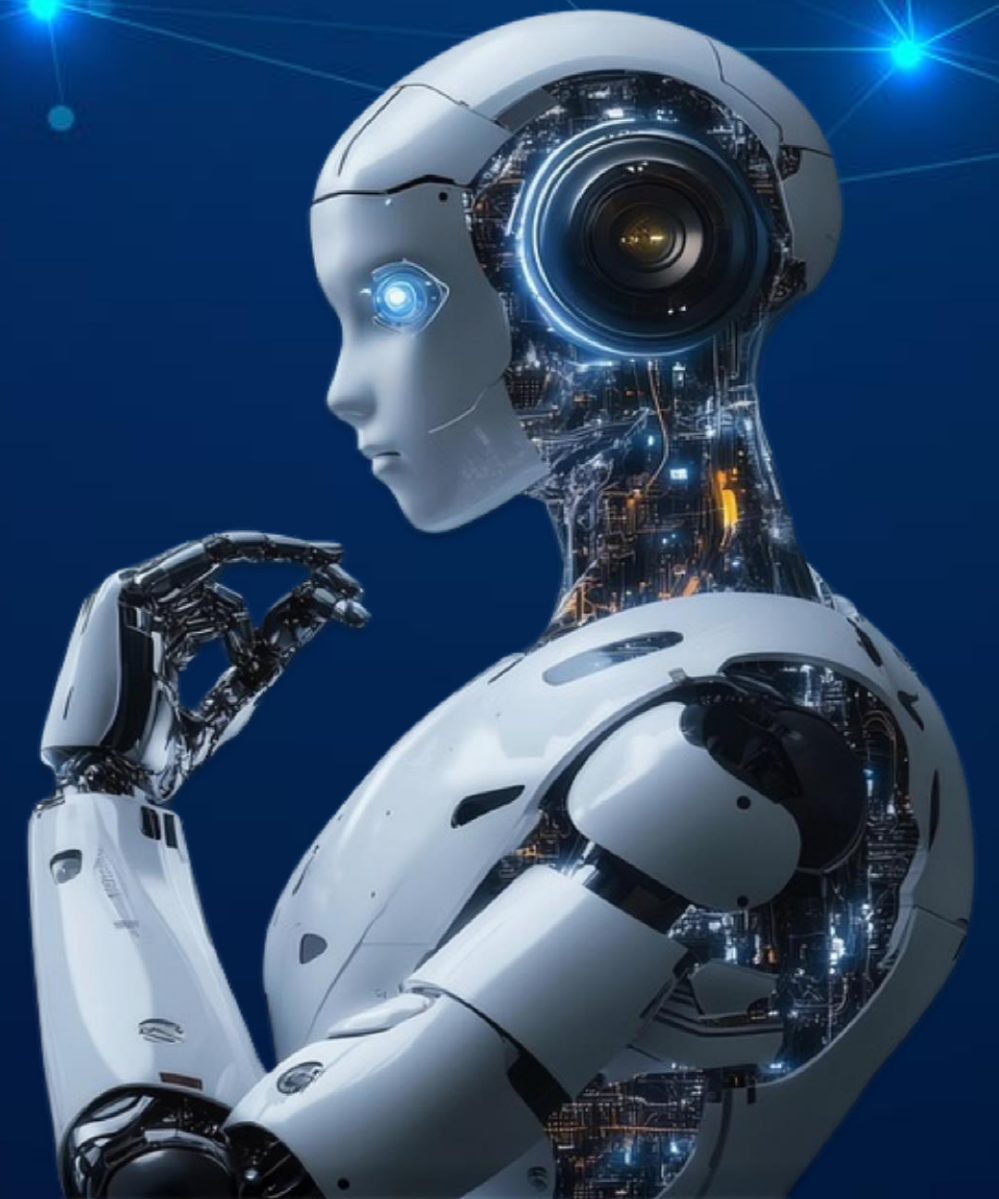




The Impact of AI Tools on EFL Students' Speaking Fluency: The Mediating Role of Emotional Factors



