The Relationship Between AI Opportunity Perception and Job Insecurity: The Mediating Role of Employee's Hope and the Moderating Role of Tenure

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Abstract

The increase in the use of artificial intelligence (AI) in the workplace has introduced changes to traditional working environments. However, these are changes not only to employee productivity but also to how employees feel and think about their work. Based on prior research that has suggested connections between employees' perceptions of AI and their emotions and thoughts at work, the present study tested a moderated mediation model in which the perception of AI opportunity is indirectly related to job insecurity via employee hope, with tenure as a moderator. Data obtained from 290 Korean full-time employees illustrated that the perception of AI opportunity was negatively related to job insecurity through hope acting as a mediator. In addition, this indirect relationship was found to be dependent on the moderating role of tenure. Specifically, at lower levels of tenure, the aforementioned indirect relationship was statistically significant, but at higher levels of tenure, this indirect relationship was no longer found to be statistically significant. The implications, limitations, and future research directions of this study are discussed.

Key words: AI Opportunity Perception, Job Insecurity, Hope, Tenure

1. INTRODUCTION

The concept of artificial intelligence (AI) in its modern form emerged in the 1950s and has been a topic of much discussion across various disciplines (Sloane, 2024). The integration of AI in the workplace has shown significant potential for improvements in various areas, including recruitment, decision-making, and job analysis (Navarro, 2023). Recently, we have also seen more studies that shed light on how AI, cognition, and mental health are connected to one another (Shimada, 2023; Yang, 2022; Graham et al., 2019).

In the context of work, the use of AI is related to increases in workers' skills (Li et al., 2021), economic growth (Lu, 2021), and new opportunities for jobs (Mokyr et al., 2015). Nevertheless, despite its potential benefits, the use of AI in the workplace also raises concerns in how it may negatively affect those who feel threatened by its increased use (Bankins, 2023). Changes in the workplace caused by AI may result in detrimental outcomes such as increases in negative emotions or turnover intention among employees (Brougham & Haar, 2018; Xiaomei et al., 2021). This may be true despite the fact that the use of AI at work has also been related to increases in employees' awareness at work, performance, and autonomy (Goods, 2019; Xiaomei et al., 2021).

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Employees' perception of a problem has a direct impact on their emotional state and level of commitment to the organization (Santana-Martins, 2022). Research indicates that there is a complex relationship between the factors that influence the emotions experienced by workers in relation to AI. When confronted with AI in the workplace, an employee who experiences positive emotions can mitigate role conflict (Okabe, 2020). Alternatively, they may experience a range of emotional states including hope, enthusiasm, threat, and worry when using AI (Gkinko, 2022). In the framework of emotions adapted from Beaudry and Pinsonneault (2010), the two proposed dimensions, namely opportunity/threat and perceived control, divide emotions into four quadrants: achievement, challenge, loss, and deterrence. This study focused on hope as a positive outcome that lies at the one extreme of the opportunity axis of the model that was also the most frequently identified by participants in previous research (Hornun & Smolnik, 2022). Nevertheless, the expression of good emotions by AI may not consistently improve service evaluations (Han, 2023). Additionally, AI-driven management can elicit negative emotions, such as concerns about job security and limited prospects for career advancement (Cheng, 2022).

This study also emphasizes the relationship between AI opportunity perception and job insecurity. In today's modern workplace setting, the notion of job insecurity is widely recognized and regularly discussed, particularly in relation to technical advancements and economic uncertainty (Sverke et al., 2002). Moreover, people tend to assign greater significance to negative information than good information, a phenomenon referred to as negative bias (Baumeister et al., 2001). Therefore, job insecurity is anticipated to have a stronger and more pervasive impact on employee attitudes and behavior compared to job security.

Based on the aforementioned call for research, this study takes into account evidence from recent research that suggests AI has the potential to influence employees' emotions and job perception, and seeks to specifically explore the mediating role of hope in the relationship between AI opportunity perception and job insecurity, with tenure as a moderator.

2. THEORETICAL BACKGROUND

2.1. AI Opportunity Perception and Job Insecurity

Extensive study has been conducted on cognitive artificial intelligence (AI) and its relationship with the psychological consequences of employees. Initially, the emergence of AI applications and the recognition that AI has the potential to replace job tasks is a recent global trend that will encourage individuals to engage in activities related to career exploration (Presbitero et al., 2023). Simultaneously, current comprehensive research indicates that having knowledge about AI is strongly associated with one's state of well-being, intention to leave a job, and level of commitment to work (Ersoy, 2023). Furthermore, within the framework of technology substitution and advancement, it is crucial to highlight the significance of regarding AI as a potential opportunity rather than a menace for ongoing education and adaptability in response to technological advancements (Bhargava, 2021).

