



# Is it a stress Buffer or a Cognitive Catalyst?-- Deconstructing the Double-Edged Sword Effect of AI Consciousness on Employee Adaptive Performance

Guohong Deng\*, Li Hui<sup>a</sup>

School of Economics and Management, Nanjing Tech University, Nanjing 211816, China

\*1666251309@qq.com, <sup>a</sup>Lihui2012@njtech.edu.cn

**Abstract.** Against the backdrop of the widespread application of artificial intelligence (AI) technology in the workplace, employees' cognition and attitudes toward AI—namely AI awareness—have increasingly become a key factor affecting their work adaptability. Based on the cognitive appraisal theory of stress, this study distinguishes AI awareness into challenge awareness and threat awareness, and explores their dual-edged effects on employees' adaptive performance. Through a questionnaire survey collecting 350 valid responses, the results show that AI challenge awareness significantly and positively predicts adaptive performance, whereas AI threat awareness significantly and negatively affects adaptive performance. This reveals that individuals' cognitive appraisals of AI technology application—viewing it as either a challenge or a threat—constitute an important mechanism influencing their adaptive behaviors. The study not only enriches the theoretical understanding of the antecedents of adaptive performance but also provides practical insights for organizations on how to guide employees' perceptions and implement effective interventions during AI transformation.

**Keywords:** AI challenge awareness, AI threat awareness, adaptive performance

## 1 Introduction

Against the backdrop of the accelerated development of the global digital economy and the deep application of artificial intelligence (AI) technology in the workplace, collaboration between humans and AI has become closer. While AI brings higher efficiency, it also presents a highly complex and uncertain external environment for enterprises, such as the introduction of new work procedures and unexpected tasks. In this situation, organizations need to adapt to changes and form dynamic adaptability to maintain competitiveness. At the same time, this trend also puts higher demands on employees, requiring them to have the ability to handle emergencies, creatively solve problems, and adapt to complex environments. Therefore, considering task performance and peripheral performance alone can no longer meet the needs of enterprise development, so more and more researchers are paying attention to adaptive performance.

Adaptive performance is considered an individual's behavior of coping, responding, and/or supporting change<sup>1</sup>. Previous studies have shown that employee adaptive performance is of great significance for individual, team, and corporate change and innovation<sup>2</sup>. Although its practical and theoretical importance has been widely recognized, many employees still feel overwhelmed when confronted with change and innovation in reality. Therefore, how to effectively enhance employees' adaptive performance has become a key challenge in organizational change and innovation management<sup>3</sup>. Some companies attempt to improve employee adaptability performance through leadership behavior, human resource management, and other means. In reality, employees still commonly exhibit maladaptive behaviors such as wait-and-see and resistance<sup>4</sup>. Especially in crises such as the AI technology revolution and economic fluctuations, employees' job insecurity has deepened. And some employees have even fallen into defensive pessimism due to resource depletion. At present, research on the antecedents of adaptive performance mostly focuses on a series of external factors, such as leadership style and AI technology, but neglects exploration from the perspective of employees<sup>5</sup>. With the rapid development of artificial intelligence (AI) technology, AI awareness has become an indispensable part for employees in the digital age. AI awareness refers to employees' cognition and attitude towards how AI technology will affect their future career development<sup>6</sup>. Through the existing literature review, most of the existing literature focuses on the direct contribution of AI technology to employee performance, but neglects whether employees' self-perception of AI will affect their performance. At the same time, research on the outcome variables of AI awareness mainly focuses on negative effects such as job insecurity and employee anxiety. Most studies only start from the negative impact of AI awareness on performance, and there is almost no research on adaptive performance that promotes organizational sustainable development. The systematic demonstration of the impact mechanism of AI awareness on innovation performance from the perspective of employees provides certain theoretical support for this article<sup>5</sup>. The stress cognitive evaluation theory, also known as the stress interaction model, is a stress theory used to explain an individual's cognitive evaluation and coping process when facing stressors. Cognitive evaluation is the process by which individuals assess the degree of correlation between their environment and their own well-being: if an individual believes that the external environment will harm their own well-being and they are unable to effectively respond, they will produce negative reactions; If one believes they can overcome stress, they will exhibit positive reactions<sup>7</sup>. Therefore, according to the theory of stress cognition evaluation, employees have different evaluations of the stressors of organizational AI applications and may respectively regard the application of AI technology in enterprises as a challenging stressor or a threatening stressor. That results in AI challenge awareness and AI threat awareness, which will have different impacts on employees' adaptive performance<sup>8</sup>.