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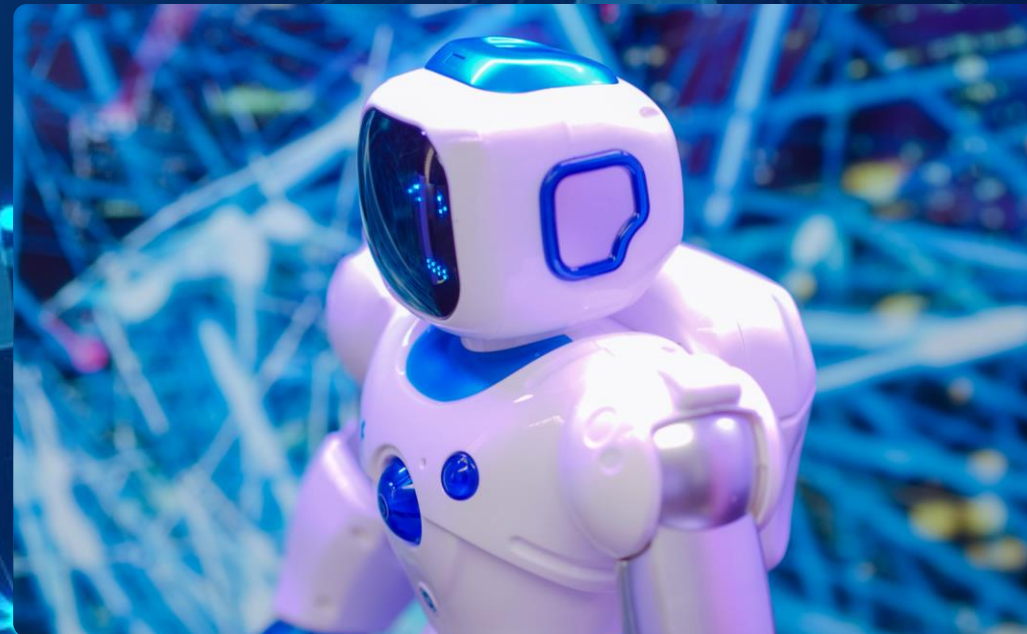
Introduction & Problem Statement

Background: AI tools (virtual tutors, conversational agents) offer personalized, interactive speaking practice beyond traditional EFL instruction.

The Challenge: Despite new tools, many EFL learners still struggle with fluency due to limited authentic exposure and affective barriers (anxiety, low confidence).

Problem: Dearth of research systematically investigating how emotional factors mediate the relationship between AI use and speaking fluency.

Research Objectives and Questions



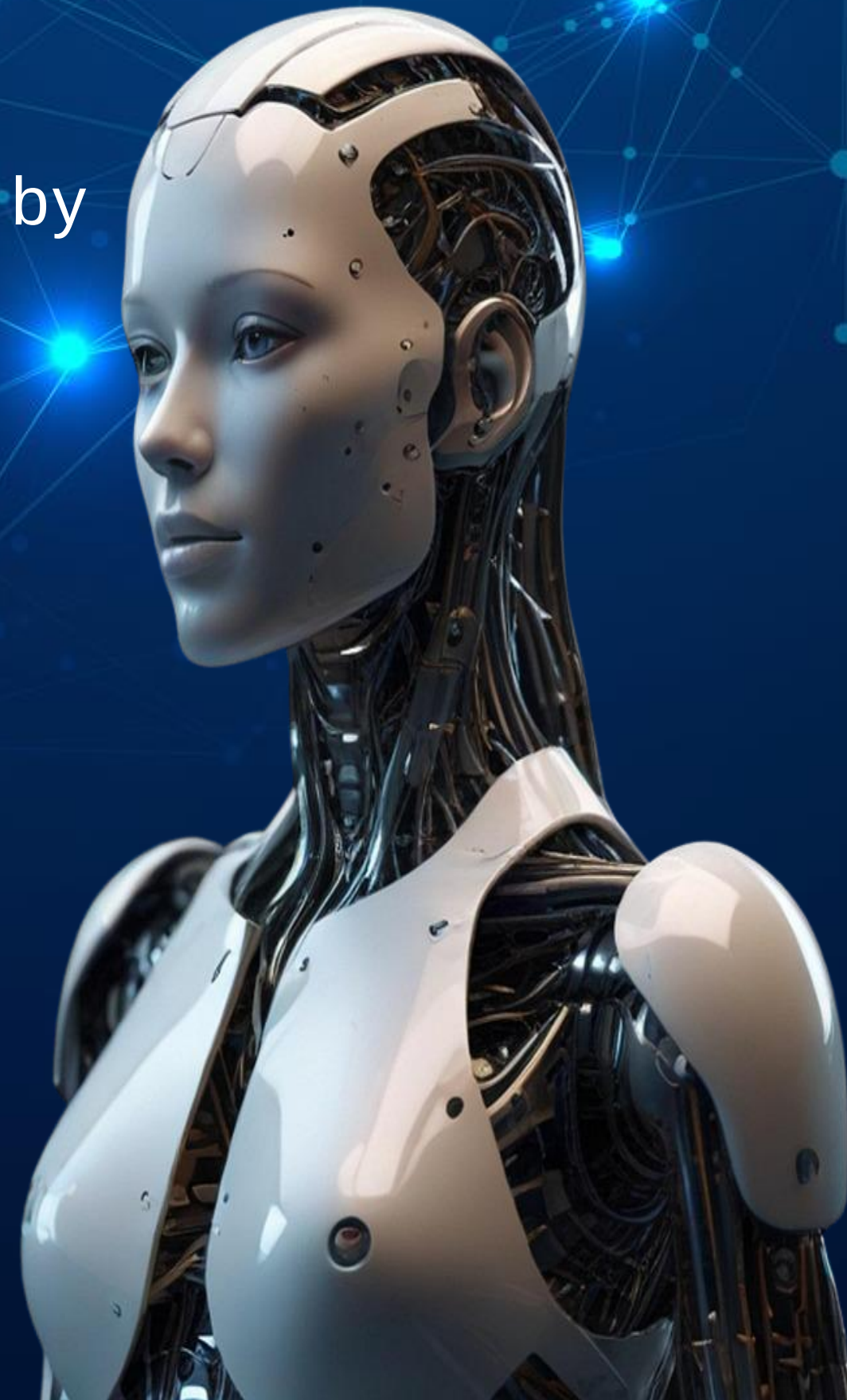
Overall Aim: To investigate the effect of AI tools on EFL speaking fluency and the mediating role of emotional factors.

