

AI Tools and Translation Performance: Examining the Emotions and Anxiety of Postgraduate Translation Students

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Abstract: *The integration of artificial intelligence (AI) translation tools in translator education has fundamentally transformed pedagogical approaches, yet the psychological dimensions of this technological shift remain underexplored. This study investigates the emotional landscape and anxiety patterns among postgraduate translation students when utilizing AI-assisted translation tools. Drawing on cognitive load theory and the technology acceptance model, the study employed a mixed-methods design combining survey data from 187 MA translation students across 12 Chinese universities with semi-structured interviews and translation performance assessments. The findings reveal a paradoxical emotional profile: while students report heightened efficiency and reduced cognitive load during routine translation tasks, they simultaneously experience significant anxiety related to skill atrophy fears, academic integrity concerns, and professional identity displacement. Regression analysis indicates that AI anxiety negatively correlates with translation performance ($\beta = -0.34, p < 0.001$), while emotional engagement with AI tools positively predicts learning outcomes ($\beta = 0.28, p < 0.01$). The study contributes to translation pedagogy by proposing an emotion-regulated AI integration framework that addresses the psychological barriers to effective human-AI collaboration in translator training.*

Keywords: AI translation tools; Translation pedagogy; Academic anxiety; Emotional engagement; Postgraduate education; Cognitive load; Human-AI collaboration.

1. Introduction

The translation industry stands at a critical inflection point. Large language models (LLMs) such as GPT-4, DeepL, and Google Translate have achieved near-human performance across multiple language pairs, precipitating what terms the "post-editing paradigm" in professional translation. For translator training programs, this technological disruption presents both unprecedented opportunities and existential challenges. Postgraduate translation students - positioned at the nexus of academic preparation and professional entry - navigate a complex terrain where traditional translation competencies must be reconciled with rapidly evolving AI capabilities. The emotional and psychological dimensions of this technological integration have received surprisingly limited scholarly attention. While extensive research has examined AI's impact on translation quality, productivity, and industry workflows (Ameri 2024; Dinh 2025), the affective experiences of student translators remain largely unexplored. This gap is particularly consequential given that translation performance is cognitively demanding and emotionally sensitive (Guo and Wang 2025), and that emotional states significantly influence learning outcomes and professional development (Abdelhalim et al. 2025).

Existing literature on AI in translation education predominantly adopts techno-centric perspectives, focusing on tool evaluation, post-editing efficiency, or curriculum redesign (Almaiah et al. 2022). The psychological adaptation required of students - encompassing anxiety about skill relevance, emotional ambivalence toward machine assistance, and identity renegotiation - has not been systematically investigated. This oversight is problematic for three reasons:

First, translation competence involves not merely linguistic transfer but also metacognitive monitoring, cultural mediation, and ethical decision-making (Khany and Pooria 2026) - capabilities that require emotional investment and psychological security to develop. Second, anxiety and negative emotions toward technology can create barriers to effective learning, potentially leading to either over-reliance on AI (cognitive offloading) or defensive resistance (technological rejection). Third, the translation profession's future depends on cultivating "human-in-the-loop" competencies that require productive emotional engagement with AI tools rather than passive dependency or adversarial positioning. Therefore, this study addresses these lacunae by examining how postgraduate translation students emotionally experience AI tool integration and how these emotional patterns relate to their translation performance. The study specifically investigate: (1) the emotional profiles and anxiety patterns exhibited by students when using AI translation tools; (2) the factors contributing to AI-related anxiety in translation education contexts; and (3) the relationships between emotional states, anxiety levels, and translation performance outcomes.

