



The Effect of Artificial Intelligence(AI) Awareness on Employees' Job Crafting: Based on the Cognitive Evaluation Theory of Stress

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Abstract. This study explores the mechanism and boundary conditions of employees using job crafting to cope with the impact of Artificial intelligence(AI) awareness based on the cognitive evaluation theory of stress and resource conservation theory. With 282 employees as the research subjects, the study found that AI awareness was positively related to the challenging appraisal, and organizational support strengthened this positive relationship, thereby affecting employees' job crafting. AI awareness was positively correlated with the threatening appraisal, and organizational support weakened this positive relationship. This study reveals the reasons and conditions for employees choosing job crafting to cope with AI awareness and expands the antecedent mechanism research of job crafting. It also provides suggestions for organizations to guide employees' job crafting from an evaluation perspective.

Keywords: Artificial Intelligence Awareness; Challenging appraisal; Threatening appraisal; Job crafting.

1 Introduction

Artificial intelligence technology, as a new emerging technology, is becoming the core driving force of the next round of industrial revolution. More and more enterprises are actively applying artificial intelligence technology to transform production and management processes^[1]. However, while artificial intelligence technology is improving the efficiency of enterprise production, it is also replacing a large number of jobs, forcing many people to leave their jobs. Some scholars have proposed that about 95% of job positions in the hotel industry will be replaced by artificial intelligence in the future, gradually "replacing" the regular job positions of enterprises^[2]. In fact, many hotels have already begun using intelligent robots to provide delivery services, gradually replacing the work of hotel waiters. "Replacing humans with artificial intelligence" will continuously reduce employees' job opportunities, negatively affecting their employment and career development^[3]. For example, a knowledgeable and passionate news anchor may be replaced by an "artificial intelligence anchor" that

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is less prone to errors, thereby hindering their career development. Existing research indicates that the workplace stress caused by AI awareness threatening employees' organizational commitment, job satisfaction^[4], and has a positive impact on their work burnout, intention to leave, and depression^[5, 6]. However, it is unclear how, when, and to what extent Artificial intelligence(AI) awareness affects employees' job crafting, and there is still relatively little discussion on this aspect.

According to the cognitive evaluation theory of stress, when the situation demands consumption of personal resources, the stress response will be triggered, and individuals will also begin to make cognitive evaluation of the stressful situation. Different cognitive evaluations will lead to different emotional and behavioral responses of individuals. Environmental conditions (stressors) are not the direct inducing cause of the stress response, but rather the individual's assessment of a challenging or threatening determines the response^[7]. Therefore, this study incorporates the challenging-threatening assessment framework to explore the impact of individual AI awareness how affect their job crafting. Furthermore, based on the resource conservation theory, the acquisition and preservation of resources are important strategies for coping with work stress, and organizational support, as an effective means for employees to obtain resources in their work, plays an important moderating role in the relationship between AI awareness and job crafting.

2 Research Hypothesis

2.1 Relationship between AI Awareness and Employee Job Crafting

AI awareness refers most to the extent to which an employee perceives that AI technology threateningens their career development^[6]. As AI technology continues to be applied, its impact on employees' work is also "mixed." There is no denying that artificial intelligence technology has greatly improved our daily work efficiency, but it also poses a threatening to our jobs. Therefore, the AI awareness is also, to a certain extent, employees' perception of work stressors. There are significant technological disparities between artificial intelligence and ordinary employees, making it difficult for employees to quickly match the high efficiency of AI technology, which can easily lead to job insecurity among employees^[8]. To this end, by increasing structural work resources proactively, that is, employees strive to increase the opportunity to improve their work skills; Increase social work resources, that is, employees strive to increase the resources of their leaders and colleagues to support them; Increase challenging work requirements, that is, proactively seek out challenging projects and take on additional tasks; Reducing threatening job requirements, such as reducing work tasks that cause emotional stress or avoiding difficult decisions^[9]. Reshaping work in this manner can alleviate job stress and motivate employees to perform better^[10].

Hypothesis 1: AI awareness positively affects employees' job crafting

2.2 The Mediating Role of Challenging Appraisal and Threatening Appraisal

According to the cognitive evaluation theory of stress, when employees face the pressure brought by the impact of artificial intelligence, they will evaluate its challenging and threatening. This cognitive evaluation is the result of individuals judging whether various coping mechanisms can be used to improve the current pressure situation. Specifically, when employees are able to cope with the stress brought about by AI awareness, they will experience a sense of accomplishment and personal growth in the stress resolution process, resulting in challenging appraisal; A threatening appraisal occurs when an employee is not able to cope with the current stress or when the stress causes him or her to expend too much energy to accomplish a specific goal. For example, Yin et al.^[11] explored the double-edged sword effect of artificial intelligence assistants on employees' innovative behavior through the Transactional Theory of Stress.