Key Objectives:
Examine the overall impact of AI tools on fluency.
Explore the mediating role of language anxiety, motivation, and self-confidence.
Develop pedagogical recommendations for effective AI integration.

Central Question: To what extent do emotional factors mediate the relationship between AI use and speaking fluency?

Theoretical Foundation

- 01 Sociocultural Theory (Vygotsky): AI tools act as mediators by providing interactive practice and scaffolding.
- 02 Affective Filter Hypothesis (Krashen): AI creates low-stakes environments, helping to lower the affective filter (reducing anxiety).
- 03 Self-Determination Theory: AI's adaptive features and instant feedback enhance autonomy and competence, boosting intrinsic motivation.



Methodology Overview



Design

Convergent Mixed-Methods Design
Quantitative and Qualitative data collected simultaneously



Participants

120 undergraduate EFL students
B1/B2 level from three Iraqi universities



Intervention

-8week period
Experimental Group used AI tools for speaking tasks:
Duolingo, Elsa Speak, ChatGPT



Instruments

- Speaking fluency tests
- Modified emotional factor questionnaire
- Semi-structured interviews

Key Finding 1: AI Significantly Improves Overall Fluency



Measure:
Speaking Fluency
in Words Per
Minute (WPM).



Experimental Group
(AI): Significant gain
of +27.4 WPM (from
84.2 to 111.6 WPM).