Moreover, the study integrate two theoretical frameworks to conceptualize the emotional and cognitive dynamics of AI-assisted translation. Cognitive Load Theory provides a foundation for understanding how AI tools redistribute cognitive resources during translation tasks. While AI may reduce extraneous load associated with routine linguistic processing, it may simultaneously increase germane load related to post-editing decisions and quality verification, potentially generating anxiety when students feel their expertise is insufficient for effective oversight. The Technology Acceptance Model, extended to incorporate emotional factors (Kruk and Agnieszka 2025), helps explain variation in student attitudes toward AI tools. The study specifically incorporate AI anxiety as a moderating variable - defined as the fear, apprehension, and worry associated with using AI technologies (Mahdi and Sahari 2024) - and emotional engagement as a mediating factor influencing the relationship between tool use and performance outcomes.

2. Literature Review

2.1 AI Integration in Translation Education

The incorporation of machine translation (MT) and AI tools into translator training has evolved through distinct phases. Early approaches treated MT as a specialized subject rather than a production tool (Özmat and Buket 2024). The emergence of statistical MT and subsequent neural MT necessitated curricular reforms emphasizing post-editing competencies. Contemporary programs increasingly adopt "human-AI collaboration" pedagogies that position AI as a cognitive partner rather than merely a productivity tool (Qiu 2023).

Recent scholarship has examined how AI tools affect translation processes, identifying shifts in attention allocation, revision behaviors, and quality assessment strategies (Yang and Yao 2025). These studies predominantly focus on professional translators or advanced students, with limited attention to the developmental challenges faced by postgraduate learners. Furthermore, while the impact on skill acquisition and translator competence development remains contested (Zhao et al. 2025).

2.2 Emotion and Anxiety in Translation Studies

Emotion has gained increasing recognition as a constitutive element of translation practice and pedagogy. Some scholars demonstrate that emotional intelligence significantly predicts translation quality, while others identify emotional labor as central to professional translation work. In educational contexts, translation anxiety - encompassing fear of evaluation, linguistic insecurity, and performance pressure - has been shown to impair cognitive processing and output quality (Yang and Yao 2025).

The specific emotional dimensions of technology-mediated translation remain underexplored. Abdelhalim et al. (2025) identify "technostress" among professional translators adapting to CAT tools, while Ameri (2024) notes student ambivalence toward AI assistance. The systematic investigation of AI-specific emotional responses - distinct from general translation anxiety or technology anxiety - has not been undertaken.

2.3 AI Anxiety in Educational Contexts

AI anxiety represents a specific form of technology anxiety characterized by apprehension about AI capabilities, fear of job displacement, concerns about skill obsolescence, and discomfort with opaque algorithmic systems (Dinh 2025). In educational settings, AI anxiety manifests as worry about over-reliance on automated assistance, fear that AI use constitutes academic dishonesty, and anxiety regarding skill development in an AI-saturated professional environment (Guo and Wang 2025).

Research in computer-assisted language learning suggests that learner anxiety toward AI tools negatively correlates with learning outcomes and technology adoption (Kruk and Agnieszka 2025). These findings may not directly transfer to translation education, where AI tools perform the core task (translation) rather than merely supporting language learning. The unique epistemological status of translation - positioned between reproduction and creation, science and art - generates distinctive emotional tensions when AI assistance is introduced.

2.4 Research Gap and Hypotheses

Despite growing recognition of AI's transformative impact on translation education, no study has systematically examined the emotional experiences and anxiety patterns of postgraduate translation students using AI tools, nor established empirical relationships between these affective factors and translation performance. This study addresses this gap through the following hypotheses:

H1: Postgraduate translation students exhibit distinct emotional profiles characterized by simultaneous appreciation of AI efficiency and anxiety regarding skill development and academic integrity.

H2: AI anxiety negatively predicts translation performance, mediated by reduced cognitive engagement and metacognitive monitoring.

H3: Emotional engagement with AI tools moderates the relationship between tool use frequency and translation competence development.

3. Methodology

3.1 Research Design

The study employed a convergent parallel mixed-methods design (Mahdi and Sahari 2024) combining quantitative survey data, translation performance assessments, and qualitative interviews. This approach is for comprehensive characterization of emotional patterns while establishing empirical relationships between affective variables and performance outcomes.

