



# Threat of technological disruption and turnover intention in Egypt: A moderated mediation model



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**Orientation:** Employee perceived threat of technological disruption (PTTD) is an unavoidable consequence of the increasing prevalence of Smart Technology, Artificial Intelligence, Robotics and Algorithms.

**Research purpose:** This study examined the relationship between PTTD and turnover intention (TI), the mediating role of job insecurity (JI) in this relationship and the moderating effect of age on JI's mediating role in the Egyptian private sector.

**Motivation for the study:** Only a few prior studies have examined the relationship between employee PTTD and TI and/or the mediating role of JI in this context. Further, none of those studies has been conducted in Egypt, and no prior research has inspected the moderating effect of employee demographic characteristics on the mediating role of JI.

**Research approach/design and method:** Hayes PROCESS Model 14 was used to analyse cross-sectional data obtained from a sample of 348 Egyptian full-time employees working in the Egyptian private sector.

**Main findings:** Findings revealed a significant positive relationship between PTTD and TI, a significant positive indirect effect of PTTD on TI through JI and that age mitigated the positive indirect effect of PTTD on TI through JI.

**Practical/managerial implications:** Understanding how PTTD influences TI through JI and the moderating effect of age can help organisations develop targeted interventions to reduce employee concerns about technological disruption and mitigate turnover risk.

**Contribution/value-add:** This study addressed key knowledge gaps by providing empirical evidence from Egypt, highlighting the mediating role of JI in the PTTD–TI relationship and demonstrating the moderating effect of age on this mediation.

**Keywords:** perceived threat of technological disruption; turnover intention; job insecurity; age; Egypt.

## Introduction

### Orientation

Prominent scholars, including Stephen Hawking and Bill Gates, have expressed concerns about widespread job loss because of the emergence of Smart Technology, Artificial Intelligence, Robotics and Algorithms – STARA (Bort, 2014; Lynch, 2015). This is attributed to significant advancements in artificial intelligence and robotic capabilities, along with the affordability of such technologies, which can outperform humans in various manual and intellectual tasks.

Employee perceived threat of technological disruption (PTTD), which is the degree to which employees perceive their current job to be threatened by STARA (Brougham & Haar, 2018), is an unavoidable consequence of the rising prevalence of STARA. Nevertheless, according to Brougham and Haar (2020), little is understood about employees' perceptions of the prospective impact of these technological disruptors on their jobs and how those perceptions could impact employee-level work outcomes. Consistent with this, very few prior studies examined the relationship between employee PTTD and turnover intention (TI) and/or the mediating role of job insecurity (JI) in this context. Turnover intention, generally defined as an employee's conscious and planned intention to leave the employing organisation (Tett & Meyer, 1993), is an important workplace outcome. On the one hand, it positively relates to undesirable outcomes such as recruiting and hiring costs (Robinson et al., 2014). Conversely, it is negatively associated with desirable outcomes such as organisational citizenship behaviour (Xiong & Wen, 2020).

There is some empirical evidence that PTTD is positively associated with TI (Brougham & Haar, 2018; Kurniawan et al., 2022; Li et al., 2019), with JI as a mediating factor (e.g. Brougham & Haar, 2020; Dou, 2023; Gödöllei & Beck, 2023; Koo et al., 2021; Mukhlis et al., 2023; Priyadarshi & Premchandran, 2022; Zhang et al., 2023). Nonetheless, none of these prior studies has been conducted in Egypt. From a cultural-relativist standpoint, the applicability of those prior findings in the context of Egypt is questionable, as cross-cultural differences can cause variations in collectivism and long-term orientation (Hofstede, 2001). In line with Hofstede (2001), collectivism refers to the extent to which individuals in a society see themselves as part of tightly knit in-groups such as families, clans or organisations that provide support in exchange for loyalty. Long-term orientation refers to the extent to which a society prioritises long-term goals and future consequences over immediate outcomes (Hofstede, 2001).

Egypt exhibits substantially higher collectivism than the cultures of prior studies, such as Australia (Brougham & Haar, 2020), China (Li et al., 2019; Zhang et al., 2023), Indonesia (Kurniawan et al., 2022), New Zealand (Brougham & Haar, 2018, 2020) and USA (Brougham & Haar, 2020; Gödöllei & Beck, 2023; Koo et al., 2021) (The Culture Factor Group, n.d.). Consequently, while in those individualist cultures, higher PTTD leads to higher JI, which results in higher TI, Egyptians may experience these dynamics differently. In Egypt, greater solidarity and mutual support within organisations may disrupt the expected positive PTTD–TI relationship through cushioning employees against PTTD-induced insecurity (Cheng et al., 2014). Additionally, Egypt demonstrates substantially shorter-term orientation compared to the cultures featured in previous studies, except for Indonesia (Kurniawan et al., 2022) (The Culture Factor Group, n.d.). This may make Egyptians significantly less concerned with the long-term risks posed to their jobs by STARA, which can further disrupt PTTD's effect on TI, especially through JI.