AI opportunity perception refers to viewing the use of AI at the workplace to be a source of positive career growth and development (Xu et al., 2023). Previous studies have shown a positive relationship between general AI awareness and job security. Park and Jung (2020) found that employees' perception of the competence of the AI system that they use was related to greater job security. Koo et al. (2020) also found that employees' perception of AI as a source for positive

change at work was negatively related to turnover intention via higher work engagement. However, several studies have also shown that in certain cases the incorporation of AI at work may be related to the inverse of job security, namely job insecurity. In Presbitero and Teng-Calleja's (2023) study, the perception of AI incorporation as a threatening factor was positively related to psychological distress through the mediating role of job insecurity. Additionally, in Koo et al.'s (2021) study, when employees viewed themselves to be powerless against AI incorporation, this was related to greater turnover intention via lower work engagement. As such, perceptions of AI at work may relate to differential outcomes based on whether the use of AI is perceived as an opportunity or a threat, such that those who view the use of AI at work as positive opportunities will experience less job insecurity, whereas those who view the use of AI at work to not be advantageous for them will experience greater job insecurity.

In theoretical terms, this can be understood through human capital theory (HCT). HCT is a broad theory of human personality and motivation that emphasizes the degree of relative autonomy of the self and the behavioral acquisition or inversion of educationand training to promote productivity and flexibility in the labor market (Becker, 1964). HCT characterizes these investments as resources that assist persons in navigating focused behavior towards specified objectives. In terms of AI application in the workplace, if someone perceives AI as an opportunity, they may engage more in learning AI-related skills, increasing their employability and decreasing job instability. As a result, we anticipated a negative relationship between AI opportunity perception and job insecurity.

H1. AI opportunity perception is negatively related to job insecurity.

2.2. The Mediating Role of Employee's Hope

Various studies have shown the substantial impact of employee emotions in the workplace. It is apparent that multiple factors have an impact on employees' emotions, with the boss's leadership style being the most common factor (Bono, 2007). Emotions are recognized as a component of the job role, indicating that these displays can influence the well-being and satisfaction of employees (Rafaeli, 1987). Furthermore, emotions have an impact on employee performance, as well as on qualities such as self-efficacy and flexibility, which play a crucial role (Lakshmi, 2018).

When faced with changes brought about by AI, we can expect to see changes in aspects such as personal emotions (Gkinko, 2022). In the framework of emotions presented by Beaudry and Pinsonneault (2010), emotions are labeled in four different quadrants based on where they lie in the dimensions of opportunity and control: challenge, achievement, loss, and deterrence. This study will focus on hope, an emotion that lies at the challenge quadrant of the model and was also the most frequently identified by participants in previous research (Hornung & Smolnik, 2022).

Hope theory claims that hope is a positive emotion marked by optimism that powers the cognitive process through which individuals identify their perception of successful approaches and potential paths they might take to achieve their goals (Snyder et al.,1991). According to hope theory, hope can be built up by the individual's behavior and actions in their social and professional environment (Snyder et al., 1991). Thus, hope has the potential to alter individuals' conduct and outlook, thereby impacting their accomplishments (Kenny et al., 2010). Moreover, hope is recognized to be a factor that impacts performance, commitment, attachment, and career growth in the work environment (Hirschi et al., 2015).

According to the conservation of resources theory (COR; Hobfoll, 2001), individuals demonstrate a ten-

dency to protect their current resources so as to avert the loss of resources (Halbesleben et al., 2014). This theory emphasizes the critical significanceof resources for employee well-being, particularly in the face of trauma and stress in order to safeguard their possessions (Doane et al., 2012). This theory can help explain how employees would react in the face of AI-related challenges (Hu et al., 2023). In the case of the present study, it is possible that personnel who perceive AI as an opportune resource for acquiring new skills and expertise may become more hopeful of future prospects at work (Al-Onizat et al., 2024). Especially in education, AI is being used to supplement traditional learning methods, with a focus on teaching the meaning and importance of AI, integrating it into coursework, and strengthening quantitative skills (Rozman, 2023).

