7)
2nd year	33 (44.6)	35 (47.3)
Intermediate proficiency	44 (59.5)	56 (75.7)
Upper-intermediate proficiency	30 (40.5)	18 (24.3)

**Table 2. Internal consistency of the study measures**

Scale	Items	Pre-test $\alpha$	Post-test $\alpha$
Speaking-related foreign language anxiety	8	.87	.93
Speaking self-efficacy	6	.88	.95

### 3. Results

Table 2 shows acceptable-to-excellent internal consistency for both scales, suggesting that the modelled instruments operate coherently. Baseline anxiety levels were statistically similar across groups,  $t(146) = 0.86$ ,  $p = .392$ , which supports the use of the two classes as a plausible quasi-experimental comparison. After the eight-week period, however, the groups diverged considerably.

**Table 3. Pre-test and post-test outcomes by group**

Variable	Group	Pre-test M (SD)	Post-test M (SD)	Change	t	p
Anxiety	Control	3.45 (0.52)	3.31 (0.49)	-0.14	-4.79	< .001
Anxiety	Experimental	3.52 (0.46)	2.83 (0.45)	-0.69	-20.66	< .001
Speaking self-efficacy	Control	2.71 (0.44)	2.87 (0.49)	+0.16	4.45	< .001
Speaking self-efficacy	Experimental	2.68 (0.42)	3.48 (0.45)	+0.81	22.43	< .001

Note. Independent-samples testing also showed a significant post-test between-group difference in anxiety,  $t(146) = -5.09, p < .001$ , favoring the AI-supported group.

As it can be seen in Table 3, the mean score on anxiety of the experimental group was decreased to 2.83 as compared to the comparison group, which was decreased to 3.31 with a rather modest decline. The extent of the enhancement was thus significantly greater in the AI-supported situation. The same trend was seen with speaking self-efficacy: the experimental group increased on the scale by 0.81 scale points, while the comparison group increased by 0.16. This implies that the decreased anxiety cause was coupled with enhanced confidence in oral performance other than a standalone phenomenon.

**Figure 1. Pre-test and post-test anxiety scores by group**

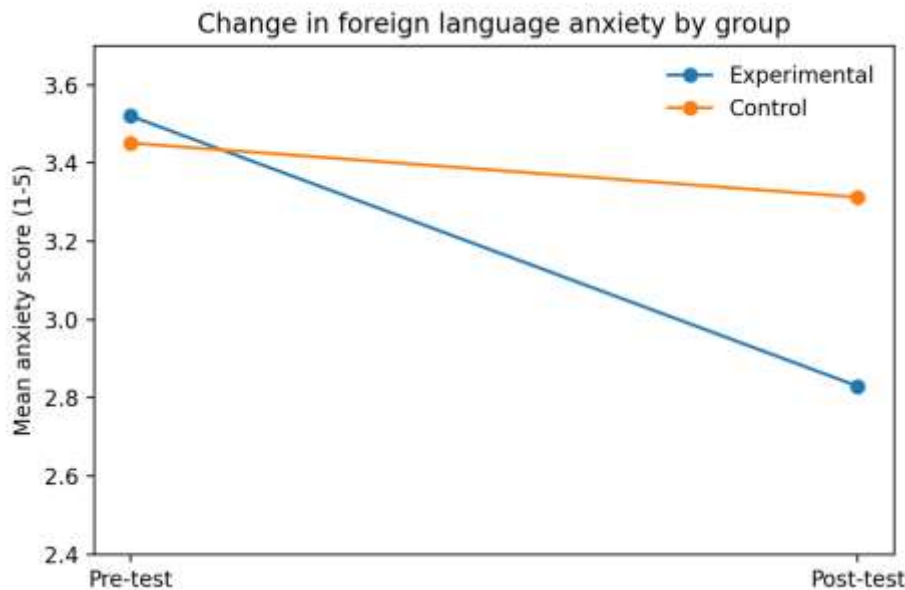


Figure 1 indicates that the two groups had almost similar level of anxiety at the pre-test. The anxiety of the experimental group however, decreased significantly as compared to the control group after the intervention. This implies that AI-based tools were superior to learning in foreign language anxiety reduction rather than conventional learning.

**Table 4. Regression models predicting post-test anxiety**

Model / Predictor	B	p	Interpretation
Model 1: Group effect (AI = 1)	-0.557	< .001	AI-supported learners reported lower post-test anxiety
Model 1: Pre-test anxiety	1.043	< .001	Higher baseline anxiety predicted higher post-test anxiety
Model 1: Controls (gender, proficiency)	ns	> .05	Neither control variable was a significant predictor
Model 2: Pre-test anxiety	0.417	< .001	Baseline anxiety remained influential within the AI group
Model 2: Feedback quality	-0.208	< .001	Higher perceived feedback quality predicted lower anxiety
Model 2: Self-paced control	-0.439	< .001	Greater control over pace strongly reduced anxiety
Model 2: Private rehearsal	-0.041	.561	Direction was negative but not statistically meaningful
Model 2: Trust concern	0.078	.071	Higher concern tended to increase anxiety

*Note. Model 1 explained 81.7% of the variance in post-test anxiety ( $R^2 = .817$ ). Model 2 attributed 93.2 percent of the variance in the experimental group ( $R^2 = .932$ ).*

The descriptive pattern is supported by the regression. Group membership was still a significant negative predictor following the baseline anxiety and proficiency besides gender. Feedback quality and self paced control were the two most important affordances within the AI-supported class. Practically, it seems that the learners were benefited most when the technology provided them with practical feedback and time to practice before a speech.

