

## PAPER

# Evaluating Mobile GenAI and Goal-Seeking: Connecting AI Technology Anxiety with Meaning in Life

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## ABSTRACT

As artificial intelligence (AI) changes higher education, students are experiencing more technology-related anxiety and uncertainty about their future. This study examines how anxiety about AI affects students' sense of meaning in life, drawing on Significance Quest and Goal Systems theories. We focused on how Mobile Device GenAI Usage Evaluation (MDGUE) and goal-seeking act as mediators in this process. We collected survey data from 695 Chinese university students and analyzed the results using structural equation modeling (SEM). The results show that anxiety about AI technology can actually increase students' sense of meaning in life by prompting them to reflect on their purpose. However, this effect only happens through a chain of cognitive and motivational steps. MDGUE fully explains this link, while goal-seeking explains part of it; together, they make up 89.4% of the total effect. The findings suggest that anxiety only helps students find meaning when they see Generative AI (GenAI) as useful, which in turn encourages them to set positive goals. We suggest that technological stress is not always harmful and can lead to personal growth if students change how they think and feel about AI. Universities should help students see the benefits of AI tools to support this positive change.

## KEYWORDS

artificial intelligence (AI) technology anxiety, meaning in life, mobile device GenAI usage evaluation (MDGUE), goal-seeking, significance quest theory, goal systems theory

## 1 INTRODUCTION

Artificial intelligence (AI) has rapidly changed modern society [1], and its impact is now a regular part of university students' daily lives [2]. AI technologies bring new levels of convenience and efficiency [3], but they also raise concerns about people becoming obsolete [4]. Many students feel threatened by the idea that AI could replace human roles, leading them to feel their education and lives are less meaningful [5]. This sense of loss can increase what is known as technology anxiety [6], and some even worry about a future where digital intelligence surpasses human abilities.

Li, L., Patphol, M., Saleemad, K. (2026). Evaluating Mobile GenAI and Goal-Seeking: Connecting AI Technology Anxiety with Meaning in Life. *International Journal of Interactive Mobile Technologies (iJIM)*, 20(9), pp. 57–68. <https://doi.org/10.3991/ijim.v20i09.61489>

Article submitted 2026-01-02. Revision uploaded 2026-03-15. Final acceptance 2026-03-19.

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More students are showing signs of feeling less purpose in life, which can look like ‘hollow disease’ or existential emptiness [7–8]. They may seem aimless and disconnected, moving through daily routines in classrooms, cafeterias, and dorms without much emotion or clear goals. Even close relationships can sometimes feel like interruptions to this strict routine.

A key question remains: Are the challenges facing young people today really caused by artificial intelligence? Simply saying yes could lead us in the wrong direction. In fact, AI has two sides. It can greatly boost productivity by automating tasks that used to take hours, such as writing or analyzing data, so they can now be done in minutes with generative AI [9–10]. At the same time, AI can also replace jobs, creating a real risk of widespread unemployment. This leaves many university graduates worried that completing their education might mean not finding work [11–12]. These mixed effects cause real uncertainty. Will AI eventually replace people? Do hard work and study still matter?

Most existing studies have focused on either the negative effects of AI on how people find meaning or on how pursuing goals can help maintain a sense of meaning [13–15]. However, few have combined technology adaptation and meaning-making processes into a single framework. This study aims to fill that gap. Generative AI (GenAI), including tools such as ChatGPT, Kimi, Grok, and Gemini, is now the most accessible and widely used form of artificial intelligence among college students.

However, we still do not know much about how students’ views on using GenAI affect the link between anxiety about AI technology and their sense of meaning in life, especially through their pursuit of goals. To address this, our research examines how evaluating GenAI use on mobile devices and goal-seeking act as mediators between AI-related anxiety and students’ sense of meaning in life. By exploring these connections, we hope to find ways to reduce existential crises and anxiety caused by technology as humans and AI become more connected. This could help us support human well-being as technology continues to advance.