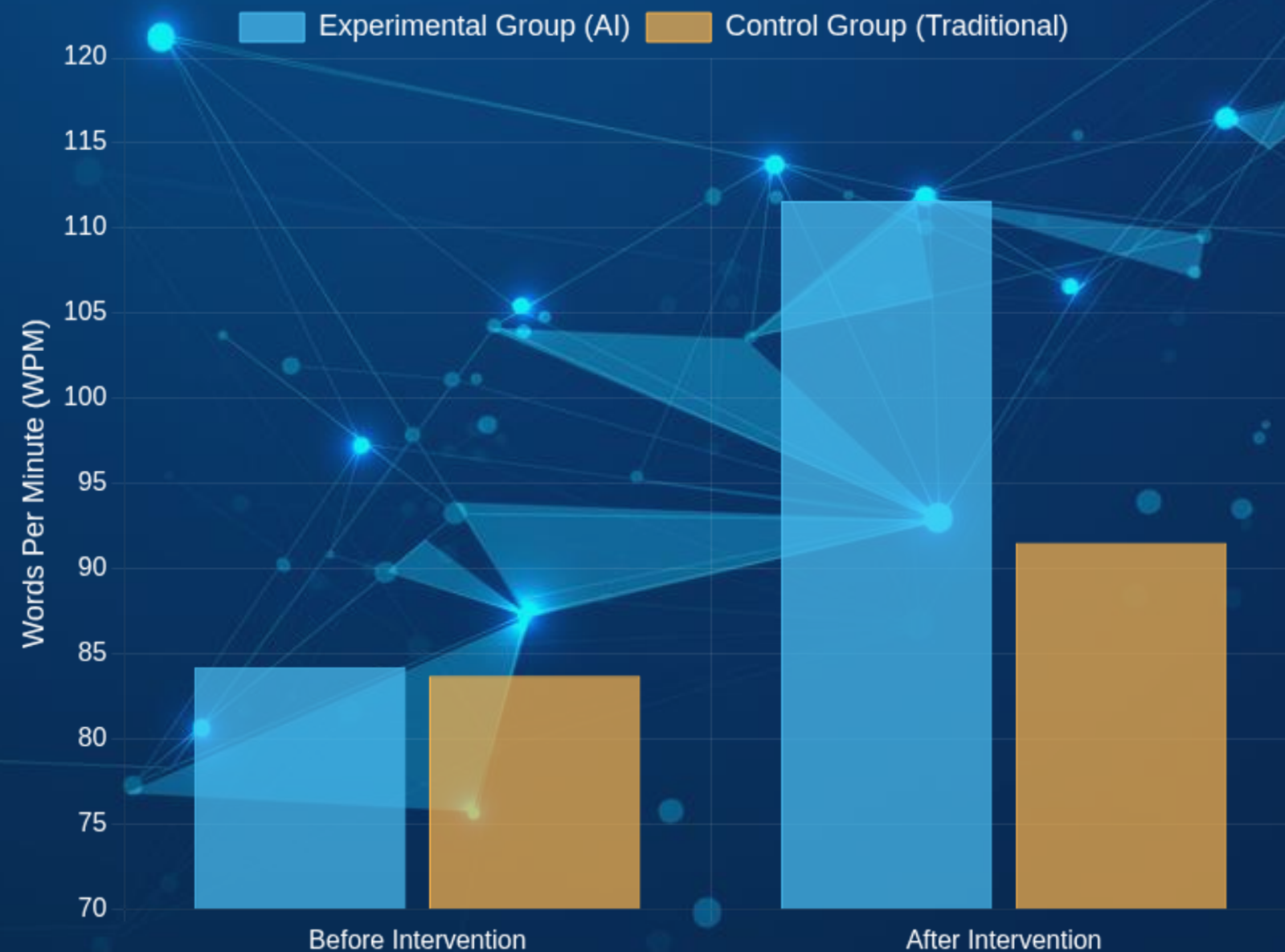
Control
(Traditional):
Modest gain of +7.8
WPM (from 83.7 to
91.5 WPM).



Conclusion: The use
of AI tools resulted
in a statistically
stronger positive
impact on oral
fluency than
traditional instruction
($p < 0.001$)

Key Finding 1: AI Significantly Improves Overall Fluency

Speaking Fluency (WPM)



Experimental Group (AI)

111.6 WPM

↑ **+27.4 WPM**

From 84.2 to 111.6 WPM



Control Group (Traditional)

91.5 WPM

↑ **7.8+ WPM**

From 83.7 to 91.5 WPM

Conclusion

The use of AI tools resulted in a **statistically stronger positive impact** on oral fluency than traditional instruction ($p < 0.001$)

Key Finding 2: Multifaceted Gains in Fluency Components

The AI group showed comprehensive improvements across all four components:

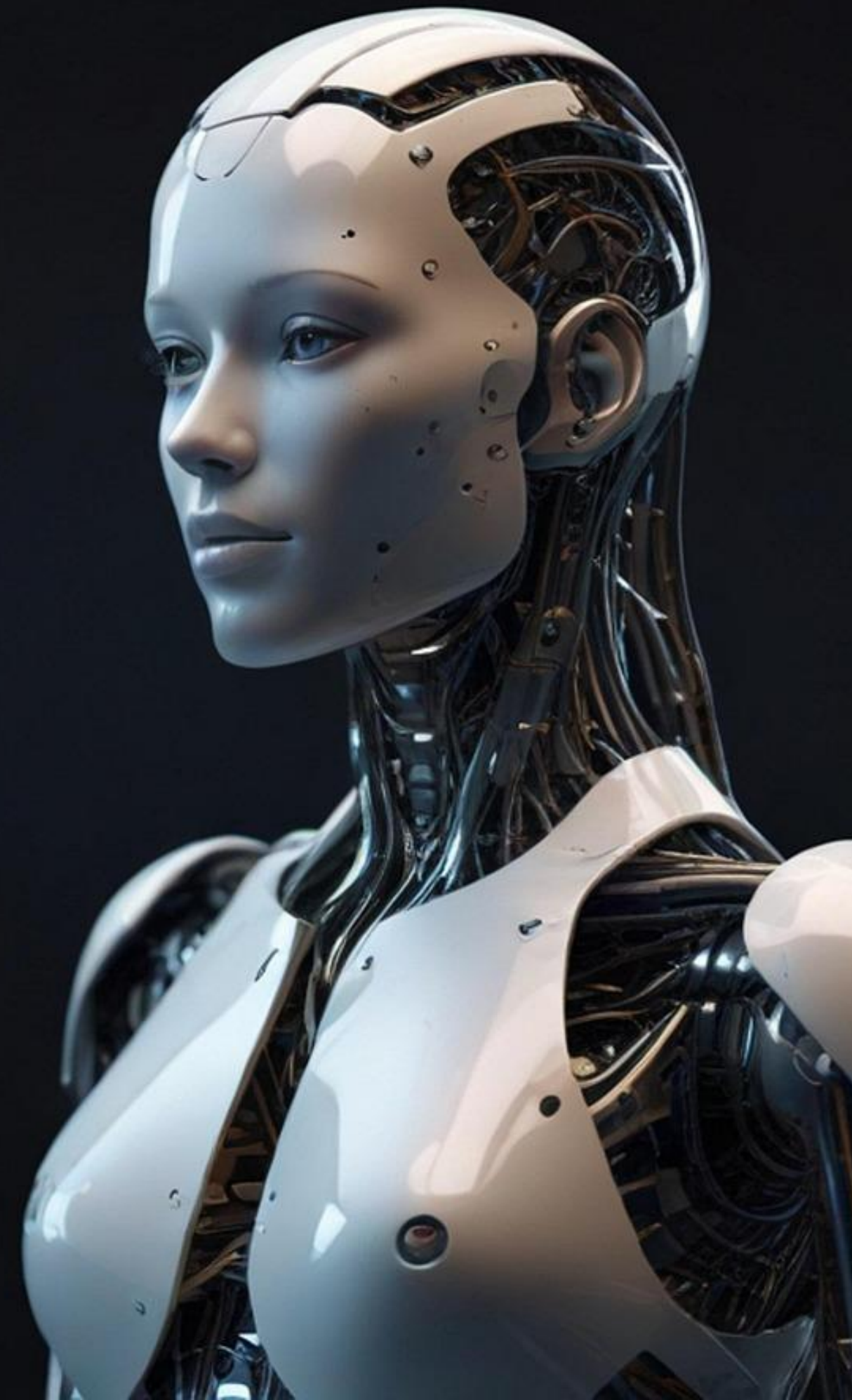
Speech Rate: Increased by 27.4 WPM.

Pause Frequency: Decreased significantly (from 7.8 to 4.9 pauses/min).

Accuracy: Improved by +9.7% (from 68.5% to 78.2%).

