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The Contingent Effect of Organizational Artificial Intelligence Adoption on Employees' Taking Charge: Based on Social Cognitive Theory

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Abstract: The advent of Artificial intelligence (AI) is catalyzing significant transformations in human work dynamics. Existing research has not yet provided a clear picture of how organizational AI adoption will affect employees' taking charge. Based on this background, this study explores the internal mechanisms by which organizational AI adoption affects employees' taking charge based on social cognitive theory. The results of the empirical analysis of the 342 samples indicate that: organizational AI adoption leads to a decline in employees' organizational-based self-esteem; organization-based self-esteem plays a mediating role between organizational AI adoption and employees' taking charge; future focus is paid to moderating the relationship between organizational-based self-esteem and taking charge and is a determinant of how their organizational-based self-esteem affects taking charge; future focus is paid to moderating the impact of organizational AI adoption through the indirect effects of organizational-based self-esteem on taking charge. This study highlights the importance of considering individual characteristics (e.g., future focus) when analyzing how organizational AI adoption affects employees' behaviors.

Keywords: Organizational AI Adoption; Taking Charge; Organization-based Self-esteem; Future Focus.

1. Introduction

In recent years, voice recognition, driverless, machine translation and other artificial intelligence technologies have developed rapidly. Artificial intelligence, as the core driving force of the new round of industrial change, has been deeply integrated with industry, services and other fields, promoting all-around changes in the original industry, enterprise and manpower, and becoming an important driving force to support the transformation and development of China's traditional economy[1-2].Due to the advantages of the technology such as high efficiency and precision, reduced production costs, and increased productivity, more and more enterprises have begun the AI transformation, actively applying AI technology to empower production and management processes[3].McKinsey's 2022 Global Artificial Intelligence Research shows that AI usage in organizations has increased dramatically globally over the last five years, with 50% of companies deploying AI technology in 2022, much higher than the 20% in 2017, and capital investment in this technology increasing dramatically in line with the increase in usage. After the adoption of AI in organizations, on the one hand, AI can help employees accomplish their work goals, such as employees using ChatGPT to write work emails and copy, translate text, write and modify code, etc.[4]; on the other hand, AI can also replace the roles of employees, such as in the service scenario, the service robots have already replaced some of the manual services[5].Therefore, more and more scholars have begun to study AI in management[6].The penetration of artificial intelligence into various industries will change the original mode of production and operation but also will have a profound impact on employees' behaviors, and how the employees react to this is an important issue for the application of artificial intelligence to drive the change of human resource management.

Currently, while the question of whether AI has a substitution or complementary effect on humans is a topic of debate in academia and across industries, AI is unanimously recognized as superior to humans in certain aspects, such as accuracy and efficiency[7].With its expanding range of capabilities and widespread use across industries, AI will take on more work tasks in the future, which can lead to a general sense of job insecurity among human employees[7-8].Given that the way employees assess and cope with job insecurity replaced by AI has a direct impact on organizational development[6,9],management scholars have begun to explore how the adoption of AI by organizations can affect employees' attitudes, behaviors, and performance, including satisfaction, work engagement, innovative behavior, and task performance[10-13].Organizational AI adoption, an organizational change, brings about changes in employees such as job content and processes[14],however, relatively little research has been conducted on the impact of organizational AI adoption on employees' taking charge.

Taking charge refers to employees' spontaneous, voluntary, and constructive challenges to the status quo in their work, constantly thinking about how to work better, and helping the organization to find breakthroughs for change in work methods, policies, and processes, to successfully carry out constructive change[15].The behavior reflects the degree of subjective efforts made by employees to reconstruct and optimize the elements of the organization's system (e.g., policy, processes, or methods), which can converge at the organizational level from the bottom up to drive constructive change such as Organizational AI adoption[16].Therefore, in the current context of the gradual application of AI to the workplace, paying attention to the mechanism of the role of organizational AI adoption on employees' taking charge will help the organization to use the new technology to gain a competitive advantage and the long-term healthy development of the enterprise, which is of great significance to the strategic management of enterprise talent and the career development of the employees. At the same time, the determinants of taking charge and the corresponding inducing

mechanism have also become a hot topic in current management research. Existing research on antecedent variables of employees' taking charge mainly focuses on the perspectives of individual differences and organizational context: at the level of individual differences, employees' personality traits, self-efficacy, and perceived role breadth have a positive impact on employees' taking charge [15,17]; at the level of organizational context, factors such as perceived organizational investment in employee development, openness of top management, organizational norms that support change, and participative, spiritual, and empowering leadership styles have a positive influence on taking charge [15,18-21].However, existing research on organizational contextual factors focuses on rigid factors such as organizational norms and leadership behaviors, which to some extent affects the practical value of the findings[22]. In contrast, organizational AI adoption, a contextual factor with high variability in comparison, is of particular interest in today's workplaces, and a systematic analysis of its impact on taking charge can provide a more comprehensive understanding of the factors influencing taking charge. However, few studies have systematically explored the impact of organizational AI adoption on employees' taking charge.