## 2 LITERATURE REVIEW

Significance Quest Theory suggests that people are deeply motivated by the need to feel important and to contribute to society [16]. This need becomes especially strong during times of hardship or loss or when facing big questions about life. The theory views having and searching for meaning as two interconnected psychological processes. When people feel lost, they look for meaning, and once they find it, they hold on to it by adjusting their goals and reaffirming their values [17]. The theory also highlights that people affirm the value of life through meaningful activities and that the search for meaning is a flexible process shaped by external influences, such as new technology.

Goal Systems theory conceptualizes meaning in life as a higher-order goal structure that organizes and integrates lower-level behavioral and cognitive goals into a coherent, hierarchical motivational system [18]. The theory distinguishes between the presence of meaning, the successful integration of experiences into a unified goal system, and the search for meaning, the ongoing motivation to construct, modify, or recalibrate that system [19–20]. It highlights that pursuing goals aligned with intrinsic values enhances feelings of purpose and meaning, while goal commitment, persistence, and compatibility among goals collectively maintain the system’s coherence and adaptability.

## 2.1 Hypotheses development

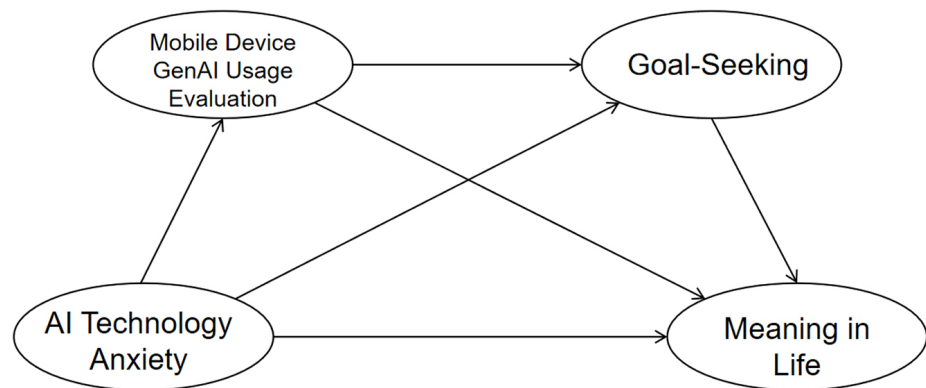
AI technology anxiety refers to the negative emotional responses individuals experience in the face of rapid AI development and widespread adoption, encompassing fear, worry, helplessness, and apprehension about future uncertainty [21]. This anxiety manifests specifically as feelings of loss of control when using AI products, heightened sensitivity to social evaluation, avoidance of learning new AI functions, and self-doubt arising from perceived gaps in technological competence relative to others [22]. It reflects psychological stress and existential unease during adaptation to technological change.

Meaning in life is a multidimensional construct comprising three core components: coherence, purpose, and existential significance. At the measurement level, it is typically operationalized along two dimensions, the presence of meaning and the search for meaning [23–24]. Together, these dimensions capture how individuals experience, maintain, and construct meaningful lives [25]. When individuals encounter feelings of loss of control, replacement fears, or future uncertainty triggered by AI technologies, such anxiety disrupts the coherence and predictability of their life narratives [26], thereby undermining perceptions of purpose and direction. As emphasized in meaning research, when technological change challenges fundamental beliefs about personal competence, social roles, and future prospects, the resulting existential anxiety directly erodes the experience of meaning [25], necessitating cognitive reappraisal and goal reconstruction to restore psychological equilibrium. Consequently, a negative association is expected between AI technology anxiety and meaning in life.

“Mobile Device GenAI Usage Evaluation” refers to individuals’ cognitive and affective appraisals of generative AI tools (e.g., ChatGPT and similar platforms), encompassing dimensions such as query understanding, human-like personality, self-learning capability, personalized responses, and cultural understanding [27–28]. It reflects users’ overall judgments of the tool’s reliability, utility, and value alignment. In the relationship between AI technology anxiety and meaning in life, mobile device GenAI usage evaluation serves as a mediator [29]; positive evaluations can restore feelings of control and goal coherence, thereby buffering the adverse impact of anxiety on meaning in life. Conversely, negative evaluations may exacerbate anxiety and impede the attainment of meaning.