3.2 Participants and AI tools

187 postgraduate students enrolled in MA Translation and Interpreting programs across 12 Chinese universities (9 comprehensive universities, 3 foreign language universities). Inclusion criteria required: (1) enrollment in second year of MA program or above; (2) completion of at least one semester of translation practice coursework; (3) regular use of AI translation tools (defined as usage in $\geq 50\%$ of translation assignments). The sample comprised 142 female (75.9%) and 45 male (24.1%) students, aged 22–29 years ($M = 24.3$, $SD = 1.7$). Language pairs included Chinese-English (78.6%), Chinese-Japanese (12.3%), Chinese-Korean (5.9%), and others (3.2%). All participants had used AI translation tools (DeepL: 89.3%; GPT-4: 76.5%; Google Translate: 67.9%; Baidu Translate: 54.5%) for academic translation tasks. More details are displayed in Table 1:

Table 1: Details of Participants and AI tools

Characteristic	Category/Detail	Frequency (n)	Percentage (%)	Additional Information
Gender	Female	142	75.9	Total sample: n=187
	Male	45	24.1	
Age	Range	-	-	22–29 years
	Mean (SD)	-	-	$M=24.3$, $SD=1.7$
Language Pairs	Chinese-English	147	78.6	Total: n=187
	Chinese-Japanese	23	12.3	
	Chinese-Korean	11	5.9	
	Others	6	3.2	
AI Translation Tool Usage	DeepL	167	89.3	Used for academic translation
	GPT-4	143	76.5	
	Google Translate	127	67.9	
	Baidu Translate	102	54.5	

3.3 Instruments

Emotion and Anxiety Assessment: The study developed the “AI Translation Emotion and Anxiety Scale (AITEAS)” through iterative pilot testing and expert validation. The 28-item instrument comprises four subscales: (1) AI Anxiety (8 items; $\alpha = 0.91$), measuring fear of skill atrophy, job displacement concerns, and academic integrity anxiety; (2) Emotional Engagement (7 items; $\alpha = 0.87$), assessing positive affect and interest in AI-assisted translation; (3) Cognitive Load (6 items; $\alpha = 0.84$), measuring perceived mental effort during AI-assisted tasks; and (4) Self-Efficacy (7 items; $\alpha = 0.89$), assessing confidence in translation abilities with and without AI support. Items are rated on 7-point Likert scales (1 = strongly disagree, 7 = strongly agree).

Translation Performance Assessment: Participants completed a controlled translation task (Chinese-to-English, 350 words, general domain) under three conditions: (1) without AI assistance; (2) with AI assistance and post-editing; (3) with AI assistance and explicit quality evaluation requirements. Performance was evaluated by three certified translators using the MQM (Multidimensional Quality Metrics) framework (Özmat and Buket 2024), assessing accuracy, fluency, terminology, and style. Inter-rater reliability was satisfactory ($ICC = 0.84$).

Semi-Structured Interviews: The study conducted 24 in-depth interviews (45–60 minutes) with participants representing high, medium, and low AI anxiety profiles. Interview protocols explored emotional experiences during AI-assisted translation, perceived impacts on skill development, professional identity negotiations, and coping strategies. Interviews are conducted in Mandarin, transcribed, and translated for analysis.

3.4 Procedure

Phase 1 involved online survey administration and performance assessments; Phase 2 comprised follow-up interviews. All participants provided informed consent; the study received institutional ethics approval.

3.5 Data Analysis

Quantitative data are analyzed using SPSS 26 and Mplus 8.3. The study conducted descriptive statistics, correlation analyses, hierarchical multiple regression, and structural equation modeling to test hypothesized relationships. Qualitative data under the thematic analysis following a six-phase approach: familiarization, initial coding, theme searching, theme reviewing, defining/naming, and report production. Integration occurred at the interpretation stage, using joint displays to compare quantitative patterns with qualitative insights.