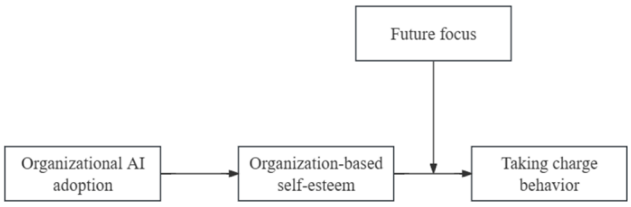

Fig 1. The conceptual model of the present study.

Social cognitive theory suggests that individuals cognitively process external environmental factors and subsequently exhibit self-regulatory behaviors to influence the environment[23]. This logic has been theorized as a triadic reciprocal determinism of "environment—subject cognition—behavior." The adoption of AI in organizations leads to substantial structural changes and can be considered as an important environmental stimulus for activating employees' cognitive engagement. Due to the increasing dominance of AI over humans in certain tasks and the prevalence of pessimistic societal opinions, it may reduce employees' perception of their own importance in the organization, i.e., organization-based self-esteem decreases. Subsequently, to adapt to the external environment, employees tend to adopt certain self-regulatory behaviors based on their interpretation of environmental cues[23]. Previous studies have shown a correlation between organizational change and employees' taking charge, so this study suggests that organizational AI adoption affects employees' taking charge[24]. Individuals with different characteristics may have different cognitive processing and corresponding self-regulatory behaviors[25].Given that future focus can be used as a motivational resource to influence an individual's self-regulatory system[26], it may have an important impact on the relationship between organization-based self-esteem and taking charge. Based on this background, this study introduces organization-based self-esteem and future focus to explore the internal mechanisms and boundary conditions of organizational AI adoption affecting employees' taking charge building upon social cognitive theory (SCT). The conceptual framework is depicted in Fig. 1.

2. Theory and Hypotheses

(1) Social cognitive theory

Social cognitive theory is represented by Bandura and is widely regarded as one of the main representatives of Western Neo-Behaviorism. Social cognition was a new discipline that emerged in the 1970s and 1980s, and then social cognitive theory was gradually developed based on the social learning theory[27]. In the late 1990s, the position of social cognition theory was fully consolidated. Nowadays, the theory has become one of the key theories in social psychology.

This theory is based on the traditional behaviorist theory of personality with a cognitive component and represents a break with the behaviorist approach by proposing "observational learning" and "self-efficacy". The behaviorist approach assumes that behavior is caused by external environmental stimuli and therefore ignores the role of the individual. Bandura (1986) suggests that it is not only the environment that causes behavior, but that behavior also helps to shape the environment[23]. Bandura later added his third factor, a person's mental processes or perceptions, arguing that individuals, behaviors, and environments are mutually influential, interdependent, and mutually deterministic. This ongoing, continuous interaction between the individual, his or her behavior, and the environment in which that behavior occurs, he called "reciprocal determinism". Personal factors include an individual's emotional factors, intrinsic motivation, and personal perceptions; behavioral factors are specific manifestations of an individual's behavior; environmental factors refer to objective environmental conditions. Individuals' emotions and motivation are influenced by environmental factors, but environmental factors do not affect individuals in the same way, and different individuals will perceive the environment differently. Individual cognition affects individual behavior, which in turn is constantly fed back to individual cognition as the individual adopts behavior, thus adjusting individual behavior. Individuals' perceptions of their abilities and behavioral outcomes cause them to regulate and control their environment, and the environment influences individuals' behavior. These three factors do not interact with each other simultaneously or in equal measure, nor do they interact immediately. Each of the three factors must take time to exert and receive influence. Simply put, individuals can influence their thoughts and behaviors through cognitive processing of the environment. The process is not a unidirectional cognitive process of the perceiver, but a process in which the perceiver and the perceived can interact and influence each other [28].

Among the individual factors in social cognitive theory, Bandura mainly emphasizes cognitive factors, of which the main one refers to self-efficacy. According to Bandura's definition, self-efficacy is an individual's judgment of his or her ability to perform a specific organization or task, which is the result of the interaction between the external environment, other self-regulatory mechanisms, and the individual's ability, experience, and performance. As an aspect of subjective factors, self-efficacy is a subjective assessment of an individual's effectiveness in accomplishing the activity before the action, and this pre-estimation affects subsequent behavior in many ways[23]. Individuals initiate, regulate, and maintain their behavior based on self-efficacy[29]. An individual's self-efficacy beliefs determine how much effort

they will put forth and how long they will put forth to overcome obstacles and accomplish behaviors. The stronger their beliefs, the greater and more sustained the effort will be. People who have a high opinion of themselves tend to have higher self-esteem than those who have a low opinion of themselves.