Goal-seeking represents the dynamic motivational process through which individuals respond to psychological stress by restoring control and direction, manifested as tendencies to set, commit to, and persist in pursuing specific goals, particularly through goal adjustment in the face of uncertainty to rebuild life coherence [30]. This variable acts as a mediator between AI technology anxiety and meaning in life: when anxiety prompts pursuit of goals aligned with intrinsic values, adaptive goal-seeking can enhance meaning in life [20, 31]. However, if goal pursuit stems merely from external pressures or fear of technological replacement rather than genuine interest, it may lead to burnout and emptiness, ultimately diminishing meaning.

AI technology anxiety first affects how people evaluate generative AI, which then shapes their goal-directed behaviors and, ultimately, their sense of meaning in life [32]. For example, when students feel anxious about AI but still have a positive view of GenAI, they are more likely to include AI in their learning goals. This can help them find new purpose and coherence as they adapt to technology [14, 17]. On the other hand, negative views of GenAI can disrupt their goals and lead to unhelpful goal-seeking, which may increase anxiety and a sense of meaninglessness. Because of this, evaluating GenAI use on mobile devices and goal-seeking are suggested as steps that link AI technology anxiety to meaning in life (see Figure 1).



**Fig. 1.** Conceptual framework

Based on the above reasoning, the following hypotheses are proposed:

- H1:** AI technology anxiety negatively predicts meaning in life among students.
- H2:** Mobile Device GenAI Usage Evaluation significantly mediates the negative effect of AI technology anxiety on meaning in life.
- H3:** Goal-seeking significantly mediates the negative effect of AI technology anxiety on meaning in life.
- H4:** The negative effect of AI technology anxiety on meaning in life is chain-mediated by mobile device GenAI usage evaluation followed by goal-seeking.

### 3 METHODOLOGY

#### 3.1 Research design and sample size

This study focused on undergraduate students from southwestern China, including nine comprehensive universities in Sichuan, Guizhou, Yunnan, and Chongqing. All these universities offer AI-related courses, so participants had a basic understanding of artificial intelligence. The Tibet Autonomous Region was excluded due to its distinct geography, culture, religion, lower economic development, and limited student exposure to AI technologies. The chosen regions have similar educational systems and AI curricula that align with the Chinese government's policies on teaching foundational AI knowledge to university students.

To ensure the sample was representative and diverse, the study used a multi-stage sampling process. First, the four provinces and municipalities were selected purposively. Next, nine universities were selected through stratified sampling to balance different types of institutions and student backgrounds. Then, participants were recruited within these universities using convenience random sampling. In total, 695 valid responses were collected. Students received personalized invitations via university email, which helped reduce dropouts, improve response rates, and ensure data accuracy and timeliness.

#### 3.2 Data collection and measurement

Four established scales were used for data collection, each subjected to reliability and validity testing (refer to Table 1). The Meaning in Life Questionnaire [23] assessed

both the presence of meaning and the search for meaning (10 items, 5-point Likert scale; Cronbach's  $\alpha$  for Presence Meaning [MP] = 0.937; Cronbach's  $\alpha$  for Meaning Search [MS] = 0.864). An adapted version of the AI Technology Anxiety Scale [32] measured potential anxiety related to the use or consideration of generative AI technologies (10 items, 5-point Likert scale; Cronbach's  $\alpha \approx 0.960$ ). The Mobile Device GenAI Usage Evaluation Scale [33] evaluated the quality of generative AI tools and services across five dimensions: query understanding, human-like personality, self-learning capability, personalized responses, and cultural understanding (32 items, 5-point Likert scale; Cronbach's  $\alpha \approx 0.960$ ). The Goal-Seeking Scale [34] assessed students' determination and motivation in setting learning goals (9 items, including 2 open-ended questions and 5 Likert-scale items; Cronbach's  $\alpha \approx 0.953$ ). Content validation for all scales was conducted by five experts using the Item-Objective Congruence (IOC) method. Following pilot testing, two items were removed due to low expert ratings and exploratory factor analysis (EFA) factor loadings below 0.4.