## Research purpose and objectives

Thus, this study aimed to validate and extend prior research by examining the PTTD–TI relationship, the mediating role of JI in this context and the moderating effect of age on the JI's mediating role within the Egyptian private sector. By investigating these relationships, the study sought to address gaps in the literature, particularly the absence of research on these dynamics in Egypt and the limited exploration of demographic moderators in this context.

The remaining article is structured as follows: the second section outlines the study's theoretical framework and hypothesis development; the third section discusses the research methodology; the fourth section presents the findings and the fifth section explores the study's theoretical contributions, practical implications, limitations and directions for future research.

## Theoretical framework and hypotheses development

### The relationship between perceived threat of technological disruption and turnover intention

As a consequence of STARA's growing capability of outperforming humans in various manual and intellectual tasks, experts have been repeatedly warning that jobs have become more threatened than ever. For instance, as noted by Bort (2014), Bill Gates warns: 'People don't realize how many jobs will soon be replaced by software bots'.

According to Coupe (2019), experts suggest that the level of threat posed by STARA to a given job is negatively associated with the job's requirements for personal interaction, creativity and specialised technical knowledge and positively associated with the job's task repetitiveness.

The threat of job loss because of STARA is recognised not only by experts but also by employees. For instance, a Pew Research Center survey in 2016 revealed that about 65% of Americans believed that robots and computers would perform much of human work within the next 50 years (Rainie & Anderson, 2017). Likewise, a Gallup poll from 2018 indicated that 23% of employed Americans were worried about losing their jobs to artificial intelligence (Reinhart, 2018). Building on this notion, PTTD is conceptualised in the present study as the extent to which employees perceive their current job to be threatened by STARA (Brougham & Haar, 2018).

TI is an extensively investigated concept in human resource and organisational behaviour research and thus multiple definitions of it exist in academic literature. For example, Tett and Meyer (1993) define it as 'a conscious and deliberate willfulness to leave the organisation'. Memon et al. (2016) define it as the individual's willingness to voluntarily and permanently withdraw from an organisation. Hom et al. (2017) delineate it as 'an employee's reported willingness to leave the organisation within a defined period of time'. Lestari and Margaretha (2021) define it as 'the desire to relocate or leave an organisation to find a better job'.

TI has been widely deemed the best predictor of actual turnover (e.g. Ajzen, 1991) for two reasons. Firstly, according to the Theory of Planned Behaviour (Ajzen, 1991), intention is the primary prerequisite of actual behaviour. Secondly, TI is the last cognitive element before actual turnover (Mowday et al., 1982).

The Conservation of Resources Theory (CRT; Hobfoll, 1989, 2002) can serve as a theoretical foundation for conjecturing a positive relationship between PTTD and TI. Conservation of Resources Theory holds that individuals strive to acquire, retain, promote and conserve their resources (Hobfoll, 1989). According to Hobfoll (1989), resources are entities

valued by the individual, and they can be: objects (e.g. a personal computer), conditions (e.g. employment status), personal characteristics (e.g. talents) and energies (e.g. mental and physical energies). The CRT further argues that stress is caused when there is: a threat of losing resources, an actual net loss of resources or a lack of gained resources following the spending of resources (Hobfoll, 2002). Expanding on CRT, a positive impact of PTTD on TI can be conjectured. Firstly, PTTD causes emotional exhaustion and depression (e.g. Teng et al., 2023) and negative emotions (Dou, 2023), and thus it depletes employees' mental energy. Secondly, employees might need to devote significant time and effort to acquire more skills to be able to compete with STARA. Such depletion of employees' resources induced by PTTD causes employees to experience stress. In response and in an effort to conserve their resources and reduce stress, employees may consider voluntary withdrawal from the organisation (Richter et al., 2020).

Another compelling rationale for postulating a positive relationship between PTTD and TI is well rooted in the norm of reciprocity. According to Spielberger (Ed. 2004), the norm of reciprocity holds that the social relationship between any two parties gets hampered if one of the parties provides the other with a benefit and does not get another benefit in compensation or is harmed instead. Building on the reciprocity norm, perceived organisational support and affective commitment are positively related (Arasanmi & Krishna, 2019; Dasgupta, 2016; Rumangkit, 2020, as cited in Khalifa, 2023). In line with Eisenberger et al. (1986), perceived organisational support refers to employees' global beliefs that their employer appreciates their contributions and cares about their welfare. According to Meyer and Allen (1997), affective commitment refers to an employee's emotional attachment to, identification with and involvement in the organisation. In line with Brougham and Haar (2018), when employees perceive that their employer actively explores new technologies to replace them, they perceive that they are less valued by their employer, become less emotionally attached to the organisation and consequently exhibit higher turnover intentions.