In summary, the cognitive processing process of the individual on the environment is a process in which the perceiver and the perceived interact and influence each other. The process emphasizes the subject's agency and focuses on the influence of an individual's cognitive and self-regulatory abilities on his or her motivation and behavior. Social cognitive theory examines how people take charge and control of their lives. People can take an active role in self-development, adaptation and self-renewal and become agents of change.

(2) Organizational AI adoption and taking charge

Artificial intelligence (AI)——defined as a system's ability to correctly interpret external data, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation[30]. Along with the iteration and optimization of basic science and algorithms, AI has long changed from the simple mechanical operation of imitating human beings to the gradual mapping of human emotions and even thoughts. The birth and accelerated application of AI Generated Content (AIGC), symbolized by ChatGPT, is a disruptive AI technology revolution that will completely change the way of life, production, work, and the integration of people and things. In a sense, it is an unstoppable intelligence revolution, which will bring about social impacts that are beyond the depth and breadth of previous technological revolutions[31].

In this context, due to the potential of AI to increase productivity and reduce costs, organizations in various industries are increasingly adopting AI to promote sustainable business development[6].The introduction of AI into organizations will not only bring technological changes and upgrades to enterprises but will also promote deeper changes in organizational culture, organizational structure and work styles, exposing employees in organizations to a dynamic work environment full of uncertainty and complexity. According to social cognitive theory, there is an interaction between individual behavior, individual cognition, and the environment in which the individual lives[23]. Among them, the environment can exert influence on behavior, and the information conveyed by the external environment has consistency with individual behavior. Organizational AI adoption can be viewed as an important external environmental factor that influences individual behavior, and this organizational-level change can have an impact on employee-level change, so there is a strong correlation between it and employees' taking charge.

This study argues that, in general, organizational AI adoption inhibits employees' taking charge. Currently, AI is equipped with a range of human capabilities from basic manual tasks to advanced cognitive functions, as well as the ability to understand emotions and reason. With the development of generative AI, such as ChatGPT, not only workers engaged in repetitive physical labor and procedural intellectual work, but also some middle- and high-skilled data analysts, programmers, and other "brain work" practitioners have their jobs in jeopardy[32]. Therefore, after the adoption of AI by organizations, on the one hand, employees may worry about AI replacing their job roles, and they may feel powerless to resist the threats caused by AI, sprouting panic about the uncertainty of future development, and triggering negative emotions such as anxiety, nervousness, and burnout[1,33].At this time, employees will adopt certain behavior to control or repair negative emotions. Employees reduce their work initiative also as a way to cope with negative emotions and therefore do not take charge. On the other hand, the risk of potential substitution triggered by organizational AI adoption can cause employees to doubt the significance and value of their existence[31,34], as well as cause them to question the importance and continuity of their roles in the organization. Employees who are valued by the organization are motivated to demonstrate behaviors that are beneficial to the organization[35]. On the contrary, employees who are skeptical about the extent to which the organization values them will be less motivated and less likely to initiate changes in their work. In addition, organizational AI adoption as a kind of organizational change may touch and change the original distribution pattern of rights and benefits, giving rise to employee attitudes of resistance to transformation[36]. As a result, employees will not engage in taking charge.

H1. Organizational AI adoption negatively influences employee's taking charge.

(3) The mediating role of organization-based self-esteem

Organization-based self-esteem is the extent to which organizational members believe that they can satisfy their own needs by assuming specific roles in organizational situations, and reflects employees' perceptions of their self-worth and importance as organizational members in the organization[37].Social cognitive theory states that individuals shape and adjust internal cognition by interpreting information from the external environment[23]. Therefore, organizational AI adoption as an important environmental factor may induce cognitive appraisal processes in employees. Since organization-based self-esteem is essentially a perception of employees that is dynamic and malleable and changes with organizational context and individual experiences[38], this study suggests that organizational AI adoption will have an impact on employees' organization-based self-esteem.

First, organizational AI adoption hinders the achievement of employees' career goals. After employees gradually implement career goal plans until they achieve their career goals, they will develop role emotions towards their careers, which will lead to a sense of satisfaction. This sense of occupational satisfaction will bring a signal that the individual can control the environment, which will enhance the self-esteem level at work[39]. If the organization is undergoing AI change, intelligent devices may replace employees in some positions, resulting in organizational job loss[40]. At this time, employees may encounter difficulties in accomplishing their career development goals[41], which can lead to a lack of career satisfaction and control, a decrease in perceived self-worth, and a lower level of self-esteem in the organization.