**Table 1.** Reliability and validity of measurement

Variable			Items	AVE	CR	$\sqrt{\text{AVE}}$
Meaning in Life	Meaning Presence	MP	5	0.8	0.952	0.894
	Meaning Search	MS	4	0.702	0.903	0.838
Goal-Seeking		GS	6	0.804	0.961	0.897
AI Technology Anxiety		TA	10	0.738	0.966	0.859
Mobile Device GenAI Usage Evaluation	Query Comprehension Ability	UQ	5	0.802	0.953	0.896
	Human-like Personality	UH	4	0.825	0.949	0.908
	Self-learning Ability	US	6	0.791	0.958	0.889
	Personalized Responsiveness	UP	6	0.741	0.945	0.861
	Cultural Understanding Ability	UC	6	0.762	0.951	0.873

### 3.3 Data analysis

We analyzed the data using SPSS 24 and Amos 24, setting the significance level at 0.05. First, we used SPSS to calculate descriptive statistics and Pearson correlation coefficients to check the data distribution and initial relationships. Then, we used Amos to run a structural equation model (SEM) to test direct and indirect effects among AI technology anxiety, GenAI usage evaluation, goal-seeking, and meaning in life. We checked model fit with the chi-square, CFI, TLI, SRMR, and RMSEA indices. Finally, we used bias-corrected bootstrapping with 95% confidence intervals to test the significance of mediation effects.

## 4 RESULT AND DISCUSSION

We used Confirmatory Factor Analysis (CFA) to test the four-factor measurement model. The results showed that the model fit was acceptable to good. Discriminant validity was checked with the Fornell-Larcker criterion, which means the square root of the Average Variance Extracted (AVE) for each construct should be higher than its correlations with other variables.

Table 2 shows that the diagonal values, such as 0.974 for MIL, are higher than the off-diagonal correlations. This supports the notion that the constructs have distinct psychometric properties and are not confounded with one another.

**Table 2.** Discriminant validity (Fornell-Larcker criterion)

	AIA	GUE	GS	MIL
AIA	0.842			
MDGUE	0.478***	0.927		
GS	0.226***	0.658***	0.879	
MIL	0.272***	0.663***	0.862***	0.974

Notes: \*\*\*ATA = AI Technology Anxiety; MIL = Meaning in Life; GS = Goal-Seeking; MDGUE = Mobile Device GenAI Usage Evaluation.

#### 4.1 Mediation Analysis

Table 3 indicated that when goal-seeking was tested as a single mediator, the model also demonstrated good fit:  $\chi^2/df = 4.125$ , RMSEA = 0.067, RMR = 0.042, CFI = 0.951, GFI = 0.884. Standardized regression coefficients.

**Table 3.** Mediating role of mobile device GenAI usage evaluation

Parameter	Estimate	Lower	Upper	P
Indirect Effects	0.278	0.21	0.365	0.001
Direct Effects	-0.029	-0.096	0.052	0.48
Total Effects	0.249	0.159	0.332	0.001
r	1.116	0.82	1.512	0.004

Table 4 demonstrates that goal-seeking serves as a significant partial mediator between AI technology anxiety and meaning in life. The significant indirect effect ( $\beta = 0.164$ ,  $p = 0.001$ ) confirms that anxiety encourages individuals to establish new objectives, which subsequently enhances their sense of purpose. Because the direct effect remains significant ( $\beta = 0.072$ ,  $p = 0.003$ ), goal-seeking explains a substantial portion ( $r = 0.694$ ) but not the entirety of this relationship. This suggests that while goal-oriented behavior is a primary psychological bridge, other factors also contribute to how technological stress influences personal meaning.

