

How Leader Support Promotes AI Crafting by Reducing AI-Induced Subjective Liminality in AI-Transformed Enterprises

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Abstract: Artificial intelligence is reshaping enterprise work, but employees may experience psychological in-betweenness during such change. Using survey data from 120 Chinese employees with AI-use experience, this study examines whether leader support promotes AI crafting through three dimensions of AI-induced subjective liminality: anxiety, ambiguity, and reduced group identification. Results show that leader support reduces all three dimensions, while only reduced group identification significantly predicts AI crafting and mediates the relationship. The findings highlight the identity-protective role of leadership in AI-transformed enterprises.

Keywords: Leader support; AI-induced subjective liminality; Reduced group identification; AI crafting; Enterprise management

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1. Introduction

Artificial intelligence (AI) has become a central element of enterprise management, reshaping employees' psychological states, work behaviors, and innovation processes ^[1-2]. The key managerial question is no longer whether enterprises should adopt AI, but how they can help employees adapt to AI-enabled work.

Prior studies show that AI adoption can support work redesign, but it may also produce uncertainty, insecurity, stress, and weakened belonging ^[3-4]. In this context, leader support may be a critical resource because leaders provide guidance, recognition, and social reassurance during AI-related change ^[2, 5]. However, less attention has been paid to whether leader support reduces AI-induced subjective liminality, namely employees' feeling of being psychologically in-between during AI transformation. This study examines how leader support reduces anxiety, ambiguity, and reduced group identification, and how these states influence AI crafting.

This issue is especially important for AI-transformed enterprises because employees do not simply

respond to AI as a neutral tool. They also evaluate whether AI changes their expertise, status, and future position in the organization. Research on AI anxiety suggests that employees may develop fear, uncertainty, and avoidance when intelligent technologies are perceived as difficult to understand or hard to control ^[6–10]. Studies on smart technology and automation further show that employees may interpret technological change as a signal of job replacement or competence devaluation ^[11]. Therefore, understanding AI adoption requires attention to employees' transitional psychological experience, not only their technical acceptance. By introducing AI-induced subjective liminality, this study explains how leader support helps employees move from psychological suspension toward active AI crafting.

2. Literature review and hypotheses

2.1. Leader support and AI-induced subjective liminality

AI implementation may disturb employees' understanding of their roles, abilities, and place in the organization. Such disruption can create anxiety, ambiguity, and reduced group identification. Studies on AI transitions suggest that AI-related change can produce insecurity, stress, and other well-being risks ^[1, 3]. These findings provide a basis for examining AI-induced subjective liminality as a multidimensional psychological response.

Leadership and support conditions also matter in AI adoption and employee AI use ^[2, 5]. Therefore, when employees perceive higher leader support, they are likely to experience lower anxiety, lower ambiguity, and weaker reduced group identification in AI-related work change. Accordingly, the following hypotheses are proposed:

AI-induced subjective liminality differs from general technology stress because it emphasizes a transitional state in which employees are no longer fully anchored in previous work identities but have not yet formed stable AI-enabled roles. In such a state, anxiety reflects emotional threat, ambiguity reflects unclear role boundaries, and reduced group identification reflects weakened belonging in AI-reconfigured teams. Leader support can reduce these reactions by clarifying expectations, legitimizing learning mistakes, and signaling that employees remain valued during AI transformation. This supportive context should make AI-related change less threatening and more interpretable.

H1a: Leader support is negatively related to AI-induced anxiety.

H1b: Leader support is negatively related to AI-induced ambiguity.

H1c: Leader support is negatively related to AI-induced reduced group identification.

2.2. AI-induced subjective liminality and AI crafting

AI crafting refers to employees' proactive efforts to reshape tasks, procedures, knowledge, and human-AI interaction. Although AI may provide new resources, employees' psychological interpretation of AI affects whether they actively redesign work. Prior studies show that AI-related work conditions can shape crafting behavior and that AI uncertainty influences employees' work redesign ^[4, 6]. Thus, the following hypotheses are proposed:

The logic of AI crafting is rooted in the broader job crafting perspective, which argues that employees actively adjust task, relational, and cognitive boundaries to create a better fit between themselves and changing work demands ^[12]. In AI-enabled work, such adjustment may include experimenting with AI tools, redesigning routines, and combining human judgment with algorithmic outputs. However, subjective

liminality may restrict this proactive adjustment. When employees feel anxious, uncertain, or socially detached, they may avoid experimentation and rely on familiar routines rather than craft new AI-supported work practices.

H2a: AI-induced anxiety is related to AI crafting.

H2b: AI-induced ambiguity is related to AI crafting.

H2c: AI-induced reduced group identification is negatively related to AI crafting.

2.3. The mediating role of AI-induced subjective liminality

Leadership may influence AI crafting through employees' psychological states during AI transformation. Supportive leaders can reduce threat perceptions and strengthen employees' sense of meaning and belonging, which may make employees more willing to explore AI tools and adjust work processes. Therefore, leader support may promote AI crafting by reducing AI-induced subjective liminality. Accordingly, the following hypotheses are proposed:

Taken together, leader support may operate as an upstream social resource that shapes how employees interpret AI transformation. Supportive leaders do not directly craft AI-enabled tasks for employees; rather, they reduce the psychological barriers that prevent employees from doing so. When anxiety and ambiguity decline, employees have more cognitive space to explore AI. When reduced group identification weakens, employees are more likely to see AI use as part of collective adaptation rather than an individual threat. Thus, AI-induced subjective liminality provides a meaningful explanatory mechanism between leader support and AI crafting.