Second, organizational AI adoption is detrimental to the achievement of employees' self-centred goals and reduces their perception of self-competence. Employees have task-centred goals, such as self-regulation at work; they will also have corresponding self-centred goals, including seeking experiences and information to confirm their self-worth[42-43]. As a result, people are sensitive to situations that question their capabilities, especially at work[44]. Given that AI performs better compared to humans in some areas, such as having the ability to make more accurate and faster decisions,

employees in this situation may perceive it as a psychological threat and reduce their perceived value to the organization[45]. However, organizational AI adoption has resulted in so many tasks requiring human-AI collaboration that numerous workflows that human employees could not handle on their own[46]. They are increasingly relying on AI to perform daily tasks[47-48]. This reliance on AI can cause employees to form an evaluation of their lack of competence, which is not conducive to the achievement of self-centred goals at work. Thus, it makes them feel unstable in their sense of self-worth and threatens their organizational self-esteem[49].

Finally, organizational AI adoption creates the threat of job substitution, causing employees to believe that the organization does not take into account their personal feelings and negative impacts on their work in advance, creating a perception of being undervalued and unappreciated by the organization, and causing them to believe that they are not a part of the organization [41,50]. Research has shown that respect from managers enhances employees' organization-based self-esteem[37]. Therefore, the perception of being underestimated and ignored by the organization and managers weakens employees' assessment of their importance in the organization and lowers their organization-based self-esteem.

H2. Organizational AI adoption negatively affects employee's organization-based self-esteem.

Social cognitive theory suggests that individual who is stimulated by the external environment to produce a cognitive appraisal will exhibit the appropriate behavior[23]. Positively, higher levels of organization-based self-esteem among employees are strongly associated with positive work behaviors desired by the organization. When employees perceive themselves as important and valuable in the organization, a sense of accomplishment and competence develops, which can stimulate internal motivation to adopt taking charge[51]. Positive perceptions of one's own importance and status also promote a sense of ownership, responsibility, and a sense of obligation among employees, causing them to seek better work methods and processes on their own and to exhibit taking charge. Employees with high organization-based self-esteem, because they perceive themselves as important in the organization, will engage in taking charge to promote organizational change to keep their behaviors consistent with their perceptions to reflect their competence and importance[52-53].In conclusion, employees with high level of organization-based self-esteem have a positive evaluation of their value in the organization, which can be used as a psychological resource to positively respond to the transformation of the organization's adoption of AI, and will be willing to invest their time and energy to adopt taking charge[39].

On the flip side, lower levels of organization-based self-esteem among employees are often associated with negative behaviors. Individuals with low levels of organization-based self-esteem are not confident in their abilities and value in the organization and at work, and believe that their taking charge does not contribute to the development of the organization. For self-protection purposes, they will reduce their additional input and contribution to the organization and will not initiate any work changes and attempts that may fail to avoid further reduction of their self-worth[54]. As a result, employees with low levels of organization-based self-esteem lack positive initiative towards their work and are less likely to behave in a way that is beneficial to the organization, and are less likely to exhibit taking charge[53].

H3. Organization-based self-esteem positively influences employees' taking charge.

Combining hypotheses 2 and 3 shows that organizational AI adoption negatively affects employees' organization-based self-esteem and organization-based self-esteem positively affects employees' taking charge. Therefore, this study proposes hypothesis 4:

H4. Organization-based self-esteem plays a mediating role in the process of organizational AI adoption affecting employees' taking charge, and organizational AI adoption indirectly negatively affects employees' taking charge by negatively affecting organization-based self-esteem.

(4) The moderating role of future focus

In addition to the triad of "environment-subject cognition-behavior", social cognitive theory emphasizes that the way individuals behave in the face of certain external stimuli depends on their characteristics[25]. As a personal trait, future focus describes an individual's ability to think about future states and preferences for future attention allocation, representing the degree to which an individual anticipates and pays attention to the future, and is a driver of individual behavior[55-57]. Therefore, this study predicts that future focus plays a moderating role in the relationship between organization-based self-esteem and taking charge.

Research has pointed out that organization-based self-esteem is a personal resource that can lead to many beneficial outcomes for both the organization and the individual and has important functions and values[58-59]. Therefore, a decrease in organization-based self-esteem is equivalent to a loss of resources, which may lead to various unfavorable outcomes for employees, such as negative emotions and feelings of job detachment, job burnout, and turnover intention[60-62]. However, certain resources can be used to counteract this negative effect and positively influence employees' attitudes and behaviors at work[63]. In the context of this study, future focus can compensate for the loss of organization-based self-esteem resources as another personal resource that serves as a motivational resource for employees[26,64].