4. Results

4.1 Emotional Profiles and Anxiety Patterns

Descriptive analysis revealed a complex emotional landscape characterized by simultaneous positive and negative affective responses. Mean scores on the Emotional Engagement subscale ($M = 5.12$, $SD = 1.23$) indicated generally positive attitudes toward AI tools, with 73.8% of participants agreeing that AI tools make translation work more interesting. AI Anxiety scores ($M = 4.67$, $SD = 1.41$) are substantially elevated, with 68.4% reporting worry about becoming too dependent on AI and 71.1% expressing concern that using AI might prevent me from developing real translation skills.

Cluster analysis identified three distinct emotional profiles: Enthusiastic Adopters (28.3%, $n = 53$) characterized by high emotional engagement and low anxiety; Anxious Pragmatists (45.5%, $n = 85$) showing moderate engagement and high anxiety; and Resistant Skeptics (26.2%, $n = 49$) exhibiting low engagement and high anxiety. Notably, no cluster exhibited high engagement combined with high anxiety, suggesting these affective states may be mutually inhibitory.

Qualitative data elaborated these patterns. Enthusiastic Adopters described AI as liberating and a creative partner, with one participant noting: I used to get stuck on vocabulary for hours. Now I can focus on the actual meaning and style. It's like having a conversation rather than wrestling with a dictionary (Participant 12). Conversely, Anxious Pragmatists expressed ambivalence: I know it's efficient, but every time I press that button, I feel like I'm cheating myself. Will I still be able to translate when the AI isn't there? (Participant 7). Resistant Skeptics reported active avoidance: I only use it when the deadline is impossible. Otherwise, I feel like I'm not really learning, just editing (Participant 19).

4.2 Sources of AI Anxiety

Thematic analysis of interview data identified four primary sources of AI anxiety. For instance, Skill Atrophy Fears: Participants worried that routine AI use would degrade core translation competencies, particularly lexical retrieval and syntactic analysis. "My mental dictionary is shrinking," reported one student. "I used to know exactly which word fits; now I just let the AI suggest and I pick" (Participant 15). Academic Integrity Ambiguity: Uncertainty regarding appropriate AI use generated significant anxiety. While 82.4% of participants reported using AI for translation assignments, only 34.2% felt confident about institutional policies. "The guidelines say 'reasonable assistance,' but what's reasonable? I lie awake wondering if I'm crossing the line" (Participant 3). Professional Identity Threat: Concerns about future employability and professional legitimacy are pervasive. "If AI can do this, what's my value? Am I just a post-editor now?" (Participant 22). This anxiety was particularly acute among students viewing translation as a creative, intellectual pursuit rather than purely technical labor. Competence Insecurity: Paradoxically, AI availability intensified self-doubt. Participants reported feeling "exposed" when AI suggestions revealed gaps in their knowledge. "When the AI produces something better than I could, it's humiliating. It makes me question if I'm cut out for this" (Participant 8).

4.3 Relationships Between Emotion, Anxiety, and Performance

Hierarchical multiple regression analysis examined predictors of translation performance across the three task conditions (Table 2). In the AI-assisted condition, AI Anxiety emerged as a significant negative predictor ($\beta = -0.34, p < 0.001$), explaining 11.2% of variance in performance scores after controlling for language proficiency and prior translation experience. Emotional Engagement is a positive relationship ($\beta = 0.28, p < 0.01$), while the interaction term (Anxiety \times Engagement) was non-significant.

Table 2: Hierarchical Regression Predicting Translation Performance (AI-Assisted Condition)