**Table 4.** Mediating role of goal-seeking

Parameter	Estimate	Lower	Upper	P
Indirect Effects	0.164	0.094	0.232	0.001
Direct Effects	0.072	0.026	0.131	0.003
Total Effects	0.236	0.14	0.315	0.002
r	0.694	0.478	0.879	0.003

The full serial mediation model, which includes both Mobile Device GenAI Usage Evaluation and goal-seeking, showed an acceptable fit, as indicated by the following

statistics:  $\chi^2/df = 3.353$ , RMSEA = 0.058, RMR = 0.041, CFI = 0.924, and GFI = 0.804. Figure 2 presents the standardized path coefficients for the complete model.

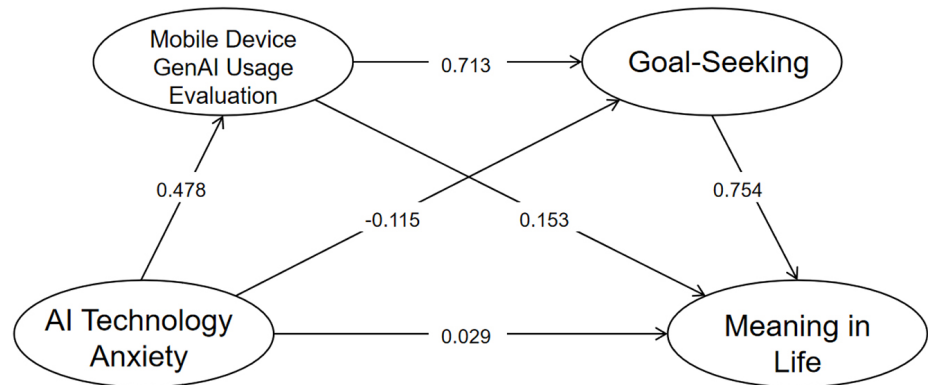


Fig. 2. Chain mediation model

Table 5 shows that the mediation effects were decomposed into three indirect pathways, each tested using bias-corrected bootstrapping with 95% confidence intervals. The indirect effect through mobile device GenAI usage evaluation alone was 0.065. The effect through goal-seeking alone was  $-0.076$ . The serial indirect effect through both mobile device GenAI usage evaluation and goal-seeking was 0.215. All three indirect effects were statistically significant because none of their 95% bootstrap confidence intervals included zero.

Table 5. Decomposed indirect effects in serial mediation

Parameter	Estimate	Lower	Upper	P
Direct Effects	0.025	-0.024	0.092	0.299
Total Indirect Effects	0.215	0.135	0.305	0.001
Indirect Effects of GUE	0.065	0.021	0.11	0.002
Indirect Effects of GS	-0.076	-0.119	-0.03	0.005
Total Effects	0.24	0.144	0.324	0.002
r	0.894	0.677	1.145	0.003

These findings show that the positive overall effect of AI technology anxiety on meaning in life is completely explained and, in some cases, reduced by the combined influence of mobile device GenAI usage evaluation and goal-seeking. The different directions of the specific indirect effects—positive through GenAI evaluation, negative through goal-seeking, and overall positive through the combined path—point to an inconsistent mediation pattern. This means the mediators together explain the relationship, but each reveals a different underlying process.

## 4.2 Discussion

When looking only at the direct link between AI technology anxiety and meaning in life, the results showed that anxiety about AI was a significant positive predictor of meaning in life (standardized  $\beta = 0.277$ ,  $p < .001$ ). As a result, Hypothesis 1 was rejected.

Although this finding may seem unexpected, it suggests that, without other factors, people who feel more anxious about AI technologies also tend to find more meaning in life. This positive effect might show that anxiety acts like an alarm in response to technological change. It can motivate people to search for meaning, encouraging them to rethink their life goals and values to cope with uncertainty. This process can lead to temporary growth-related stress.