Previous research has also demonstrated that hope predicts a variety of beneficial psychological outcomes, including resilience, well-being, performance, and employee satisfaction (Ong et al., 2017; Peterson & Luthans, 2003; Reichard et al., 2013). Since the expansion of AI use in the workplace may not always be positively viewed due to the perspective that AI can replace certain jobs (Ajithkumar et al., 2023), lower employment rates (Lu, 2020), and reduce the demand for human labor (Akinadewo, 2021), having hope would be relevant to reducing one's sense of insecurity, such that by having greater hope one may feel more confident that one's employment will not be jeopardized in the near future (Bouzari & Karatepe, 2018). Based on the above discussion, the following hypothesis was established:

H2. Hope mediates the negative relationship between AI opportunity perception and job insecurity.

2.3. The Moderating Role of Tenure

Studies on tenure in the workplace demonstrate the substantial influence it has on employees' outcomes and the employment market. According to a market research study in Russia (Wang, 2023), tenure has a significant influence on an employee's employment. The study found that with higher tenure and higher levels of education as they have, they are more likely to have career stability. In traditional research, tenure is regarded as a variable that can alter the correlation between job performance and general happiness, contentment with work, and satisfaction with supervision (Norris, 1984).

The work characteristics of individuals, such as the length of their tenure, which refers to how long an individual has been a part of a workplace, have been shown to be related to various psychological experiences in the workplace (Abdullah, 2020; English, 2010). In the case of tenure, longer tenure has been shown to be related to greater affective commitment and improved mental health (Adams, 2006; Bal et al., 2013). Therefore, tenure may help employees to reduce their work stress or find a way to overcome difficult circumstances in the workplace.

In this study, tenure is positioned as a moderator in shaping the relationship between AI opportunity perception and employee hope. In the course of their employment, employees generally become more proficient at their work and create social networks atwork (Sturman, 2003; Zenoff, 2013). In this sense, employees who have stayed with an organization for an extended period of time may not have their sense of hope strongly affected by more recent developments in AI since they have already established their place in their workplace. On the other hand, for individuals with much less job experience at their workplace, their perceptions of recent developments in AI at the workplace may be more closely tied to their sense of hope. (see Fig. 1 for the hypothesized model).

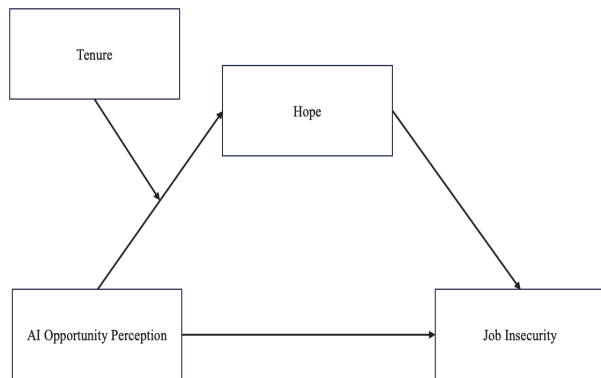**H3.** Tenure moderates the indirect relationship be-

Fig. 1. Moderated mediation model.

tween AI opportunity perception and job insecurity through employee's hope, such that this relationship is stronger when tenure is low than when it is high.

3. METHOD

3.1. Participants and procedures

The study was conducted with 340 Korean adult participants who are working full time. Prior to collecting the data, we obtained approval from the institutional review board (IRB) of the university. Subsequently, we prepared the questionnaire and reached out to dataSpring Korea to administer the online survey. In order to mitigate the issue of participants lacking attentiveness during the survey, we implemented an attention check question. As a result, 290 individuals were included in the data analysis. All survey participants were Korean (55.8% men, n = 162). They had an average of 10.25 years of work experience and most had a bachelor's degree or higher (82%, n = 238). The survey respondents ranged from 23 to 73 years old (m = 47.33).

3.2. Instruments

In this study, we measured the perception of AI op-

portunities, job insecurity, hope, tenure, self-efficacy, and demographic variables such as age, sex, income, position and educational background.

3.2.1. AI Opportunity Perception

Xu et al.'s (2023) scale adapted from Highhouse and Payam's measure was employed to assess AI opportunity perception. We applied Brislin's (1970) back-translation procedure for measure because it was only available in English. The English version of the measure was first translated into Korean by a qualified bilingual expert, a native Korean doctoral student from the psychology department of a Korean university. Then, a Korean graduate student from the psychology department back-translated the measure. The translation was finalized after reviewing this process. The measure consists of five items scored on a five-point scale (1 = strongly disagree, 5 = strongly agree). A sample item is "the adoption of artificial intelligence by enterprises is beneficial to me". Cronbach's alpha was .72 in original measurement and .91 in this study.