H3a: AI-induced anxiety mediates the relationship between leader support and AI crafting.

H3b: AI-induced ambiguity mediates the relationship between leader support and AI crafting.

H3c: AI-induced reduced group identification mediates the relationship between leader support and AI crafting.

3. Research method

3.1. Variable measurement

To ensure measurement reliability and validity, this study used mature scales and adapted them to the employee AI-use context. The leader support scale was adapted from Zhang et al. ^[7]. AI-induced subjective liminality scale developed by Dhar and Boyatzis, including anxiety, ambiguity, and reduced group identification ^[8]. AI Crafting adapted from Li et al. ^[6]. All items were measured on a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree.

3.2. Data collection and sample

Data were collected through an online questionnaire platform. After data screening, 120 valid responses were retained. The gender distribution was balanced, with 60 male and 60 female respondents. Most respondents were aged between 21 and 40. Private-enterprise employees formed the largest occupational group, followed by state-owned enterprise employees, public institution employees, and civil servants. Most respondents held undergraduate or graduate degrees.

4. Data analysis

4.1. Reliability and validity analysis

As shown in **Table 1**, Cronbach's α coefficients ranged from 0.740 to 0.892, and composite reliability values ranged from 0.827 to 0.934, indicating acceptable internal consistency and reliability across all constructs. Following Fornell and Larcker, the overall measurement quality was considered acceptable for subsequent analyses ^[9].

Table 1. Means, standard deviations, and correlations

Variable	Mean	SD	Leader support	Anxiety	Ambiguity	Reduced group identification	AI crafting
Leader support	5.685	0.689	(0.740)				
Anxiety	2.844	1.335	-0.297***	(0.858)			
Ambiguity	2.650	1.386	-0.353***	0.841***	(0.892)		
Reduced group identification	2.731	1.297	-0.380***	0.769***	0.845***	(0.866)	
AI Crafting	5.939	0.619	0.296**	-0.078	-0.162	-0.279**	(0.753)

Note: Values in parentheses are Cronbach's alpha coefficients. ** $P < .01$; *** $P < .001$.

4.2. Descriptive statistics and correlation analysis

Table 1 reports the means, standard deviations, and Pearson correlation coefficients. Leader support was negatively correlated with the three dimensions of AI-induced subjective liminality. The three liminality dimensions were highly correlated with each other. Reduced group identification was significantly and negatively correlated with AI crafting, whereas anxiety and ambiguity showed weaker relationships with AI crafting.

4.3. Hypothesis testing and mediation analysis

As shown in **Table 2**, leader support had significant negative effects on anxiety, ambiguity, and reduced group identification. Leader support also had a significant positive total effect on AI crafting. In the parallel mediation model, reduced group identification had a significant negative effect on AI crafting, whereas anxiety and ambiguity did not significantly predict AI crafting. The model explained additional variance in AI crafting, indicating that reduced group identification is the key psychological pathway.

Table 2. Regression path test results

Dependent variable	Independent variable	Standardized β	p value	R ²	P
Anxiety	Leader support	-0.272	0.003	0.104	0.013
Ambiguity	Leader support	-0.319	<0.001	0.158	0.001
Reduced group identification	Leader support	-0.357	<0.001	0.157	0.001
AI Crafting	Leader support	0.273	0.003	0.111	0.009
AI Crafting	Leader support	0.210	0.028	0.182	0.002
AI Crafting	Anxiety	0.298	0.068	0.182	0.002
AI Crafting	Ambiguity	0.073	0.718	0.182	0.002
AI Crafting	Reduced group identification	-0.469	0.008	0.182	0.002

Note. Standardized regression coefficients are reported. Gender, age, and education were controlled.

A 5,000-sample bootstrap procedure was further used to test the parallel mediation effects. The indirect effect through reduced group identification was significant because its 95% confidence interval excluded zero. The indirect effects through anxiety and ambiguity were not significant. Therefore, H1a, H1b, H1c, H2c, and H3c were supported, while H2a, H2b, H3a, and H3b were not supported. These results indicate that leader support promotes AI crafting mainly by reducing employees' AI-induced loss of group identification.

5. Conclusion, discussion, and managerial implications

5.1. Conclusion and discussion

This study examined how leader support influences AI crafting through three dimensions of AI-induced subjective liminality. The results show that leader support significantly reduces anxiety, ambiguity, and reduced group identification, confirming that supportive leadership can stabilize employees during AI-related work change. However, only reduced group identification significantly predicts AI crafting and mediates the relationship. This suggests that the key barrier to proactive AI work redesign is not merely emotional uneasiness or role uncertainty, but the weakening of employees' sense of belonging to meaningful work groups. The study therefore highlights the identity-protective function of leadership in AI-transformed enterprises.

5.2. Managerial implications and limitations

Enterprises should not treat AI implementation as a technical project only. Managers need to provide timely guidance, recognize employees' AI-related efforts, and maintain team belonging during AI transformation. Training programs should combine AI skills with social support mechanisms so that employees feel included while redesigning work around AI. This study used a relatively small cross-sectional sample, so future research could adopt longitudinal or multi-source data, compare industries, and examine whether liminality dimensions differ across AI tool types and transformation stages.

Disclosure statement

The authors declare no conflict of interest.

Author contributions

Xiaolin Zhou collected and organized the data and wrote the paper. Dexin Zhao conceived the idea of the study and contributed to translation.

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