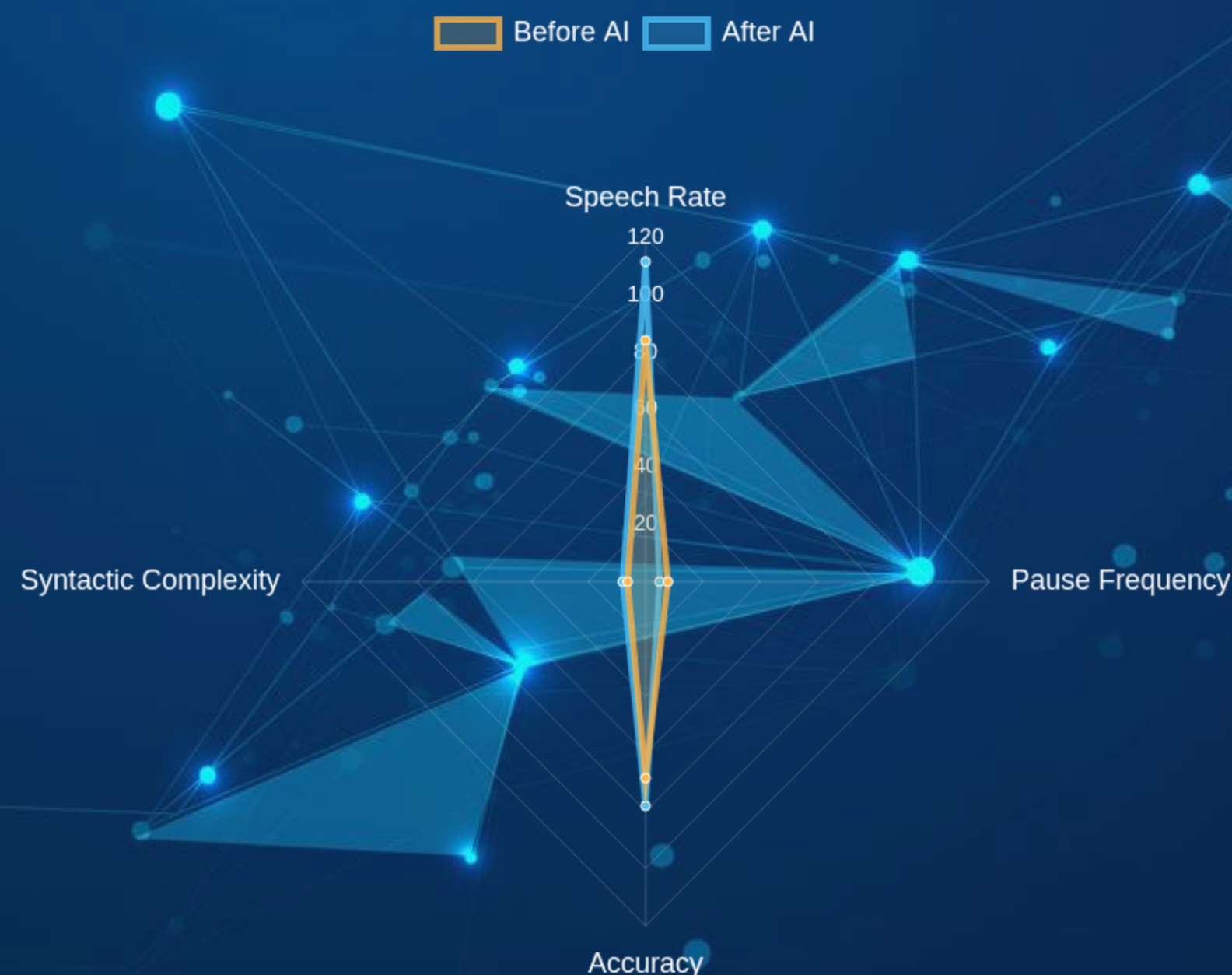
Syntactic Complexity: Increased by +1.7 words/clause.

Takeaway: AI-assisted practice does not just make speech faster; it makes it smoother, more accurate, and structurally sophisticated.