3.2.2. Job Insecurity

The Korean translation of the Job Insecurity Scale (JIS; Brockner et al., 1992) was used (Oh, 2016). The scale contains seven items on a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). However, according to Jang (2015), a reliability analysis of the seven items indicated that item 7 hindered overall reliability and was hence removed. A sample item is "I may quit my job regardless of my will". Cronbach's alpha was .91 in both Oh's study and this study.

3.2.3. Hope

The Korean version of the Dispositional Hope Scale (DHS), originally developed by Snyder et al. (1991), was used (Choi et al., 2008). Four items measured path-

way (e.g., "I can think of many ways to get out of a jam") and four items measured agency (e.e., "I energetically pursue my goals"). Although this scale was originally developed to assess hope as a trait, it has also been used widely to measure hope as a state that can be predicted by preceding variables (Chang et al., 2019; Satici, 2016; Yalcm & Malkoç, 2015; Yao & Yang, 2017). The items follow a four-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). Cronbach's alpha was found to be .88 in this study and .80 in the study of Choi.

3.2.4. Tenure

Tenure was measured with the following question: "What is the duration of your employment at your organization?" Participants responded by entering the number of years and months that they were employed by their organization. We then computed these numbers into years.

3.2.5. Self-efficacy

Self-efficacy refers to general beliefs regarding one's capabilities to execute specific behaviors or courses of action (Bandura et al., 1999). By controlling for self-efficacy, we can more accurately isolate the effects of AI opportunity perception on hope and job insecurity, and it is important to demonstrate that the impact caused by AI opportunity perception cannot be explained away just by self-efficacy itself. This ensures that the observed relationships are not completely dominated by general confidence in one's abilities, but also independently im-

pacted by the perception of AI opportunities. Therefore, self-efficacy was included as a control variable in the current study to demonstrate that the predictive power of AI opportunity perception is not nullified when self-efficacy is included as a co-predictor, thereby illustrating the unique role of AI opportunity perception in explaining hope and job insecurity.

3.3. Data Analysis

Initially, the R program was utilized to compute descriptive statistics, which was then followed by performing correlation analysis. The hypotheses testing employed Hayes' (2017) PROCESS 4.2, specifically employing PROCESS Macro model 4 for Hypotheses 1 and 2. Subsequently, the moderation effect stated in Hypothesis 3 was examined using PROCESS Macro model 7, incorporating a percentile bootstrap estimation method to evaluate the significance of the hypothesized indirect effect.

4. RESULTS

4.1. Descriptive Statistics

The descriptive statistics and the correlation coefficients of the study variables are presented in Table 1. AI opportunity perception was inversely correlated with job insecurity (r = -.13, $p < .05$), and positively correlated with hope (r = 37, $p < .01$), tenure (r = .18, $p < .01$), and self-efficacy (r = .37, $p < .01$). Job insecurity

Table 1. Descriptive statistics and correlation analysis

Variables	M	SD	1	2	3	4
1. AI Opportunity Perception	3.20	0.72	-			
2. Job Insecurity	2.71	0.77	-.13*	-		
3. Hope	2.88	0.45	.37**	-.37**	-	
4. Tenure	10.25	8.9	.18**	-.04	.22**	-

$N = 290$, **$p < .01$, *$p < .05$

was inversely correlated with hope (r = -.37, p < .01) and self-efficacy (r = -.31, p < .01). The demographic variables including gender, age, education level, type of company, working hours, and marital status did not exhibit a significant correlation with the primary variables examined in this study. Considering this, the demographic variables were not included in the final model for parsimony.

4.2. Test of Hypotheses

To test the hypotheses, we ran statistical analyses with SPSS version 26. To test Hypothesis 1, we entered AI opportunity perception as the independent variable and job insecurity as the dependent variable in a linear regression analysis. As seen in Table 2, the relationship between AI opportunity perception and job insecurity was negative in a statistically significant manner (b = -.19, SE = 0.89, p = .02). As such, Hypothesis 1 was supported.

We used the SPSS PROCESS macro version 4.2 with model 4 (Hayes, 2017) to determine the mediating impact of hope on the relationship between AI opportunity perception and job insecurity (see Table 3). There was a positive relationship between AI opportunity percep-

tion and hope (b = .38, SE = 0.05, p < .01). In turn, hope was negatively related to job insecurity (b = - .57, SE = 0.08, p < .01). Additionally, AI opportunity perception was no longer statistically significantly directly related to job insecurity in the mediation model once hope was included (b = .02, SE = 0.08, p = 0.8). We further examined the indirect impact of AI opportunity perception on job insecurity via hope using bootstrapping with 5,000 bootstrapped samples (Shrout & Bolger, 2002). The 95% confidence interval did not contain zero, demonstrating that the indirect effect was statistically significant, 95% CI = [-0.33, -0.12]. Hence, Hypothesis 2 was supported.