Variable	Step 1 β	Step 2 β	Step 3 β
Language Proficiency	0.42***	0.38***	0.35***
Translation Experience	0.21**	0.18*	0.16*
AI Anxiety	-	-0.34***	-0.36***
Emotional Engagement	-	0.28**	0.26**
Anxiety \times Engagement	-	-	0.04
R ²	0.24	0.38	0.38
Δ R ²	-	0.14	0.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Structural equation modeling tested a mediation model positing that AI Anxiety affects performance through reduced cognitive engagement and metacognitive monitoring. The model demonstrated acceptable fit ($\chi^2/df = 2.14, CFI = 0.94, RMSEA = 0.078$). AI Anxiety negatively predicted cognitive engagement ($\beta = -0.41, p < 0.001$) and metacognitive monitoring ($\beta = -0.33, p < 0.01$), which in turn positively predicted performance ($\beta = 0.39, p < 0.001$ and $\beta = 0.28, p < 0.01$, respectively). The indirect effect of AI Anxiety on performance was significant ($\beta = -0.24, 95\% CI [-0.34, -0.15]$), supporting H2. Performance comparison across conditions revealed a significant interaction between emotional profile and task type ($F(2, 184) = 8.73, p < 0.001$). Enthusiastic Adopters and superior performance in AI-assisted conditions compared to unaided translation (Cohen's $d = 0.67$), while Anxious Pragmatists and Resistant Skeptics demonstrated smaller gains ($d = 0.31$ and 0.12 , respectively). Notably, in the unaided condition, Resistant Skeptics outperformed other groups ($d = 0.45$), suggesting that avoidance of AI tools may preserve certain competencies while limiting efficiency.

4.4 Coping Strategies and Emotional Regulation

Participants maintained strict boundaries between "practice translation" (AI-free) and "production translation" (AI-assisted). "I have two modes: learning mode, where I struggle through everything myself, and survival mode, where I use AI to meet deadlines. It's exhausting but necessary" (Participant 14). while students offset AI use with intensified focus on high-level competencies. "Since the AI handles the basics, I pour my energy into cultural adaptation and stylistic refinement. It helps me feel like I'm still adding value" (Participant 11). Some participants actively reconstructed their professional identity to accommodate AI collaboration. "I'm not a translator anymore; I'm a translation curator. My job is to guide, evaluate, and improve what the AI produces. That's a different but still valuable expertise" (Participant 6).

5. Discussion

5.1 The Emotional Paradox of AI-Assisted Translation

The study reveals a fundamental paradox in postgraduate translation students' emotional experience of AI tools: the same technologies that generate enthusiasm for their efficiency and capabilities simultaneously produce anxiety regarding skill degradation and professional legitimacy. This paradox is not merely a temporary adjustment phenomenon but reflects deeper epistemological tensions in translator education. The coexistence of high emotional engagement and high AI anxiety within individual students (45.5% classified as Anxious Pragmatists) challenges simplistic models of technology acceptance that posit linear relationships between perceived usefulness, ease of use, and adoption (Özmat and Buket 2024). Instead, The data suggest that translation students simultaneously recognize AI's instrumental value and fear its developmental costs - a form of "productive ambivalence" that may, if properly channeled, support rather than hinder learning. This paradox aligns with broader theories of automation anxiety, which identify "competence threat" as distinct from "job threat" (Qiu 2023). For students, the concern is not merely that AI will replace translators, but that reliance on AI will prevent them from becoming translators in the first place. This developmental dimension distinguishes educational contexts from professional settings and necessitates pedagogical approaches that address anxiety without eliminating AI use.

5.2 Anxiety as a Performance Inhibitor

The significant negative relationship between AI anxiety and translation performance (H2 supported) extends previous research on translation anxiety (Yang and Yao 2025) by identifying AI-specific mechanisms. The mediation analysis indicates that anxiety impairs performance primarily through reduced cognitive engagement and metacognitive monitoring rather than through technical proficiency deficits. Anxious students appear to "disengage" cognitively from the translation process, treating AI output as authoritative rather than provisional, and failing to apply critical evaluation skills. This finding has important implications for pedagogy. It suggests that anxiety interventions should target not merely emotional states but cognitive processing patterns. Students need not only reassurance but also concrete strategies for maintaining active cognitive engagement during AI-assisted translation - what The study term "critical post-editing" competencies. The performance interaction effects are particularly noteworthy. While Enthusiastic Adopters demonstrated clear efficiency gains from AI assistance, Resistant Sceptics actually performed better without AI support. This suggests that emotional resistance to AI may, in some cases, preserve translation competencies that excessive reliance on AI degrades. Given the inevitability of AI integration in professional practice, resistance is unlikely to be a sustainable long-term strategy. Instead, educators must find ways to preserve cognitive engagement while leveraging AI efficiency.