In summary, based on the theory of stress cognitive evaluation, this study explores the impact of developing employees' AI awareness on adaptive performance and conducts empirical research on it, thus enriching the research on the antecedents of adaptive performance. Intended to provide some reference for scholars who conduct research in this area in the future.

## 2 Theoretical Analysis and Research Hypothesis

AI awareness refers to employees' cognition and attitude towards the impact of AI technology on their future career development<sup>6</sup>. With the rise of ChatGPT globally, the impact of AI in organizations and workplaces has become increasingly prominent. Scholars have pointed out that employees' keen perception of technological shocks can weaken their willingness to support organizational change, thereby becoming an obstacle for organizations to promote artificial intelligence transformation<sup>9</sup>. However, some scholars believe that AI awareness is not just about concerns and a sense of substitution, but also includes an evaluation of the new opportunities brought by AI technology. The application of AI technology has given rise to new job positions such as data scientists and machine learning engineers, while also driving the transformation and upgrading of traditional professions<sup>10</sup>. According to the theory of cognitive evaluation of stress, the degree of influence of stressors varies among individuals, depending on how they evaluate and respond to stressors. Employees have different evaluations of the sources of pressure for the application of AI technology, which can lead to two different levels of awareness: AI challenge awareness and AI threat awareness. AI challenges awareness refers to employees' recognition and understanding of the opportunities and challenges brought by AI technology. This awareness emphasizes the potential of AI technology in improving work efficiency, creating new opportunities, and promoting career development<sup>11</sup>. Therefore, employees with AI challenge awareness are more likely to realize the importance of learning new skills and adapting to changes to meet the job requirements of the AI era<sup>12</sup>. The challenging pressure brought by AI perception can stimulate employees' motivation and enthusiasm, prompting them to fully unleash their potential and strive to adapt to the current work environment and achieve work goals. By learning AI technology, employees can better cope with these challenging pressures and enhance their adaptability<sup>13</sup>. Secondly, AI threat awareness refers to employees' perception and concern about the potential negative impact of AI technology on their job positions and career prospects<sup>6</sup>. This awareness stems from their recognition of the powerful capabilities of AI technology in automation and intelligence. Employees may worry that their jobs will be replaced or reduced<sup>9</sup>. Existing research suggests that employees' AI threat awareness may enhance their perception of occupational threats, leading to a gradual decrease in their sense of organizational support and ultimately resulting in an increasing tendency for individuals to resign and a gradual decline in their job performance<sup>6</sup>. The emergence of various negative situations, such as reduced work engagement and low work mood that may be caused by AI consciousness, is highly likely to lead knowledge workers to no longer engage in innovation-related activities<sup>14</sup>. Some scholars have also pointed out that the technological shock caused by the digital technology revolution can lead to a sense of job insecurity among employees, resulting in workplace anxiety<sup>15</sup>. These negative emotions can further affect employees' work performance, and even affect the morale and work efficiency of the entire team. Therefore, this article proposes the following hypothesis:

Assumption 1: AI challenge awareness positively affects employees' adaptive performance.

Assumption 2: AI threat awareness will have a negative impact on employees' adaptive performance.

Based on assumptions, this study constructs a theoretical model, as shown in Fig 1.

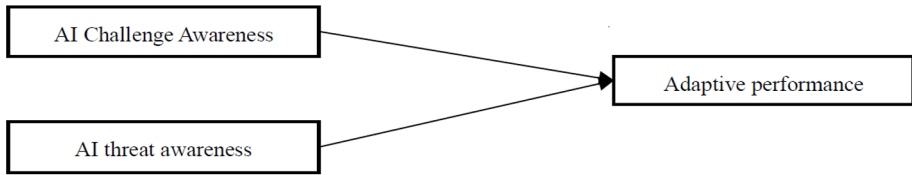


Fig. 1. Research model.