Finally, we tested the hypothesized moderated mediation relationship using PROCESS macro model 7. The interaction of AI opportunity perception and tenure on predicting hope was statistically significant (b = -.01, SE = 0.01, p = .02), with the positive direct relationship between AI opportunity perception and hope being statistically significant for those with lower tenure but not for those with higher tenure (see Fig. 2). To confirm Hypothesis 3, we computed the index of moderated mediation. As shown in Table 4, the index of moderated mediation did not contain zero in its confidence interval, indicating a statistically significant moderated mediation

Table 2. The Relationship Between AI Opportunity Perception and Job Insecurity

	b	SE	t	p	LLCI	ULCI
AI → Job Insecurity	-0.19	0.89	- 2.2	0.02	- 0.37	- 0.02

N = 290, LLCI = Lower Limit Confidence Interval 95%, ULCI = Upper Limit Confidence Interval 95%. Linear regression analysis.
Note: AI refers to AI Opportunity Perception

Table 3. Mediation analysis

	b	SE	LLCI	ULCI
AI → Hope	0.38	0.05	0.27	0.48
Hope → Job Insecurity	- 0.57	0.08	- 0.71	- 0.40
AI → Job Insecurity (Direct)	0.02	0.08	- 0.15	0.19
AI → Hope → Job Insecurity (Indirect)	- 0.22	0.06	- 0.33	- 0.12

N = 290, Bootstrap sample size = 5000, LLCI = Lower Limit Confidence Interval 95%, ULCI = Upper Limit Confidence Interval 95%. Linear regression analysis.
Note: AI refers to AI Opportunity Perception

Table 4. The index of moderated mediation

	Index	SE	LLCI	ULCI
Tenure	0.005	0.003	0.001	0.011

Table 5. Conditional indirect effects

Tenure	Indirect effect	SE	LLCI	ULCI
- 1SD	- 0.09	0.03	- 0.17	- 0.02
Mean	- 0.04	0.02	- 0.10	- 0.002
+ 1SD	0.00	0.03	- 0.06	0.07

Bootstrap sample size = 5000, LLCI = Lower Limit Confidence Interval 95%, ULCI = Upper Limit Confidence Interval 95%.
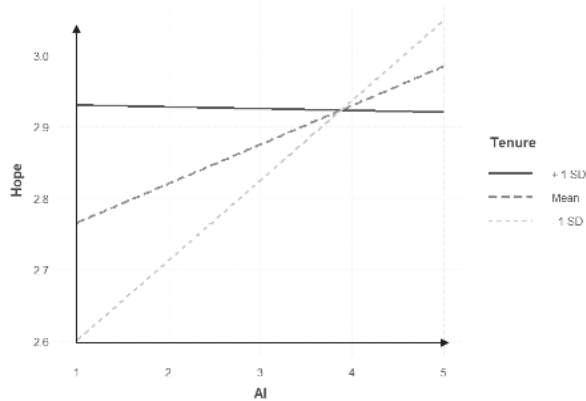

Fig. 2. The interaction between AI opportunity perception and tenure on employee's hope
Note: AI refers to AI Opportunity Perception

(index = 0.005, SE = 0.003, 95% CI [0.001, 0.011]. We additionally examined the conditional indirect effects based on the values of the moderator (mean +1 SD, mean, mean -1 SD) as shown in Table 5. The indirect effect was statistically significant for those with low tenure at -1 SD (standardized indirect effect = -.09, 95% CI = [-0.17, -0.02]), but not for those with high tenure at +1 SD (standardized indirect effect = .002, 95% CI = [-0.06, 0.07]). Overall, this indicates that the negative indirect relationship between AI opportunity perception and job insecurity via hope was statistically significant for employees with lower levels of tenure but not for those with higher levels of tenure, thereby supporting Hypothesis 3.