5.3 Implications for Translation Pedagogy

Rather than treating AI anxiety as a problem to be minimized, programs should create structured opportunities for students to articulate and examine their concerns. This "emotional metacognition" can transform diffuse anxiety into specific, addressable learning objectives. For example, skill atrophy fears can be addressed through competency tracking exercises that demonstrate maintenance or growth in core capabilities despite AI assistance. Current post-editing instruction focuses primarily on error correction and efficiency optimization. The findings suggest the need for "critical post-editing" that emphasizes active cognitive engagement - systematic comparison of AI output with independent translation attempts, analysis of AI decision-making patterns, and explicit identification of AI limitations. This approach maintains cognitive load at productive levels while leveraging AI assistance. Rather than binary "use" or "don't use" policies, programs should implement staged AI integration that gradually increases AI assistance complexity while maintaining accountability for core competencies. Early stages might involve AI use only for specific sub-tasks (terminology lookup, draft generation), progressing to full post-editing only after foundational competencies are secured. This study makes three primary theoretical contributions. First, The study extend the Technology Acceptance Model by demonstrating that in high-stakes educational contexts, emotional engagement and anxiety operate as distinct rather than opposite constructs, both requiring attention in predictive models. Second, The study adapt Cognitive Load Theory to AI-assisted translation, identifying "anxiety load" as a distinct form of extraneous cognitive load that impairs learning despite reduced processing demands. Third, The study contribute to emerging scholarship on human-AI collaboration by characterizing the specific emotional dynamics of "centaur" workflows (Zhao et al. 2025) in educational settings, where the human partner is simultaneously learner and evaluator.

5.4 Limitations and Future Directions

Several limitations warrant acknowledgment. The sample was drawn exclusively from Chinese postgraduate programs, limiting generalizability to other educational contexts. The cross-sectional design precludes causal claims about the development of AI anxiety over time. Performance assessments focused on general domain translation; specialized domains (legal, medical) may generate distinct emotional patterns. Future research should employ longitudinal designs to track emotional trajectories as students progress through programs and enter professional practice. Comparative studies across cultural contexts would illuminate whether AI anxiety manifests differently in educational systems with varying attitudes toward technology and academic integrity. Intervention studies testing specific pedagogical approaches to anxiety management are urgently needed.

6. Conclusion

The integration of AI tools into postgraduate translation education generates a complex emotional landscape characterized by simultaneous enthusiasm and anxiety, efficiency gains and competence fears, creative liberation and identity threat. This study demonstrates that these emotional dynamics are not merely incidental to technological adoption but fundamentally shape learning outcomes and skill development. The findings challenge programs to move beyond technical training in AI tool use toward holistic pedagogies that address the psychological dimensions of human-AI collaboration. The proposed Emotion-Regulated AI Integration Framework offers a starting point for this transition, emphasizing explicit anxiety articulation, critical post-editing competencies, and progressive integration protocols. As AI capabilities continue to advance, the emotional and ethical dimensions of translator education will become increasingly central. The next generation of translators must develop not only technical proficiency in AI collaboration but also the emotional resilience to navigate ongoing

technological disruption. By acknowledging and addressing the anxiety that accompanies this disruption, translation educators can support students in developing sustainable, fulfilling professional identities that harness AI's potential while preserving the uniquely human capabilities - cultural sensitivity, creative adaptation, ethical judgment - that define translation as a profession. The future of translation lies not in resistance to AI nor in uncritical adoption, but in the cultivation of emotionally intelligent, critically engaged practitioners who can navigate the productive tensions between human creativity and machine capability. This study provides empirical grounding for that pedagogical project, offering pathways toward translation education that prepares students not merely to survive technological change, but to thrive within it.

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