When Mobile Device GenAI Usage Evaluation was added as a mediator, the model showed a total effect of 0.249 and a direct effect of  $-0.029$  (95% CI  $[-0.096, 0.052]$ ,  $p = .480 > .05$ ). This means that Mobile Device GenAI Usage Evaluation fully explained the link between AI technology anxiety and meaning in life, supporting Hypothesis 2. After accounting for the mediator, the direct path from AI technology anxiety to meaning in life was no longer significant and became slightly negative ( $\beta \approx -0.029$ ). This suggests that anxiety alone may not directly increase meaning in life unless people also consider how they use generative AI. The indirect effect was 0.278, which was larger than the total effect. This may indicate suppression, where anxiety could indirectly reduce meaning in life by lowering mobile device GenAI usage evaluation [33]. This negative pathway might be partly hidden by a stress-growth response in the direct effect [34]. These results are consistent with goal systems theory, which holds that technological anxiety affects meaning in life mainly through how people view and use AI tools (means-goal linkages), rather than through direct effects on existential psychology [35].

When goal-seeking was included as a single mediator, the model revealed a total effect ( $\beta = 0.236$ ), indirect effect ( $\beta = 0.164$ ), and direct effect ( $\beta = 0.072$ ), all statistically significant ( $p < .05$ ). Goal-seeking partially mediated the relationship between AI technology anxiety and meaning in life, thus supporting Hypothesis 3. After controlling for goal-seeking, the direct effect remained significant but was reduced relative to the total effect, indicating that part of AI technology anxiety's influence operates through goal-seeking pathways. The positive indirect effect suggests that AI-related anxiety may activate adaptive goal-setting and pursuit behaviors, which in turn enhance meaning in life. This finding resonates with Significance Quest Theory, which views anxiety in the context of technological uncertainty as a motivational catalyst that prompts individuals to reconstruct life direction and agency through active goal seeking, thereby partially buffering potential existential erosion.

In the full serial mediation model incorporating both Mobile Device GenAI Usage Evaluation and goal-seeking, the total effect of AI technology anxiety on meaning in life was 0.24 ( $p = .002$ ), while the direct effect was 0.025 ( $p = .299$ ), indicating full mediation and thus supporting Hypothesis 4. After controlling for both mediators, the residual direct path became non-significant, suggesting that anxiety does not directly influence meaning in life but must be transmitted through the serial chain of cognitive appraisal and motivational processes. The total indirect effect was significant and positive (0.215,  $p = .001$ ), accounting for approximately 89.4% of the total variance and indicating that the influence of AI technology anxiety on meaning in life is almost entirely mediated by the 'cognition-motivation' dual-pathway system. Notably, the specific indirect path via mobile device GenAI usage evaluation was positive (0.065), whereas the independent path via goal-seeking was negative ( $-0.076$ ). These opposing directions suggest that goal-seeking becomes constructive only when preceded by a positive functional appraisal of AI; otherwise, unmediated goal reactions may impair meaning. This pattern is highly consistent with both Goal Systems Theory and Significance Quest Theory, which emphasize that technological anxiety must be processed through hierarchical cognitive-to-motivational restructuring to ultimately shape meaning in life, rather than exerting direct effects on existential psychology.

## 5 CONCLUSION

In conclusion, this study shows that AI technology anxiety does not, in itself, create meaning. Instead, it encourages people to rethink their thoughts and motivations. The findings challenge the idea that anxiety is always harmful and suggest that its effect on well-being depends on how people view GenAI tools and adjust their goals. These results support goal systems theory, showing that people find meaning when they first view technology positively before setting their goals. Anxiety can help create meaning only if it motivates people to rethink how new technology fits with their personal goals.

## 6 ACKNOWLEDGEMENTS

The authors thank L.L.Y., M.P., and K.S. for their time investment and critical review of the revised paper. We wish to thank and acknowledge the help and support of all the investigators from all the partner institutions. Special thanks to the Yunnan College of Business Management for their invaluable support in this research.

## 7 ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethics Committee of Yunnan College of Business Management (Approval number YUBM-2025-07-89321). The committee reviewed the process of obtaining informed consent from all participants.

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