

Original Research Article

"Luddite" or "Nirvana"? How AI anxiety shapes career adaptability among knowledge workers

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Abstract: Artificial intelligence is changing the content, pace, and evaluation criteria of knowledge work. Although AI can augment productivity, it can also intensify uncertainty about skill obsolescence, role replacement, and future employability. This study examines how AI anxiety influences career adaptability among knowledge workers and clarifies the psychological mechanism through which this effect unfolds. Based on trait activation theory, a moderated mediation model is proposed in which proactive vitality management functions as a mediator and sense of control operates as a moderator. Using survey data from 582 knowledge workers employed in firms that had filed AI-related patent applications or reported AI implementation, the study tests curvilinear and interaction effects through hierarchical regression. The results show that AI anxiety has a U-shaped relationship with both proactive vitality management and career adaptability: at lower levels it suppresses adaptive responses, whereas beyond a critical range it begins to stimulate active self-regulation and adaptive renewal. Sense of control positively moderates these relationships by weakening the inhibitory effect of low-to-moderate AI anxiety and strengthening the facilitating effect of higher AI anxiety. Proactive vitality management positively predicts career adaptability and transmits both the direct effect of AI anxiety and the interaction effect between AI anxiety and sense of control. The findings show that AI anxiety is not only a threat signal but can also become a catalyst for career renewal when employees retain psychological agency and actively manage their energy resources.

Keywords: AI anxiety; proactive vitality management; career adaptability; sense of control; knowledge workers

1. Introduction

The spread of artificial intelligence has created a paradox for knowledge workers. On the one hand, AI expands information access, automates repetitive cognitive tasks, and opens new opportunities for innovation. On the other hand, it raises acute concerns about replacement, deskilling, and declining occupational security, especially for employees whose work combines knowledge intensity with relatively routine cognitive operations^[1,2]. The present study uses the term knowledge workers to refer to employees with university-level education who perform knowledge-intensive but comparatively standardised cognitive tasks within organisations.

Career adaptability is a central resource for coping with technological change because it reflects an individual's readiness to deal with vocational tasks, transitions, and work-related disruptions^[3-5]. Workers with stronger career adaptability are better able to plan ahead, regulate choices, explore emerging opportunities, and maintain confidence when occupational demands shift. In AI-rich workplaces, these capabilities are critical: employees must decide whether to resist, avoid, or integrate new technologies into their identity, skill profile, and future career pathway.

Existing research has shown that AI-related stress and uncertainty can undermine willingness to work with intelligent systems, yet the literature still treats anxiety mainly as a linear and uniformly harmful force^[2,10]. This perspective overlooks the possibility that anxiety may first inhibit adaptive behaviour and later, once it becomes salient enough, activate a compensatory process in which employees mobilise effort, learning, and self-regulation. To address this gap, the present paper develops a framework linking AI anxiety to career adaptability through proactive vitality management and examines whether sense of control changes the strength and direction of this process.

2. Theory and hypotheses

2.1. AI anxiety and career adaptability

Career adaptability encompasses concern for the future, control over vocational choices, curiosity about possible selves and opportunities, and confidence in solving career-related problems^[3-5]. AI anxiety may erode all four components in its early stage because workers who perceive AI as a threat are more likely to avoid future-oriented thinking, feel less autonomous, disengage from exploration, and question their capacity to remain employable. From this perspective, anxiety initially works as a constraining force.

Trait activation theory suggests, however, that demanding work contexts can also activate latent positive traits when the situation becomes sufficiently pressing^[8]. Knowledge workers often possess high achievement motivation, strong learning orientation, and substantial cognitive resources^[9]. When AI anxiety reaches a salient level, these traits may be triggered, prompting workers to reassess their career path, acquire new skills, and reconstruct professional confidence. Accordingly, the relationship between AI anxiety and career adaptability is expected to be curvilinear rather than purely negative.

H1: AI anxiety has a U-shaped relationship with career adaptability among knowledge workers.

2.2. AI anxiety and proactive vitality management

Proactive vitality management refers to deliberate actions through which employees regulate their physical and psychological energy in order to maintain effective functioning at work^[6,7]. Under low-to-moderate AI anxiety, knowledge workers may conserve resources defensively by withdrawing from experimentation, reducing engagement, and avoiding visible performance risk. Such a reaction suppresses proactive vitality management because employees do not actively invest energy in coping or renewal.

Once AI anxiety becomes strong enough to signal a material threat to future employability, avoidance is less tenable. Knowledge workers may then begin to manage their energy more intentionally, for example by learning new digital tools, restoring mental focus, and reorganising work effort. As a result, AI anxiety should first depress and then stimulate proactive vitality management.