Specifically, the higher an employee's level of future focus, the higher the degree to which the loss of organization-based self-esteem resources will be compensated for, and thus the taking charge will be exhibited. First, future focus is closely related to employees' diligence, dedication, planning, foresight and efficiency in work and life, and it promotes employees' awareness of long-term strategic planning and career development[64-65]. Therefore, in the face of the impact of AI on their work, employees with a high level of future focus will have a long-term vision and will be aware of the irreversibility of the development of AI while feeling the impact on their self-worth. They will take the initiative to think about the future form of work and plan career development paths, and then follow the trend of the times to seek change, increasing the degree of dedication to organizational change. It will also make them focus more on planning as well as improving their work rather than dwelling on the negative emotional experience of damaged organization-based self-esteem. Secondly, employees with high level of future focus are more likely to pay attention to the long-term goals of the organization, will consider the future development of the organization, and have a high sense of identification with the strategic planning goals of the organization. So they tend to take the initiative to do some behaviors that are beneficial to the organization, such as organizational citizenship behaviors and extra-role behaviors

[66-67]. Therefore, future-focused employees with a reduced perception of their own value and importance in the organization will consider the adoption of AI as a long-term goal and strategic plan for the organization. As a member of the organization, he or she should also participate in it and therefore will have a higher likelihood of taking charge. Finally, employees who are concerned about the future are equally concerned about their future selves[68]. Employees with a high degree of future focus construct a future ideal state of self, which prompts them to actively recognize the gap between their present self and the future self expected by the times and the organization, and to set self-regulation goals accordingly. They are then more inclined to think about what kind of job demands the organization has increased for its members as a result of adopting AI, and then adopt taking charge to achieve their own and the organization's future goals. On the contrary, employees with low levels of future focus pay less attention to career planning and developmental needs, and such employees are more concerned with the present moment[26,69]. As a result, they tend to orient their cognition into the negative affective experience of lower organization-based self-esteem, increasing the fear of potential job loss. In addition, employees with low levels of future focus cannot conceptualize and think about their future selves, are unable to realize the gap between them and the members the organization will need in the future, and thus seldom take the initiative to change themselves to accommodate future developments. Because employees with low levels of future focus do not have long-term plans and have limited resources to motivate their own actions, they may be reluctant to allocate energy and resources to taking charge designed to promote organizational change. Moreover, in response to organizational AI adoption, such employees may reduce taking charge seeking to restore perceptions of fairness and cognitive consistency[70].

H5. Future focus moderates the relationship between organization-based self-esteem and taking charge such that this relationship is negative when future focus is high but positive when future focus is low.

Taken together, organizational AI adoption reduces employees' organizational self-esteem, and whether employees will exhibit taking charge depends on their future focus level. When employees have a high level of future focus, they are concerned about the irreversibility of the development of the technology, the organization's strategic planning and their career development, and have a stronger motivation to take charge. On the contrary, when employees have a low level of future focus, they are more likely to be immersed in the negative emotions of lower organization-based self-esteem, lack the construction of their future selves, and have insufficient resources to drive their taking charge.

H6. The indirect effect of organizational AI adoption on taking charge via organization-based self-esteem is moderated by future focus such that these indirect associations are positive when it is high but negative when low.

3. Materials and Methods

(1) Sample and data collection

Shanghai, as one of the most leading regions in China in the development of the AI field, is at the forefront of the country in terms of favorable policy environment for the development of the AI industry. Therefore, this study selected three companies located in Shanghai, all of which had extensively integrated AI into their operations. This study contacted the relevant staff of the companies through field visits and requested their help in sending the questionnaire link to their workgroups after explaining their intentions. Employees completed the survey by filling out the questionnaire online. A total of 383 groups of questionnaires were distributed, 355 groups were recovered, and 342 groups of valid questionnaires were recovered after excluding 13 groups of invalid questionnaires. The effective rate of questionnaire recovery was 89.3%. Among the respondents, 55.3% were male and 44.7% were female. Age distribution showed that 17.5% were 18–24, 26.0% 25–29, 22.8% 30–34, 20.2% 35–39, and 13.5% over 40. Regarding educational background, participants included 12.0% with high school diplomas or below, 15.2% with junior college degrees, 54.7% with bachelor's degrees, and 18.1% with master's degrees or a higher level of education. Regarding tenure, 36.5 % of the employees had worked for their firms for 3–4 years, 9.9% < 1 year, 12.6% 1–2 years, 26.0 % 5–6 years, and 14.9% > 6 years.

(2) Measures

Besides demographic details, all variables in this study were measured on using a five-point scale, with values spanning from 1 ("strongly disagree") to 5 ("strongly agree").

Taking charge. To measure taking charge, 10 items from Morrison and Phelps(1999)were adopted[15]. An example of an item used was: "I often try to adopt improved procedures for doing my job." The reliability of this scale was indicated by a Cronbach's alpha of 0.922.

Organizational AI adoption. A three-item scale, adapted by Cheng et al. (2023) from Wang, Li, Li, and Zhang (2016), was employed for assessing organizational AI adoption[6]. A sample item was: "My company has been involved in the adoption of AI technology." The reliability of this scale was indicated by a Cronbach's alpha of 0.778.