5. Discussion

AI has the potential to offer a multitude of opportunities to people across various sectors, ranging from commerce to healthcare (Horák & Turková, 2023). Nevertheless, in a society where AI is capable of aiding humans in various activities and maybe even substituting them (Diware, 2023), employee perspectives may undergo alterations due to the advent of AI. For instance, AI throughout educational settings can enhance teachers' sense of positive emotion by enhancing their effectiveness in teaching and transforming students' perspective and dynamic learning (Guo, 2020). Hence, it is necessary to investigate the relationship between employees' thoughts on AI and their emotions at work. In this study, we concentrated on examining the relationship between the perceptions of AI opportunities and job insecurity, taking into account the mediating role of employee hope and the moderating role of tenure.

Our results revealed that AI opportunity perception is negatively correlated with job insecurity, supporting our prediction as well as prior studies on the relationship between AI perception and employee well-being (e.g., Xu et al., 2023). Hope played a mediating role in the relationship between AI opportunity perception and job insecurity. This is consistent with previous research that has demonstrated how the use and perception of AI in

the workplace may impact employees' emotions (Gkinko, 2022; Patulny et al., 2020).

Our findings also confirmed that tenure would moderate the relationship between AI opportunity perception and hope, such that AI opportunity perception is relevant to hope for those with low levels of tenure, but not for those with high levels of tenure. Moreover, the moderated mediation analysis demonstrated that the indirect negative relationship between AI opportunity perception and job insecurity was valid for those with low levels of tenure but not for those with high levels of tenure. Specifically, for those with low tenure, AI opportunity perception was positively related to hope, and hope was subsequently negatively related to job insecurity. In contrast, for those with high tenure, whether or not one's AI opportunity perception was high or low was not relevant to one's level of hope and subsequent job insecurity (see Fig. 2).

Our study has contributed to the research on AI perception and employee well-being in the following ways. First, this study shows the impact of AI awareness observed at an individual level, where workers expressed dread related to the potential risk of being replaced by AI (Chiu, 2021) or positive emotions resulting from the productivity boost that AI can bring,with particular emphasis placed on how hope can change employees' attitude towards their duties when facing with AI context. Although prior studies have often focused on negative emotions (e.g., Wang, 2019), our study has shed light on the role that hope, a positive emotion, may play in AI perception. This study also reveals that employees can be characterized by tenure: employees with shorter tenure are more strongly subjected to the mediating role of hope, supporting the establishment of time-involvement as an important factor in AI research. Secondly, the study also demonstrates the specific mechanisms at play, i.e. the inverse correlation between AI opportunity perception and job insecurity mediated by hope has part

of its strength dictated by tenure. There are currently no in-depth studies on the impact of AI perception as an opportunity related to emotions and organizational behavior. Therefore, our research contributes to a greater understanding of the functioning of employee emotions both at the individual and collective level. Finally, this study determined the influence of tenure as a moderating variable, validating the relationship between AI opportunity perception and the employee's hope on work. In order to enhance job efficiency and eliminate employee concerns over their job, it is recommended to take into account employee engagement as well as working durations. Furthermore, this study also demonstrates consistency with the notion that individuals who possess employment stability or extensive knowledge about the organization tend to exhibit low motivation and lack the capacity to adjust to changes in their work environment, primarily due to diminished self-monitoring (Ng, 2013; Moser, 2007).

The practical nature of the current study provides guidelines for human resources managers on why they should better equip their employees with regard to perceptions of AI use in the workplace. Since poor AI opportunity perceptions may result in less hope and greater job insecurity at work, especially for those with low levels of tenure, it will be beneficial for managers to directly tackle these negative perceptions through methods such as positive cognitive reframing. Other intervention methods can include providing training to employees on how to use different AI programs at work, thereby improving employees' sense of competence and subsequent perception toward AI.

On a final note, our study is subject to some limitations that must be addressed. First, our study specifically targeted Korean adults who are currently employed on full-time contracts. Hence, the outcomes of this study can vary if it is carried out in a different societal milieu, such as Europe or America. Therefore, it is necessary

to conduct further research on individuals who are new to other cultures and organizational settings. Second, we relied on self-report measurements. While employing this method in investigations concerning the psychological outcomes of employees and the perception of AI is commendable, it is crucial to acknowledge the possibility of social desirability bias and common method bias. Both of these biases may hinder the accuracy of measurements and the latter is particularly prevalent in studies that depend on self-report measures (Cooper, 2020). Third, the mediational model cannot be strictly interpreted as a causal chain because the data was collected at one measurement occasion. In future, a longitudinal investigation of the causal relationships should be further examined. Finally, this study focused on the role of one positive emotion such as hope. In future studies, the roles of additional emotions such as anger and disgust could also be investigated.

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