Key Finding 2: Multifaceted Gains in Fluency Components

Fluency Components Improvement



Speech Rate

↑ **+27.4 WPM**

Words per minute increased

Pause Frequency

↓ **-2.9 pauses/min**

From 7.8 to 4.9 pauses/min

Accuracy

↑ **%9.7+**

From 68.5% to 78.2%

Syntactic Complexity

↑ **1.7+ words/clause**

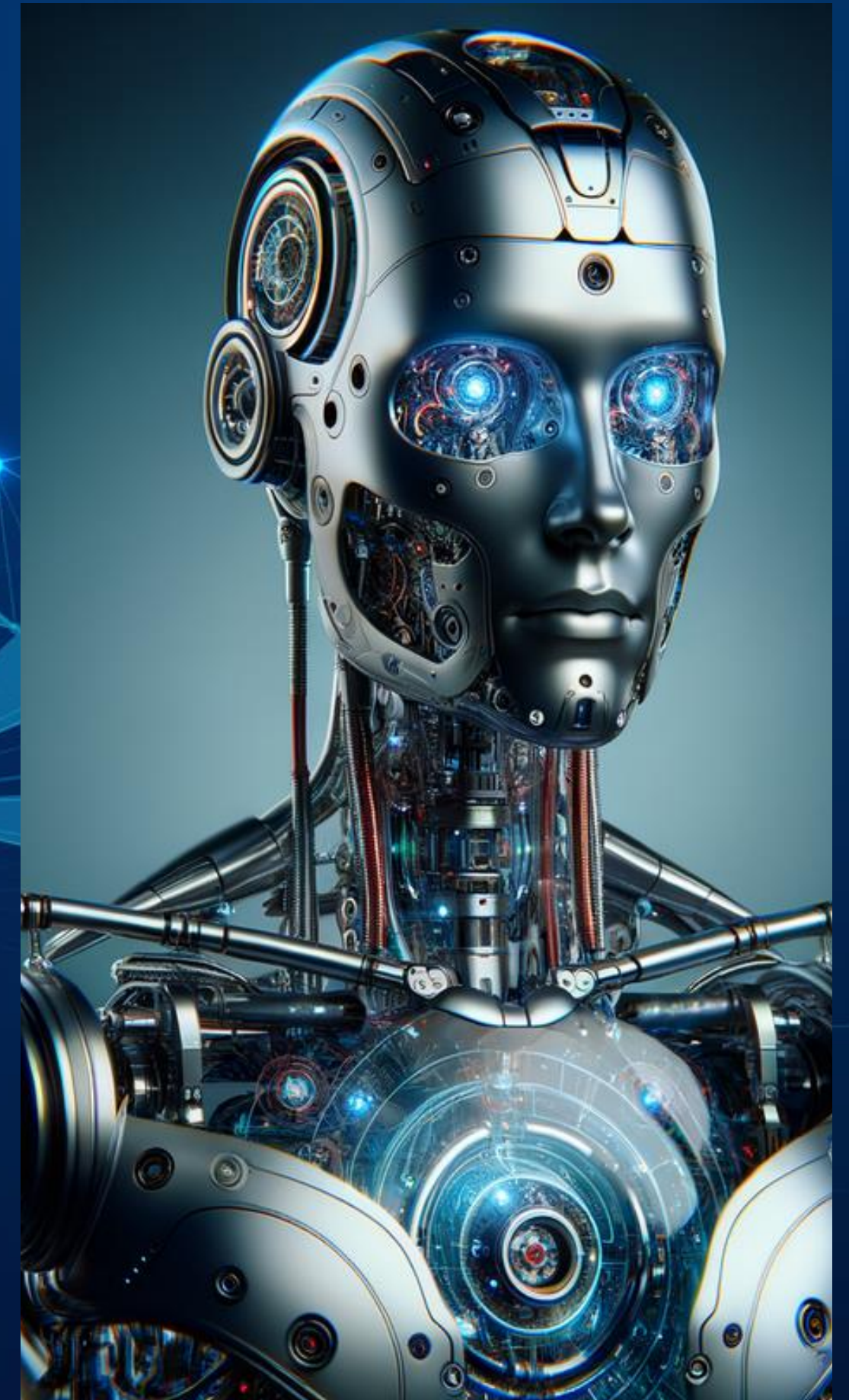
More sophisticated structures

Takeaway

AI-assisted practice does not just make speech **faster**; it makes it **smoother**, more **accurate**, and structurally **sophisticated**

Key Finding 3: Emotional Factors Improve Markedly

The Experimental Group showed significant positive changes across all emotional factors, with anxiety decreasing by 0.71 points, motivation increasing by 0.52 points, and self-confidence rising by 0.61 points (all $p < 0.001$). In contrast, the Control Group exhibited only minor, non-significant changes, highlighting the strong emotional benefits of AI-assisted learning.