### 3 Method

#### 3.1 Sample

This study used a questionnaire survey to collect data and selected employees from various industries who were exposed to AI in their work as the research subjects. We used the Crademo platform for questionnaire collection to ensure the breadth and validity of the data. Utilize its user base to recruit eligible participants through online forums and member recommendations. Conduct preliminary screening of registered participants to ensure they meet the background and requirements required for the research. A total of 350 questionnaires were obtained in this survey. In the survey sample, 163 were male, accounting for 46.6%, and 187 were female, accounting for 53.4%; 43 people under the age of 25, accounting for 12.3%, and 113 people aged 26 to 30, accounting for 32.3%; 82 people aged 31-35, accounting for 23.4%, 69 people aged 35-40, accounting for 19.7%, and 43 people aged 40 and above, accounting for 12.3%; 108 people have a college degree or below, accounting for 30.9%, 197 people have a bachelor's degree, accounting for 56.3%, and 45 people have a master's degree or above, accounting for 12.9%; 18 people with less than one year of work experience, accounting for 5.1%; 52 people with 1-3 years, accounting for 14.9%; 122 people with 3-5 years, accounting for 34.9%; 46 people with 5-10 years, accounting for 13.1%; 112 people with more than 10 years, accounting for 32.0%; There are 211 grassroots employees, accounting for 60.3%, 91 grassroots managers, accounting for 26.0%, 42 middle-level managers, accounting for 12.0%, and 6 senior managers, accounting for 1.7%;

#### 3.2 Measures

The scale selection for this empirical study used validated and widely used scales both domestically and internationally, and ensured the accuracy of the wording in the questionnaire through back translation. After ensuring the accuracy of the wording, the final questionnaire was formed. Except for demographic characteristic variables, this article uses the Likert 5-point scoring method for all other variables, with 1 indicating strongly disagree and 5 indicating strongly agree. The specific variable measurements are as follows:

(1). AI Challenge awareness: Use the 4-item scale developed by Ding (2021)<sup>16</sup>, which includes four items including "The uncertainty of work brought by AI will teach me a lot". The Cronbach's alpha coefficient of this scale is 0.834.

(2). AI threat awareness: Use the 4-item scale developed by Ding (2021)<sup>16</sup>, which includes four items such as "AI applications limit my ability to develop". The Cronbach's alpha coefficient of this scale is 0.839.

(3). Adaptive performance: Using the four-dimensional scale developed by Tao Qi and Wang Chongming (2006), adaptive performance is measured from four aspects: continuous learning in the job, stress and emergency response, innovative problem-solving, and cultural and interpersonal adaptation. I learn new knowledge or skills very quickly. 25 questions included. The Cronbach's alpha coefficient of this scale is 0.979.

(4). Control variables: Referring to relevant research, control for demographic characteristic variables that may affect employee adaptive performance, including gender, age, education, years of work experience, and job position.

## 4 Result

This study collected questionnaires through "Crademo". The method of questionnaire collection was relatively simple, which might lead to common method bias. Therefore, this paper adopts the Harman single-factor method to test the common method bias. Among the six factors with eigenvalues greater than 1 extracted, the first component only accounts for 37.798% of the total variance, which is lower than the threshold of 40%, indicating that the common method bias of the data collected in this study is not significant. Second, the "unmeasured single-source latent factor method" was used for further examination. After introducing a common method factor into the original three-factor model, the results showed that the changes in model fit indices were all below 0.03, and the overall model fit did not improve significantly. In conclusion, the common method bias in this study is within an acceptable range.

### 4.1 Correlation Analysis

The mean, standard deviation, and correlation coefficient of the key variables in this study are shown in Table 1. The results showed that there was a significant positive correlation between AI challenge awareness and Adaptive performance ( $r=0.424$ ,  $p<0.01$ ); There is a negative correlation between AI threat awareness and Adaptive performance ( $r=-0.429$ ,  $p<0.01$ ), which preliminarily supports the research hypothesis proposed in this paper.