Organization-based self-esteem. The assessment of organization-based self-esteem is based on 10 items created by Pierce et al.(1989)[37]. Two sample items were: "I count around here" and "I am trusted." The calculated Cronbach's alpha for this measure stood at 0.930.

Future focus. To assess employees' future focus, we used the four-item scale formulated by Shipp et al.(2009)[55]. An illustrative item included was: "I think about what my future has in store." Cronbach's alpha value calculated was 0.936.

Control variables. To avoid irrelevant variables from interfering with the causal relationship between the variables in this study, gender, age, education, and tenure were selected as control variables for this study.

4. Results

(1) Test of CMB

To identify CMB, an initial application of Harman's single-factor test was undertaken. The outcomes of this test showed that the primary factor accounted for merely 34.205% of the overall variance, below the 50% benchmark.

(2) Confirmatory factor analysis

This study measured four variables, including organizational AI adoption, organization-based self-esteem, future focus, and taking charge, and applied a confirmatory factor analysis technique to assess the discriminant validity between them. The results, as shown in Table 1, showed that the four-factor model was the best fit to the sample (CFI = 0.981; TLI = 0.979; RMSEA = 0.031) and that all other models showed a deteriorated fit when compared to the four-

factor model. This suggests that the measures in this study have good discriminant validity.

Table 1. Goodness of fit indices of the measurement model and alternative models

Models	Factors	χ^2/df	GFI	CFI	NFI	TLI	RMSEA
Four-factor Model	A、B、C、D	1.323	0.918	0.981	0.928	0.979	0.031
Three-factor Model	A+B、C、D	2.212	0.873	0.929	0.878	0.889	0.060
Two-factor Model	A+B+C、D	6.019	0.519	0.704	0.667	0.679	0.121
One-factor Model	A+B+C+D	9.600	0.455	0.492	0.467	0.450	0.159

Notes: N=342. A denotes organizational AI adoption; B denotes organization-based self-esteem; C denotes taking charge; D denotes future focus; "+" denotes variable merging

(3) Descriptive statistics

Table 2 summarizes descriptive statistics for all variables, detailing their means, standard deviations, as well as correlations. Notably, a significant negative correlation was observed between organizational AI adoption and organization-based self-esteem ($r=-0.455$, $p<0.01$). Organization-based self-esteem is significantly and positively related to taking charge ($r=0.428$, $p<0.01$), and organizational AI adoption is significantly and negatively related to taking charge ($r=-0.399$, $p<0.01$). Accordingly, the previous hypotheses are preliminarily supported.

(4) Hypotheses testing

Results obtained from the hierarchical multiple regression analysis, showcased in Table 3 revealed a negative link between organizational AI adoption and organization-based self-esteem ($\beta=-0.372$, $p<0.01$, Model 4), thereby validating H1.

Meanwhile, organizational AI adoption is significantly and negatively related to organization-based self-esteem($\beta=-0.430$, $p<0.01$, Model 2), as verified by H2. Model 5 verified that organization-based self-esteem was significantly and positively related to taking charge ($\beta=0.419$, $p<0.01$), and H3 was validated. Finally, Model 6 shows that organization-based self-esteem has a significant effect on taking charge after controlling for organization-based self-esteem ($\beta=0.303$, $p<0.01$), and that the effect of organizational AI adoption on taking charge remains significant ($\beta=-0.242$, $p<0.01$). This finding suggests that the mediating effect of organization-based self-esteem is significant and partially mediated, thus H4 is validated. To further validate the mediating effect of organization-based self-esteem, the PROCESS plug-in was used to examine the significance of the mediating effect, and the number of repeated samples was set to 5,000. The results show that after controlling for the relevant variables, the indirect effect of the organizational AI adoption on taking charge through organization-based self-esteem is −0.130, with a 95% confidence interval of [−0.211, −0.061]. The confidence interval does not include 0, indicating that the mediating effect of organization-based self-esteem is significantly present, and H4 is again validated.

Furthermore, findings validated a negative association between the interaction of organization-based self-esteem and future focus, and taking charge ($\beta=-0.517$, $p<0.01$, Model 7). Additionally, this study employed the method recommended by Aiken, West, and Reno (1991) to examine the moderation effects in the testing of H5[72]. Fig. 2 illustrates that when future focus is low, organization-based self-esteem displayed a more positive correlation with taking charge ($\beta=0.982$, $p<0.01$). Conversely, the correlation became negative when future focus levels were high ($\beta=-0.121$, $p<0.01$). These findings were consistent with H5.