The type of cognitive evaluation of an individual's AI awareness will also affect his job crafting behavior. On the one hand, the challenging appraisal of employees' AI awareness is conducive to their job crafting. Employees who produce challenging appraisal often have the work resources needed to cope with the pressure brought about by the current AI awareness, and believe that development through their own efforts can narrow the gap with the efficiency of AI technology and even bring more innovative ideas to the organization^[12]. This affirmation of self-competence can make employees more effective in coping with stress and accompanied by positive emotional experiences. Therefore, individuals are prompted to devote more energy to work in order to alleviate or even change the existing work dilemma. For example, He et al.^[13] believe that challenging appraisal of artificial intelligence has a positive impact on employee job crafting. On the other hand, employees' threatening appraisal of AI awareness may inhibit their job crafting behavior. Individuals who have a threatening appraisal of the AI awareness will think that the current job crafting exceed their own bearable range, and thus show a low enthusiasm and initiative for work, implement the "undoing" of the existing work situation, and believe that artificial intelligence technology is gradually replacing their work importance. Therefore, in the process of coping with work pressure, it is easy to produce fear, anxiety, depression and other negative emotions, and then cannot complete the work task in a vigorous work state, and will not think of actively reshaping the work to change the status quo. Therefore, it is proposed that:

Hypothesis 2a: challenging appraisal mediates the relationship between AI awareness and job crafting.

Hypothesis 2b: threatening appraisal mediates the relationship between AI awareness and job crafting.

2.3 Moderating Effects of Organizational Support

Organizational support refers to employees' perception of how the organization views their contributions and cares about and nurtures them, which can provide employees

with important material and psychological resources to cope with work stress^[14]. This study believes that organizational support can create a good working atmosphere for employees under the AI awareness, so as to alleviate the negative impact caused by work stress.

Studies have shown that individuals with high-level organizational support are more likely to feel appreciated, recognized and affirmed by the organization, thus increasing their sense of competence and building confidence in achieving goals^[5, 15]. When faced with work pressure, they are more likely to positively attribute it and evaluate it as an opportunity to gain benefits and achieve work goals, and have more confidence to invest individual resources to cope with losses caused by stressors. Therefore, with a high level of organizational support, the positive relationship between AI awareness and employee challenging appraisal will be more significant, thus promoting job crafting. On the contrary, with a low level of organizational support, employees are more inclined to maliciously attribute the pressure brought by the AI awareness, believing that it affects their career planning and poses a threatening to their jobs, which seriously endangers their well-being, thus enhancing their threatening appraisal and reducing the possibility of job crafting. In summary, the following hypothesis is proposed:

Hypothesis 3a: organizational support moderates the the association between AI awareness and challenging appraisal such that the association will be more positive under conditions of higher organizational support.

Hypothesis 3b: Compared with low levels of organizational support, employees with high levels of organizational support are more likely to make challenging appraisal of AI awareness and promote their job crafting.

Hypothesis 4a: organizational support moderates the the association between AI awareness and threatening appraisal such that the association will be more positive under conditions of lower organizational support.

Hypothesis 4b: Compared with high levels of organizational support, employees with low levels of organizational support are more likely to make a threatening appraisal of AI awareness, thus reducing their job crafting.

Based on the above hypotheses, the theoretical model of this study is shown in Fig. 1.

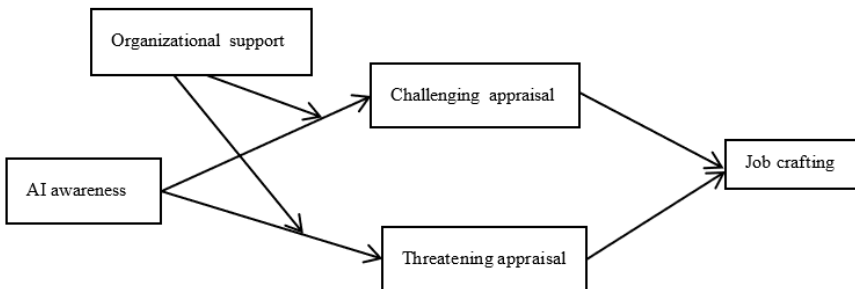


Fig. 1. theoretical model figure

3 Data and Method

3.1 Sample

In this study, the online data collection method of Questionnaire Star platform was adopted, and a total of 309 questionnaires were collected. After eliminating the invalid questionnaires with obvious contradictions in answering or other problems, 282 valid questionnaires were finally obtained, with an effective recovery rate of 91.26%.