Key Finding 3: Emotional Factors Improve Markedly

🧠 Emotional Factors Comparison



Anxiety

↓ **-0.71 points**

Significant reduction in language anxiety
 $p < 0.001$



Motivation

↑ **+0.52 points**

Increased intrinsic motivation to practice
 $p < 0.001$



Self-Confidence

0.61+ points

↑ Enhanced belief in speaking abilities
 $p < 0.001$

Mediation Analysis: Confidence is the Strongest Link

Using Structural Equation Modeling (SEM), the study examined the mediating pathways between AI use, emotional factors, and speaking fluency. The analysis revealed that AI tools had a significant direct effect on fluency ($\beta = 0.42$), while emotional factors also played a crucial mediating role. Specifically, confidence emerged as the strongest mediator ($\beta = 0.27$), followed by motivation ($\beta = 0.18$) and anxiety, which showed a negative relationship ($\beta = -0.21$). These findings suggest that AI's effectiveness in improving fluency is largely driven by its ability to enhance learners' self-confidence and belief in their speaking abilities.



Mediation Analysis: Confidence as the Strongest Link



Structural Equation Modeling

Examined mediating pathways between:

AI use
Emotional factors
Speaking fluency



Direct Effect

AI tools had a significant direct effect on fluency:

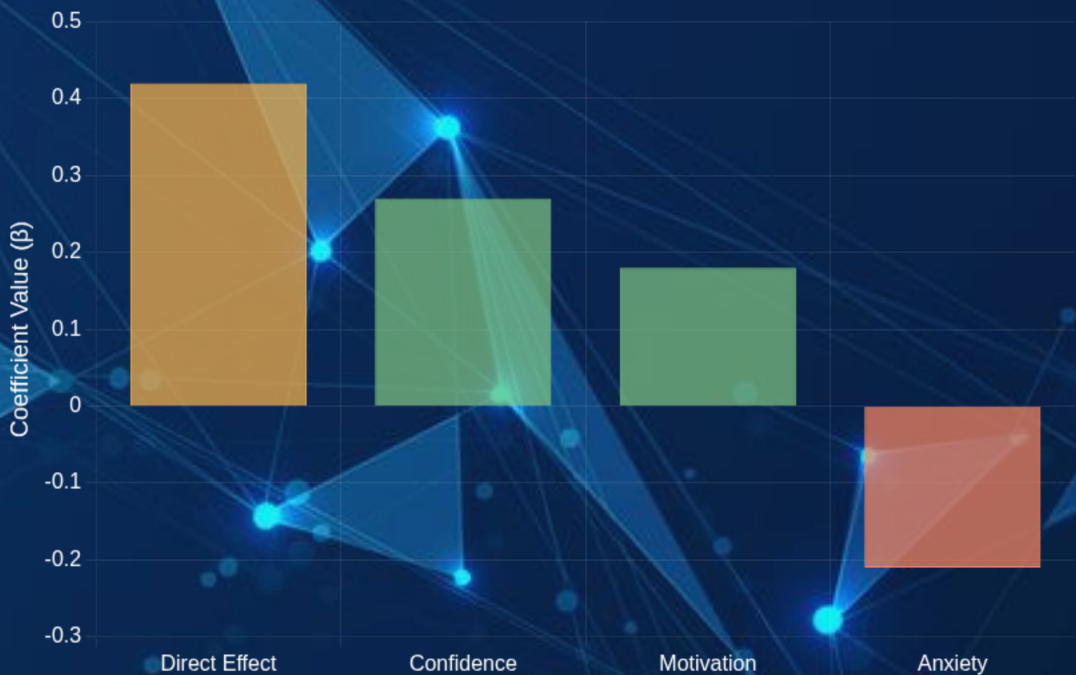
$$\beta = 0.42$$



Mediating Role

Emotional factors played a crucial mediating role between AI use and fluency

Mediation Analysis Results



Confidence

$$\beta = 0.27$$



Motivation

$$\beta = 0.18$$



Anxiety

$$\beta = -0.21$$



Key Finding

AI's effectiveness in improving fluency is largely driven by its ability to enhance learners' **self-confidence** and belief in their speaking abilities 1

Conclusion and Pedagogical Recommendations

Dual Impact: AI tools significantly enhance linguistic fluency and foster emotional resilience (reducing anxiety, increasing confidence/motivation).

Recommendation 1 (Integration): Intentionally integrate AI applications as complementary resources that provide individualized, non-judgmental practice.

Recommendation 2 (Teacher Training): Teacher training must focus on using AI to address learners' affective needs and promote an emotionally supportive learning environment.

Future Research: Examine long-term effects of AI and its impact across different proficiency levels.

Thank You