H2: AI anxiety has a U-shaped relationship with proactive vitality management among knowledge workers.

2.3. The mediating role of proactive vitality management

Employees with higher proactive vitality management are more capable of sustaining attention, regulating emotion, and maintaining purposeful action under demanding conditions^[6,7]. These self-regulatory behaviours provide the energetic foundation for career adaptability by supporting future planning, occupational exploration, decision control, and confidence. Proactive vitality management should therefore positively predict career adaptability.

At the same time, proactive vitality management offers a plausible mechanism through which AI anxiety affects adaptation. When AI anxiety is low-to-moderate, depleted energy and defensive coping reduce adaptive capacity; when anxiety becomes salient, active energy management can convert perceived threat into purposeful adjustment. This implies that proactive vitality management transmits the effect of AI anxiety to career adaptability.

H3: Proactive vitality management is positively associated with career adaptability.

H4: Proactive vitality management mediates the relationship between AI anxiety and career adaptability.

2.4. The moderating role of sense of control

Sense of control reflects the extent to which individuals believe they can influence outcomes, direct action, and manage uncertainty in their environment^[11]. Employees with a strong sense of control are more likely to interpret technological disruption as manageable, preserve psychological agency, and respond with active coping rather than passivity. In contrast, low-control employees are more likely to experience AI as an uncontrollable external threat, which intensifies paralysis and disengagement.

Accordingly, sense of control should shape both the curvilinear effect of AI anxiety on career adaptability and the curvilinear effect of AI anxiety on proactive vitality management. Moreover, because proactive vitality management is the mechanism through which psychological agency is enacted, it should also carry the interaction effect of AI anxiety and sense of control to career adaptability.

H5: Sense of control positively moderates the relationship between AI anxiety and career adaptability.

H6: Sense of control positively moderates the relationship between AI anxiety and proactive vitality management.

H7: Proactive vitality management mediates the interaction effect of AI anxiety and sense of control on career adaptability.

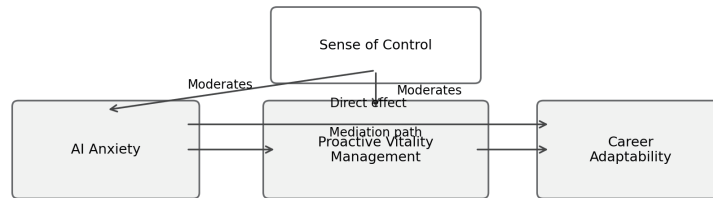


Figure 1. Conceptual model of the study.

3. Method

3.1. Sample and analytical strategy

The empirical analysis draws on survey data from 582 knowledge workers employed in organisations that had either applied for AI-related patents or reported AI implementation. The model includes six control variables: gender, age, position, working time, industry type, and length of AI exposure. The focal variables are AI anxiety, proactive vitality management, sense of control, and career adaptability.

To test the proposed framework, the analysis combines descriptive statistics, correlation analysis, and hierarchical regression. AI anxiety squared is introduced to examine the hypothesised U-shaped effects. Before the interaction terms were computed, the relevant variables were mean-centred to reduce multicollinearity. The source manuscript reports a maximum variance inflation factor of 3.126 and Durbin-Watson statistics close to 1.67, indicating no severe multicollinearity or autocorrelation problems in the regression models.

3.2. Empirical analysis

3.2.1. Correlation analysis

Table 1 reports the means, standard deviations, and correlation matrix. AI anxiety is significantly associated with both proactive vitality management and career adaptability, and sense of control is significantly related to both outcomes as well. These bivariate relationships provide initial support for the proposed model.

Table 1. Means, standard deviations, and correlation matrix.

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
V1 Gender	1									
V2 Age	-0.038	1								
V3 Position	-0.005	0.171**	1							
V4 Working time	0.004	-0.026	0.041	1						
V5 Industry type	-0.007	0.038	-0.019	-0.032	1					
V6 Length of AI exposure	0.172**	-0.077	0.053	-0.073+	-0.017	1				
V7 AI anxiety	0.155**	0.232**	0.029	-0.020	-0.041	-0.008	1			
V8 Proactive vitality management	0.027	0.236**	0.192**	-0.052	-0.019	0.149**	-0.079+	1		
V9 Sense of control	-0.013	-0.038	-0.045	-0.001	0.072+	0.023	0.403**	-0.181**	1	
V10 Career adaptability	0.073+	0.221**	0.136**	-0.077+	-0.030	0.165**	-0.082*	0.619**	-0.348**	1
Mean	1.57	1.51	2.86	1.25	1.59	2.66	2.792	3.725	2.942	3.846
SD	0.496	0.500	0.382	0.433	0.493	0.948	0.966	0.392	0.863	0.504

Note: N = 582. + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. Abbreviations: V1 = Gender; V2 = Age; V3 = Position; V4 = Working time; V5 = Industry type; V6 = Length of AI exposure; V7 = AI anxiety; V8 = Proactive vitality management; V9 = Sense of control; V10 = Career adaptability.