3.2 Variables

The scales selected in this study are all mature scales compiled by foreign scholars, and all use 5-point Likert scores, with 1-5 indicating the range from “strongly disagree” to “strongly agree”.

AI awareness: This study adopts the AI awareness Scale from Brougham and Haar^[16], consisting of 4 items. An example item is: “I think my job may be replaced by artificial intelligence.” The Cronbach's α reliability coefficient of this scale is 0.806.

Job Crafting: The scale used in this study was developed by Tims et al.^[9], comprising a total of 21 items. An example item from the scale is: “In my job, I strive to improve my overall competence.” The Cronbach's α reliability coefficient of this scale is 0.847.

Cognitive Appraisal: The 8-item scale developed by Drach-Zahavy and Erez^[16] was adopted. This scale includes 4 items for challenging appraisal and 4 items for threatening appraisal. An example item for challenging appraisal is: “My current job provides me with opportunities to overcome difficulties.” An example item for threatening appraisal is: “I am worried that my current job will expose my weaknesses.” The internal consistency coefficient for the challenging appraisal scale is 0.795, and the internal consistency coefficient for the threatening appraisal scale is 0.803.

Organizational Support: The 8-item scale developed by Eisenberger et al.^[17] was used. An example item is: “When I have difficulties, the organization will help me.” The Cronbach's α reliability coefficient of this scale is 0.868.

Control Variables: Consistent with most previous studies, this study controls for employees' gender, age, education level, and job tenure^[18].

4 Data Analysis and Results

4.1 Confirmatory Factor Analysis

In this study, MPLUS 8.3 was used to conduct confirmatory factor analysis on AI awareness, challenging appraisal, threatening appraisal, job Crafting and organizational support scales to verify the validity of each variable. As shown in Table 1. Compared with other models, the five-factor model has the best fitting effect, which indicates that the five-factor variables have good validity.

Table 1. Results of confirmatory factor analysis

Model	χ^2	df	χ^2/df	RMSEA	CFI	TLI	SRMR
Five- factor (AI; CA; TA; JC; OS)	1644.806	769	2.139	0.052	0.903	0.914	0.049
Four-factor (AI; CA+TA; JC; OS)	2736.161	733	3.733	0.083	0.809	0.793	0.098
Three-factor (AI; CA+TA; JC+OS)	3691.672	776	4.757	0.098	0.746	0.729	0.121
Two-factor (AI; CA+ TA+JC+OS)	4888.234	778	6.283	0.106	0.720	0.703	0.126
Single factor (AI+ CA+ TA+JC+OS)	6298.344	779	8.085	0.143	0.502	0.469	0.133

Note: $N=282$, *** $p < 0.001$, AI stands for AI awareness, CA stands for challenging appraisal, TA stands for threatening appraisal,JC stands for job crafting,OS stands for organizational support.

4.2 Common Method Deviation Analysis

In order to exclude the influence of the common method bias of the measured variables on the results, this study conducts exploratory factor analysis on a total of 41 items of the five variables according to the Harman's single factor test. The results showed that the first common factor explained 25.946% of the variance, which was lower than the critical standard value of 40%. Therefore, it was considered that there was no serious common method bias.

4.3 Descriptive Statistical Analysis of Variables

The mean, standard deviation of each variable, and the correlation coefficient between variables are shown in Table 2. The AI awareness is significantly positively correlated with the challenging appraisal ($r = 0.302, p < 0.01$) and threatening appraisal ($r = 0.221, p < 0.01$), respectively. The challenging appraisal is significantly positively correlated with job crafting ($r = 0.690, p < 0.01$), while the threatening appraisal is significantly negatively correlated with job crafting ($r = -0.642, p < 0.01$), which is consistent with the research expectation and lays a foundation for further hypothesis verification.