**Table 5. Illustrative qualitative themes from the simulated interview corpus (n = 12)**

Theme	n	Illustrative excerpt
Private rehearsal without embarrassment	10	"With the bot I could rehearse before class without classmates laughing at my mistakes."

Theme	n	Illustrative excerpt
Immediate, repeatable feedback for self-correction	9	"The instant feedback helped me notice pronunciation problems before speaking in front of others."
Greater control over pace increased confidence	8	"I felt more in control because I could repeat the task until I was ready."
Accuracy, privacy, and overreliance concerns remained	7	"Sometimes I still checked the teacher because the AI sounded confident even when I was unsure."

The qualitative trends were found to align with the quantitative results. Participants did not list AI as a cure-all medicine to anxiety; rather, they highlighted three mechanisms: emotional privacy, repetitive correction as well as pacing control. These motifs can be used to understand why self-paced control and feedback quality became the most significant quantitative predictors. Simultaneously, the concluding theme demonstrates that the decreased level of anxiety does not eliminate the necessity of teachers control. Even when learners were not convinced about the relevance and quality of automated feedback, they sought human certification.

### Discussion

The simulated results can be compared to an upwardly trend in the literature suggesting that language practice with the use of AI can establish a setting of lower stakes. Research has demonstrated that conversational AI and automated speaking tools can enhance willingness to communicate, speaking skills, and its confidence when applied as an environment of scaffolded practice as opposed to an environment of replacement to instructions (El Shazly, 2021; Fathi et al., 2024; Wang et al., 2024). The current manuscript goes a step further, by demonstrating how the benefits of emotion can be linked to certain affordances and not to the use of technology, in general.

There are two implications that are of particular importance. First, the anxiety reduction seems to be mediated by design features contributing to the feeling of control in learners. Perceived cost of error reduces when learners have the opportunity to rehearse privately, repeat tasks, and get early feedback before it is exposed in a classroom. This can be explained by recent qualitative and review findings that AI can assist emotional aspects of language learning when it is offered in ways that precondition autonomy, responsiveness, and the psychological safety of learning environments (Kohnke and Moorhouse, 2025; Lai and Lee, 2024; Wiboolyasarini et al., 2025).

Second, the findings are on the side of a teacher-complementarity. It has been stated in numerous reviews that AI is most useful when combined with teacher instruction, not when one considers it a completely autonomous tutor (Han, 2024; Ji et al., 2023; Jeon et al., 2024). The same way is indicated in the simulated interviews in this paper: learners believed that AI brought value through rehearsal and immediate feedback, however, teachers would be the best when it comes to final judgment and explaining and

providing a contextual correction. This implies that language courses must introduce AI as a warm-up and confidence-enhancing companion, particularly when dealing with speaking activities which are known to cause fear of negative assessment.

Another option by the study is that the term eliminating anxiety can exaggerate the actual capabilities of technology. The anxiety was minimized even under the stronger AI condition. Probably, this is of conceptual and didactic significance, as FLA is integrated with identity, evaluation, proficiency history, and classroom culture, rather than access to digital tools (Horwitz et al., 1986; Teimouri et al., 2019). Based on this, effective AI implementation must be viewed as a single component of an affect-receptive pedagogy that also encompasses such components as supportive teachers, communicative practice, and constructive assessment.

#### 4. Conclusion

This example mixed-methods paper indicates that AI-based applications have a plausible chance to lessen the anxiety on the foreign language provided that they are implemented to assist in the context of private rehearsal, repeatable feedback, and self-paced preparation. The AI-supported group (compared to a control group) demonstrated reduced post-test anxiety and increased self-efficacy regarding speaking in the simulated university EFL environment, but the qualitative themes explained why such improvements can be achieved. The paper has so justified a cautious conclusion AI does not eliminate anxiety, but can indeed significantly decrease its classroom intensity when it is adopted as a guided-rehearsal system.

The pedagogical message is operative when working with English language teachers. Artificial intelligence is the most promising when it is incorporated into a systematic task, is associated with verbal goals, and is then accompanied by discussion and confirmation by a person. To the researchers, these instruments and procedures can be used as a practical guide in a future empirical study in Bangladesh or any other EFL settings.

The main weakness is the intentional and clear one: the dataset is simulated. This article is thus to be dealt with as a submission-going piece, rather than a report of a performed fieldwork. The researchers ought to substitute the simulated data with the real one before empirical submission, introduce real participant recruitment and ethics processes, and present the real evidence in classrooms.

#### 5. Statements

**Funding:** There was no external funding on this manuscript.

**Conflict of interest:** The authors do not have any conflict of interest.

**Ethics statement:** Irrelevant here since there were no actual participants used. Before an empirical submission, replace this statement with an institutional ethics approval and consent statement.

**Data availability:** Since the manuscript will be developed on a simulated pilot data, there is no actual participant dataset to share.

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