**Table 1.** Descriptive Statistics and Correlation Analysis (N=350)

variable	mean	standard deviation	1	2	3	4	5	6	7
1. gender	1.530	0.500	—						
2. age	2.870	1.221	-0.059	—					

3. education level	1.850	0.708	0.043	-0.052	—			
4. Years of Work Experience	3.520	1.225	-0.057	.864**	-0.084	—		
5. Job position	1.550	0.769	0.096	.248**	-0.046	.282**	—	
6. AI Challenge Awareness	3.281	0.923	0.007	-0.085	-0.018	-0.057	0.015	—
7. AI threat awareness	2.634	0.920	0.017	0.024	0.015	-0.019	-0.021	-.335**
8. Adaptive performance	3.301	0.992	0.004	-0.027	-0.013	0.014	0.028	.424** -.429**

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$

## 4.2 Hypothesis Testing

This study used SPSS 27.0 for stratified regression analysis to further test the hypothesis. The results are shown in Table 2. Analysis shows that AI Challenge Awareness ( $r=0.339$ ,  $p<0.001$ ) is significantly positively correlated with employee adaptive performance, and task design focused on prevention ( $r=-0.346$ ,  $p<0.001$ ) is also negatively correlated with employee adaptive performance. Therefore, Hypothesis 1 and Hypothesis 2 have received further support.

**Table 2.** Results of regression analysis

variable	AP			
	M1	M2	M3	M4
gender	0.002	0.003	0.019	0.015
age	-0.127	-0.079	-0.072	-0.05
education level	-0.011	0.000	-0.006	0.001
Years of Work Experience	0.114	0.097	0.064	0.063
Job position	0.035	0.016	0.023	0.012
AI Challenge Awareness		0.454***		0.339***
AI threat awareness			-0.459***	-0.346***
R <sup>2</sup>	0.085	0.429	0.432	0.524
ΔR <sup>2</sup>	0.007	0.184	0.187	0.274
F	0.496	12.859***	13.135***	18.478***

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

## 5 Conclusions

This study is based on the theory of stress cognitive evaluation, and constructs a research logic and theoretical framework of "AI consciousness-adaptive performance". It analyzes and empirically tests the impact of AI consciousness on the adaptive performance of employees under different cognitive evaluations. The results showed that AI challenge awareness had a significant positive impact on adaptive performance, while AI threat awareness had a significant negative impact on adaptive performance. Research has shown that the impact of an individual's AI awareness on their adaptation depends on whether they perceive AI applications as a challenging or obstructive stressor. The research has expanded and enriched the theoretical research in the field of AI consciousness, providing practical insights for employee adaptive management and intervention.

This study has practical implications for the management of employee AI awareness and adaptation. Enterprises should fully understand employees' positive or negative attitudes towards AI, obtain their cognitive and emotional responses to the application of AI technology in the enterprise, and implement effective management strategies and intervention measures. Enterprises can encourage employees to participate in management decision-making through information dissemination, and encourage them to communicate, exchange, and provide feedback on the application of AI technology in the workplace, promoting the enterprise to grasp the changing status of employees' awareness of different types of AI. Enterprise managers should actively guide, communicate, and train employees to recognize that skill improvement is an inevitable requirement for applying AI technology in the workplace. Through psychological counseling, employees are encouraged to have a positive attitude towards the application of AI technology, recognize that AI applications can empower their work, trigger innovative work behaviors, and provide more sense of work meaning. Enterprises should provide employees with skills training related to AI knowledge, to match their knowledge and skills with AI technology requirements, and improve their adaptability performance. In addition, companies should create an organizational culture of human-machine symbiosis, improve human-machine synergy, and enable employees to adapt to AI technology work scenarios. This study has the following limitations: (1) The data for this study were collected at a single point in time, which may not completely eliminate the influence of common method bias. It is recommended that future research adopt a multi-time-point and multi-source data collection design. (2) The selection of control variables in this study has some deficiencies. It only covers demographic variables. Future research could consider the confounding effects of background factors such as organizational support and leadership style.

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