Table 2. Means, standard deviations, and correlation coefficients of variables

variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9
1.Gender	1.530	0.500	1								
2.Age	2.130	0.978	-0.03	1							
				7							
3.Education level	5.110	0.768	0.087	-0.51	1						
				3**							
4.Job tenure	2.620	1.235	0.041	0.829	-0.70	1					
				**	2**						

	te		te		te		te		te		te	
1	0.05	0.05	0.05	0.04	-0.0	0.05	-0.0	0.04	0.00	0.06	-0.0	0.04
	2	2	3	6	42	3	44	9	7	1	33	3
2	0.07	0.04	0.08	0.04	-0.1	0.04	-0.1	0.04	0.12	0.04	0.03	0.03
	9	5	7	2	33	2	.	1	9	6	9	3
3	-0.0	0.04	-0.0	0.04	0.02	0.04	-0.0	0.04	-0.0	0.04	-0.0	0.03
	75	8	43	4	1	4	08	1	95	9	53	5
4	-0.0	0.04	-0.0	0.04	0.07	0.04	0.06	0.03	-0.0	0.04	-0.0	0.03
	40	5	28	1	5	2	4	9	84	7	36	1
AI	0.44	0.08	0.35	0.08	0.17	0.06	0.26	0.09	0.25	0.08	0.12	0.08
	4**	9	9***	3	8**	9	6**	9	1**	9	4**	3
CA											0.45	0.07
											0***	6
TA											-0.4	0.06
											08**	8
											.	
OS			0.22	0.05			-0.2	0.05				
			5***	2			28**	0				
							.					
AI × OS			0.81	0.20			-0.7	0.20				
			7***	1			20**	0				
							.					
Intercepts	2.92	0.42	4.23	0.28	3.53	0.42	4.38	0.28	3.01	0.43	3.57	0.61
	8***	2	7***	7	3***	0	3***	1	1***	7	3***	7
R ²	0.12	0.03	0.26	0.04	0.04	0.02	0.17	0.03	0.06	0.02	0.45	0.04
	4**	9	8***	1	4*	4	5***	5	2*	7	0***	8

Note: N=282, ***p < 0.001, **p < 0.01, *p < 0.05, 1 stands for Gender, 2 stands for Age, 3 stands for Education level, 4 stands for job tenure, AI stands for AI awareness, CA stands for challenging appraisal, TA stands for threatening appraisal, OS stands for organizational support.

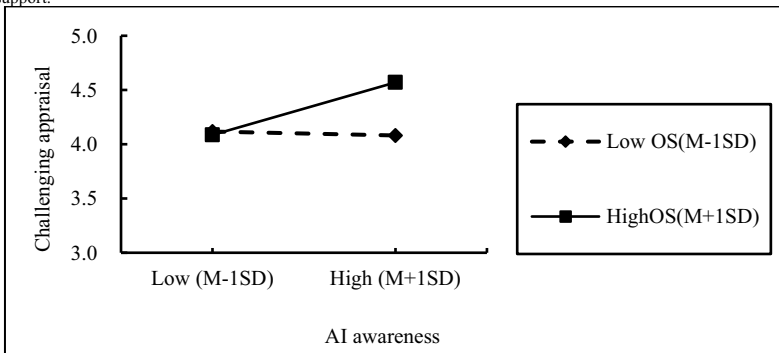


Fig. 2. Moderating effect diagram (1)

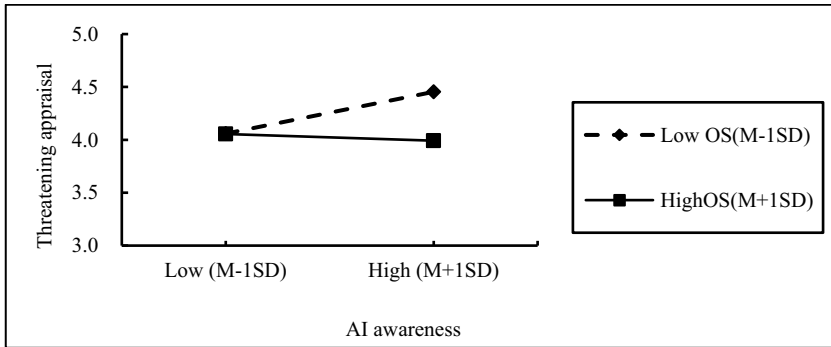


Fig. 3. Moderating effect diagram (2)

To further verify the moderated mediation effect, this study employed the Bootstrap method (N = 5000) for statistical analysis. As shown in Table 4, when the level of organizational support is high, the indirect effect of AI awareness on job crafting through challenging appraisal is significant (b = 0.348, 95%CI = [0.185, 0.538]). Organizational support moderates the mediation of challenging appraisal in the relationship between AI awareness and employees' job crafting, and Hypothesis H3b is supported. Similarly, as indicated in Table 4, when the level of organizational support is low, this indirect effect is significant (b = -0.258, 95%CI= [-0.418, -0.133]). Organizational support moderates the mediation of threatening appraisal in the relationship between AI awareness and job crafting, and Hypothesis H4b is supported.