To verify H6, this study adopted Process Macro Model 14 for the analysis of the conditional indirect effect of organizational AI adoption on taking charge (mediated via organization-based self-esteem). The outcomes indicated that when future focus was at −1 standard deviation, the indirect effect of organizational AI adoption emerged as both negative and statistically significant ($\beta=-0.372$, 95%CI[−0.481, −0.273]). However, at +1 standard deviation of future focus, the indirect effect shifted to being positive and significant ($\beta=0.104$, 95%CI[0.052, 0.156]). The moderated mediation index further corroborated the significance of this effect (index=0.223, 95%CI[0.164, 0.282]). Hence, H6 received support.

5. Discussion

Table 2. Means, standard deviations, and correlations

	1	2	3	4	5	6	7	8
1.Gender	1							
2.Age	0.016	1						
3.Education	−0.052	0.036	1					
4.Organizational tenure	0.042	0.006	−0.082	1				
5. Organizational AI adoption	−0.038	0.028	−0.117*	−0.044	1			
6. Organization-based self-esteem	0.023	0.044	0.045	0.045	−0.455**	1		
7.Taking charge	−0.070	−0.044	−0.019	0.044	−0.399**	0.428**	1	
8.Future focus	−0.099	−0.018	0.003	−0.076	−0.043	0.026	0.030	1
M	1.45	2.86	2.79	3.23	2.82	3.17	3.18	3.02
SD	0.498	1.299	0.878	1.153	0.85	0.80	0.77	1.07

Notes: N = 342; *p < 0.05; **p < 0.01.

Table 3. Results of hypothesis testing.

	Organization-based self-esteem			Taking charge				
	Model 1	Model 2		Model 3	Model 4	Model 5	Model 6	Model 7
Control Variable								
Gender	0.037	0.006		–0.112	–0.139	–0.128	–0.141	–0.096
Age	0.026	0.035		–0.025	–0.017	–0.036	–0.028	–0.023
Education	0.045	–0.007		–0.016	–0.061	–0.034	–0.059	0.034
Tenure	0.033	0.017		0.031	0.016	0.017	0.011	0.034
Independent variable								
Organizational AI adoption		–0.430**			–0.372**		–0.242**	
Mediator								
Organization-based self-esteem						0.419**	0.303**	0.430**
Moderator								
Future focus								0.014
Interaction								
Future focus ×organization-based self-esteem								–0.517**
R^2	0.007	0.211		0.009	0.173	0.196	0.251	0.597
Adj.R^2	–0.005	0.200		–0.002	0.161	0.184	0.237	0.589
F value	0.573	18.002**		0.788	14.093**	16.363**	18.698**	70.751**

Notes: N = 342; *p < 0.05; **p < 0.01.

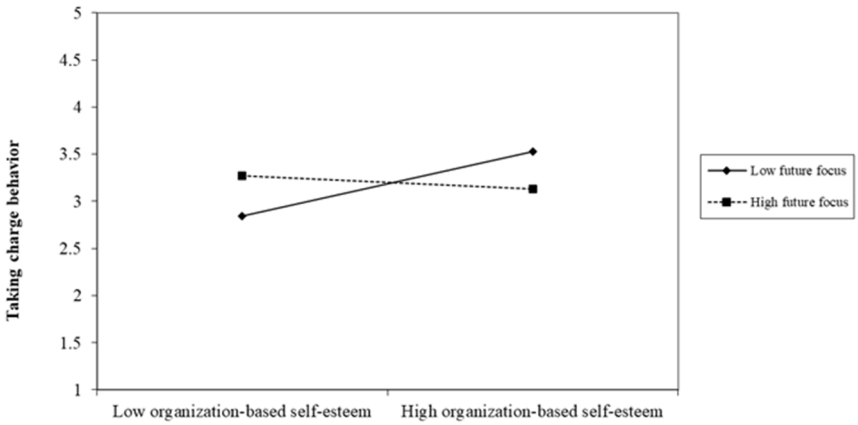

Fig 2. The interactive effect of organization-based self-esteem and future focus on taking charge

Table 4. Results for conditional indirect effect.

Future focus	Boot indirect effect	Boot SE	95%CI	
			LLCI	ULCI
–1 SD (–1.067)	–0.372	0.053	–0.481	–0.273
+1 SD (1.067)	0.104	0.026	0.052	0.156
Index of moderated mediation	0.223	0.030	0.164	0.282

Notes: N = 342.

(1) Theoretical implications

First, this study examines the impact of AI on employees and enriches the research on organizational management at the individual level after the adoption of AI in the workplace. Overall, research on the impact of AI on individuals is still in its infancy, and most of the studies are qualitative theoretical analyses with fewer empirical analyses. This study demonstrates through empirical analysis that organizational AI adoption can have an impact on employees' taking charge, provides empirical data for subsequent research, and makes a useful addition and expansion of domestic research on the impact of AI at the individual level.