3.2.2. Hypothesis testing

Table 2 summarises the hierarchical regression results for the focal variables. For career adaptability, the coefficient of AI Anxiety² is positive and significant in Model 2 and remains positive after the introduction of the moderator and mediator, indicating a U-shaped relationship and supporting H1. For proactive vitality management, AI Anxiety² is also positive and significant, supporting H2. Proactive vitality management shows a strong positive coefficient when predicting career adaptability, supporting H3. The interaction terms between sense of control and both AI Anxiety and AI Anxiety² are significant in the relevant models, which supports H5 and H6. Because the inclusion of proactive vitality management materially improves the explanation of career adaptability and carries the conditional effect of AI anxiety, the results are consistent with H4 and H7.

Table 2. Hierarchical regression results for the focal variables.

Variable	Career Adaptability	Career Adaptability	Career Adaptability	Career Adaptability	Career Adaptability	Proactive Vitality Management	Proactive Vitality Management	Proactive Vitality Management	Proactive Vitality Management
	M1	M2	M3	M4	M5	M6	M7	M8	M9
AI Anxiety		-0.054 (-2.60)	-0.025 (-1.16)	-0.071 (-2.62)	-0.017 (-0.76)		-0.040 (-2.46)	-0.058 (-3.14)	-0.083 (-1.89)
AI Anxiety ²		0.138 (7.87)	0.088 (4.95)	0.054 (2.54)	0.034 (1.88)		0.099 (7.20)	0.050 (3.45)	0.032 (1.75)
Proactive vitality management					0.646 (15.66)				
Sense of control			-0.146 (-6.19)	-0.182 (-6.81)	-0.158 (-7.03)			-0.018 (-0.88)	-0.038 (-1.65)
Sense of control x AI Anxiety			0.206 (8.78)	0.257 (8.67)	0.140 (5.39)			0.154 (7.74)	0.182 (7.21)
Sense of control x AI Anxiety ²				0.060 (2.81)	0.039 (2.16)				0.033 (1.82)
R ²	0.097	0.206	0.411	0.419	0.594	0.107	0.200	0.300	0.304
F	10.343	18.617	39.896	37.420	69.440	11.460	17.861	24.451	22.618

Note: Control variables included in all models are gender, age, position, working time, industry type, and length of AI exposure. Entries are unstandardised coefficients with t values in parentheses. Variables were mean-centred before the interaction terms were constructed.

4. Discussion and conclusion

The study advances the literature in three ways. First, it shows that AI anxiety should not be treated as a uniformly detrimental state. Its effect is curvilinear: when mild or moderate, anxiety suppresses adaptation; when sufficiently salient, it can activate compensatory effort and adaptive renewal. Second, the results identify proactive vitality management as the psychological mechanism that links AI-related threat perceptions to career adaptability. Third, the findings highlight sense of control as a key boundary condition that determines whether anxiety remains paralysing or becomes developmental.

The practical implications are equally clear. Organisations introducing AI should not focus solely on technical training. They should also strengthen employees' sense of control by improving transparency, clarifying the role of AI in task redesign, and ensuring that workers retain opportunities for choice and influence. At the individual level, interventions that foster proactive vitality management—such as structured recovery practices, focused learning routines, and deliberate energy regulation—may help transform anxiety into adaptive capacity rather than withdrawal.

Several limitations should be acknowledged. The empirical evidence is based on cross-sectional survey data, so causal inference remains limited. The sample is drawn from a specific organisational and national context, which may constrain generalisability. Future research can extend the model using longitudinal or multi-wave designs, compare sectors with different levels of AI intensity, and examine whether other psychological resources such as AI self-efficacy or organisational support further shape the conversion of anxiety into adaptability.

In conclusion, the paper suggests that the decisive question is not whether knowledge workers experience AI anxiety, but what they do with it. Without psychological agency, anxiety invites a "Luddite" response of avoidance and resistance. With stronger sense of control and proactive vitality management, however, the same anxiety can become the starting point for a "Nirvana"-like process of adaptation, integration, and career renewal.

Acknowledgements

Not applicable.

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