Table 4. Indirect effect analysis results

Mediator variable	Organizational support(OS)	Effect	Boot SE	Boot LLCI	Boot ULCI
Challenging appraisal	High OS(M+SD)	0.348	0.089	0.185	0.538
	Low OS(M- SD)	-0.026	0.063	-0.153	0.094
	High and low group indirect effect difference	0.367	0.063	0.092	0.152
Threatening appraisal	High OS(M+SD)	0.041	0.031	-0.052	0.071
	Low OS(M- SD)	-0.258	0.072	-0.418	-0.133
	High and low group indirect effect difference	0.294	0.094	0.120	0.152

5 Research Conclusions and Enlightenment

5.1 Research Conclusions

This study explores the AI awareness on employee job crafting based on the cognitive evaluation theory of stress and the conservation of resources theory. The findings are as

follows: (1) AI awareness positively affects employee job crafting. (2) Challenging appraisal and threat appraisal mediate the relationship between AI awareness and job crafting. (3) Organizational support moderates the above two mediation paths.

5.2 Theoretical Significance

First, this study explores the impact of AI awareness on job crafting from the perspectives of challenging appraisal and threatening appraisal, expanding research in the organizational field related to AI development. This echoes the research by Liang et al.^[19], which discusses the dual impact of AI development on employees' work performance. On the one hand, the development and application of AI technology can bring employment crises to employees; on the other hand, it can also motivate them to enhance their skill levels. Second, based on the cognitive evaluation theory of stress, this study examines the diverse impacts of AI awareness on employee job crafting and clarifies the mediating mechanism between AI awareness and employee job crafting. That is, challenging appraisal and threatening appraisal play critical mediating roles between AI awareness and job crafting. Under the impact of AI, employees need to continuously adapt to new work environments and technological requirements, which inevitably prompts them to engage in deeper levels of job crafting, revealing new characteristics and patterns of job crafting in the context of emerging technologies. Third, this study expands the application of the cognitive evaluation theory of stress in organizational research, providing an important theoretical validation for stress cognitive evaluation. In contrast to most previous organizational studies that focused on stressors rather than evaluations of stressors, this study applies the cognitive evaluation theory of stress to demonstrate the significant role of stress evaluation in job crafting decisions. It emphasizes the necessity of considering stress evaluations rather than stressors themselves, further enriching the expanded application of the cognitive evaluation theory of stress.

5.3 Practical Enlightenment

First, guide employees to correctly understand the impact of AI technology and enhance their stress management capabilities. The same AI impact awareness may trigger different cognitive evaluations among employees, leading to diverse coping behavior strategies. Therefore, leaders need to understand employees' perceptions and feelings towards organizational change, guide them to correctly address the challenges posed by AI technology, and promote their job crafting. Second, employees should adopt a dialectical perspective towards the development of AI technology. They should proactively seek out the latest developments in AI, contemplate how to integrate it into their work to enhance efficiency or pioneer new work areas, and devise learning plans to regularly update their knowledge base and keep pace with industry trends. Lastly, enhance organizational support to mitigate the adverse effects of AI impact awareness. Organizations should clearly communicate the purpose of technological change to employees, actively promote the new opportunities AI technology presents for employees and assist them in self-improvement.

5.4 Research Limitations and Future Prospects

First, this study solely relies on cross-sectional data collected at a single time point to examine the impact of AI awareness, challenging appraisal, threatening appraisal, and organizational support on job crafting, without fully considering that the variables themselves and their relationships may evolve over time. In future research, an attempt could be made to collect longitudinal data to more clearly and convincingly demonstrate the relationship between AI awareness and job crafting. Second, constrained by practical research conditions, the data used in this study are solely self-reported by employees, which introduces a potential common method bias. Therefore, future research could improve the research design to obtain data through more rigorous methods. Third, this study focuses primarily on short-term job crafting. Follow-up studies could track and survey participants to explore the long-term effects of AI awareness on employees' job crafting

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