Second, this study combines social cognitive theory with the introduction of organization-based self-esteem as a mediating variable to uncover the "black box" between organizational AI adoption and taking charge. It has been argued that organization-based self-esteem is in part a social construct, with perceptions of self-worth shaped through self-concepts conveyed by role models, mentors, and evaluators [51], ignoring the role of organizational-level change, organizational AI adoption, in this context. This study adds to the understanding of the antecedents and consequences of organization-based self-esteem, as well as the antecedents of taking charge, and provides a wealth of information for understanding how organizational AI adoption affects employees' taking charge.

Finally, this study introduces the moderating variable—— future focus and explores the boundary conditions under which organizational AI adoption acts on employees' taking charge through organization-based self-esteem. While existing studies have focused on the bidirectional effects of AI on employees, they have started with two intermediaries and explored the facilitating or inhibiting effects of different psychological mechanisms of employees on behaviors. This study creatively focuses on employees' future focus as a personal trait, emphasizing that how organizational AI adoption affects employees is closely related to their personal characteristics and that different individuals will have different behavioral responses when facing the same situation. This enriches the boundary conditions for the impact of organizational AI adoption on workplace behavioral consequences and also provides a theoretical basis for organizations to take differentiated measures to intervene in the adverse effects of AI transformation.

(2) Practical implications

This study yields valuable practical insights. It shows that organizational AI adoption can have varying effects on

employees' taking charge, either positive or negative. It informs how organizations can mitigate the harmful impacts of AI adoption. Specifically, organizational AI adoption induces reduced organization-based self-esteem among employees, leading to elevated levels of taking charge among those with high future focus, while those with low future focus demonstrate reduced taking charge. Given the irreversible trend of AI adoption in organizations, addressing the fear of being replaced is crucial for enhancing employees' organization-based self-esteem.

First, organizations are advised to pay attention to employees' emotions and guide them to form positive perceptions. On the one hand, the organizations should pay attention to the psychological fluctuations and emotions of employees, give them enough emotional care and value affirmation, regard them as partners of the enterprise, and formulate a series of employee assistance programs. On the other hand, the organizations should provide correct guidance to employees, and encourage employees to rationally view AI as an opportunity rather than a threat. To make employees realize that AI can help reduce their workload, and in the process of AI transformation, both enterprises and employees can improve efficiency and value.

Second, providing training programs to enhance employees' knowledge and skills, especially those not easily mastered by AI, is imperative. Organizing a series of thematic lectures or workshops, or using actual cases, data analysis, etc., so that employees can gain a deeper understanding of how AI enhances work efficiency through automation, optimization of processes, and so on. In addition, formulating personalized training plans and providing diversified learning resources based on employees' job requirements and skill levels. These approaches may foster employees' confidence in their job performance, alleviating the insecurity associated with AI adoption.

Third, since organizational AI adoption can improve taking charge for high-future focus employees while impeding it for those with low levels, it is recommended that organizations incorporate future focus as a selection criterion during candidate interviews in the recruitment process. Additionally, providing clear and well-defined career paths is crucial for attracting and retaining individuals with high future focus. Finally, organizations should pay attention to the cultivation of employees' future-focus, which can invest in initiatives such as career counseling and training courses, so that employees do not only see immediate benefits, but also consider their own or even the organization's long-term development.

(3) Limitations

This study was conducted with meticulous attention to rigor; nevertheless, several limitations warrant consideration. First, SCT serves as the overarching theory. Within this context, organization-based self-esteem is delineated as a mediating factor, and future focus as a moderating factor, in understanding the relationship between organizational AI adoption and employees' taking charge. It is essential to acknowledge the possible existence of other mediators and moderators by exploring alternative theoretical foundations, such as social information processing theory and conservation of resources theory. Second, all survey responses were self-reported by employees and collected at the same time, introducing the possibility of CMB. Future studies are encouraged to implement a time-lagged research design and employ objective methods, such as obtaining reports from immediate supervisors or department colleagues, to measure variables such as an employee's taking charge. Lastly, this study was carried out within the Chinese context, potentially constraining the applicability of the findings exclusively to China. Future research should seek to validate the conceptual model in diverse countries to enhance its applicability.

6. Conclusion

In this study, we attempted to unpack the underlying mechanism by which organizational AI adoption influences employees' taking charge. Building upon the triadic reciprocal determinism of "environment—subject cognition—behavior" as theorized by SCT, a theoretical framework was proposed that explicitly considered the mediating and the moderating role of organization-based self-esteem and future focus, respectively. The findings demonstrated a negative correlation between organizational AI adoption and employees' organization-based self-esteem. Organizational self-esteem mediates the relationship between organizational AI adoption and employees' taking charge. Furthermore, the connection between organization-based self-esteem and taking charge is contingent upon the levels of employees' future focus. Specifically, organization-based self-esteem negatively correlated with taking charge of employees with high future focus, whereas a positive association was observed for those with low future focus. Additionally, this study validated the role of future focus in moderating the indirect effects that organizational AI adoption has on taking charge via organization-based self-esteem.

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