Consistent with this notion discussed above, Brougham and Haar (2018) apply a mixed methods approach to examine data from 120 employees in New Zealand and convey that higher perceived threat of STARA leads to lower levels of commitment, which consequently leads to higher levels of TI. Additionally, analysing data from 468 Chinese hotel employees, Li et al. (2019) reveal that PTTD and TI are positively associated and that this association is mitigated at higher levels of perceived organisational support. In addition, other studies have disclosed a positive relationship between perceived threat of STARA and TI (e.g. Kurniawan et al., 2022).

As deliberated in the introduction, Hofstede's (2001) framework proposes that the positive PTTD-TI link may be nullified in Egypt compared to the cultures of prior studies because of Egypt's stronger collectivist orientation and lower long-term orientation (The Culture Factor Group, n.d.). Nonetheless, this study contends that the rationales underpinning the positive relationship between PTTD and TI – rooted in CRT (Hobfoll, 1989, 2002) and reciprocity norm (Ed. Spielberger, 2004) – remain pertinent in the Egyptian context, especially given the recent leaps in generative artificial intelligence and automation. Consequently, it is anticipated that the positive relationship between PTTD and TI would still hold in Egypt. To verify this expectation, this study posits:

H<sub>1</sub>: PTTD and TI are positively related in Egypt.

### The mediating role of job insecurity

According to Klug et al. (2024), scholarly research differentiates between quantitative and qualitative JI, whereas the former signifies perceived threat of losing the job and the latter signifies perceived threat to important features of the job. Attributed to its importance as a predictor of various critical individual and organisation-level work outcomes, abundant definitions of JI exist in scholarly human resources and organisational behaviour literature. Many of those definitions incorporate only the quantitative dimension of JI. For instance, De Witte (1999) defines JI as 'an overall concern about the continued existence of the job in the future'. Likewise, Burchell (2011) delineates it as 'an employee's perception of the likelihood of losing the job involuntarily in, say, the next six or twelve months'. Some of the definitions address both the quantitative and qualitative dimensions of JI. For example, Sverke and Hellgren (2002) conceptualise it as 'a fundamental and involuntary change concerning the continuity and security within the employing organisation'.

Despite the abundant, different definitions of JI, scholars seemingly agree on three attributes of it (Shoss et al., 2020). Firstly, JI is a subjective perception, where the exact condition may induce different levels of insecurity across employees (Shoss et al., 2020). Secondly, JI is involuntary, not concerning employees who willingly engage in insecure employment, such as contract employment (e.g. Sverke & Hellgren, 2002). Thirdly, JI concerns one's current job with their current employer (Shoss et al., 2020).

Conceivably, the most scholarly established mechanism through which PTTD positively impacts TI is the intervention of JI. As a consequence of STARA's accelerating potential to replace human labour, employees have been increasingly considering it as a source of JI (e.g. Rainie & Anderson, 2017; Jiang, 2024). Because JI is a stressful state, it consequently positively affects TI (Çinar et al., 2014; Staufienbiel & König, 2010). In line with this rationale, research has reported that PTTD has a positive indirect effect on TI through JI (e.g. Brougham & Haar, 2020; Dou, 2023;

Priyadarshi & Premchandran, 2022; Gödöllei & Beck, 2023; Koo et al., 2021; Mukhlis et al., 2023; Zhang et al., 2023). Hence, the following is also posited:

$H_2$ : PTTD has a positive indirect effect on TI through JI.

## The moderating effect of age

As aforementioned, JI is a stressful condition, and thus it mediates the positive PTTD–TI link (e.g. Brougham & Haar, 2020; Priyadarshi & Premchandran, 2022). Therefore, there is a strong rationale to assume that this mediation effect of JI would be alleviated at higher levels of stress-coping efficacy. The socioemotional selectivity theory (SST) (Carstensen, 1991, 1992) suggests that as individual's age, they shift their motivational priorities towards emotional well-being and meaningful social interactions, which enhances their ability to regulate stress and maintain stability in the face of uncertainty. In line with this notion, there is empirical evidence that older people have higher stress-coping efficacy, because they: have a better sense of control (Lachman & Weaver, 1998), generally exhibit higher levels of emotional well-being in stressful conditions (Charles et al., 2009), often use more adaptive strategies during stressful situations (Aldwin & Yancura, 2010) and typically exhibit higher self-regulation during stressful events (Diehl & Hay, 2010). These age-related stress-coping advantages are likely to act as a psychological buffer, allowing older employees to reinterpret insecurity cues in a less threatening way and to maintain their organisational commitment. Consequently, it can be hypothesised that age will weaken the impact of JI on TI, as older employees' coping resources reduce the emotional intensity of JI. Based on these theoretical and empirical insights, the following is also posited:

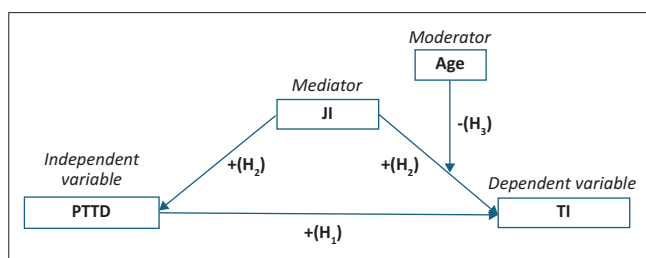
$H_3$ : The positive indirect effect of PTTD on TI through JI gets weaker (less positive) with age.

Figure 1 exhibits the present study's conceptual model.

## Research design

### Research approach

The present study adopts a quantitative research approach, employing a cross-sectional survey design to examine the relationships between PTTD, JI and TI among Egyptian private sector employees. A quantitative approach was deemed appropriate given the study's objective of



PTTD, perceived threat of technological disruption; TI, turnover intention; JI, job insecurity.

**FIGURE 1:** The present research's conceptual model.

testing theoretically driven hypotheses using statistical analysis. By leveraging a structured questionnaire, the study systematically collects numerical data, enabling the use of inferential statistical techniques to establish relationships between the study constructs.

Given the study's focus on full-time employees in Egypt's private sector, a non-experimental, correlational design was utilised to capture naturally occurring variations in the variables of interest. This design allows for the investigation of mediation and moderation effects while controlling for relevant demographic factors, including age, gender and tenure. The research is grounded in established measurement scales adapted for the study context, ensuring the reliability and validity of the collected data. Furthermore, the cross-sectional nature of the study provides a snapshot of the current workforce dynamics regarding PTTD, JI and TI, making it particularly relevant for organisations navigating technological change.

## Research method

### Participants

The final sample of this study involved 348 participants, whose demographic profile is reported in Table 1. It is important to note that the population of the present study comprises all Egyptian full-time employees working in the Egyptian private sector. According to the Announcement of Fifth Economic Census Results (n.d.), as of 31 March 2020, the Egyptian private sector employed 12.58 million people.

### Measurement

*Perceived threat of technological disruption* was measured using a scale comprising three Arabic items adapted from Brougham and Haar's (2018) STARA-awareness scale. The original items are: 'I think my job could be replaced by STARA'; 'I am personally worried that what I do now in my job will be able to be replaced by STARA' and 'I am personally worried about my future in my organisation because of STARA replacing employees'. The scale

**TABLE 1:** Respondents' profile.

Variable	Categories	Count	%
Gender	Female	194	55.75
	Male	154	44.25
Age (years)	21–30	55	15.80
	31–40	91	26.15
	41–50	119	34.20
	51–60	67	19.25
	61 or more	16	4.60
	Tenure (years)	5 or less	55
6–10		88	25.29
11–15		116	33.33
16–20		62	17.82
21 or more		27	7.76
Subsector of employment		Industrial	44
	Commercial	131	37.64
	Service	173	49.72

employed in the present research demonstrates excellent reliability (Cronbach's alpha = 0.97). *Job insecurity* was measured using a scale comprising three Arabic items adapted from De Witte's (1999) JI scale. The original items are: 'Chances are, I will soon lose my job', 'I feel insecure about the future of my job' and 'I think I might lose my job in the near future'. The scale employed in the present research demonstrates excellent reliability (Cronbach's alpha = 0.98). *Turnover intention* was measured using a scale comprising three Arabic items adapted from Colarelli's (1984) TI scale. The original items are: 'I frequently think of quitting my job', 'I am planning to search for a new job during the next 12 months' and 'If I have my own way, I will not be working for this firm one year from now'. The scale employed in the present research demonstrates excellent reliability (Cronbach's alpha = 0.99). For these three constructs, responses were obtained on a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The overall score for each construct was calculated by averaging the responses to the respective items. Individual items' responses and descriptive statistics are accessible *via* the data link shared at the end of this article.

*Gender* was measured using a single nominal item asking the respondent to indicate their biological sex, offering two options: 'Female' (coded 0) and 'Male' (coded 1). *Age* was measured using one ordinal item asking the respondent to indicate their age group. Five options were provided: '21–30 years' (coded 1), '31–40 years' (coded 2), '41–50 years' (coded 3), '51–60 years' (coded 4) and '61 years or more' (coded 5). *Tenure* was measured using one ordinal item requesting the respondent to indicate how long they have been working for their organisation. Five options were provided: '5 years or less' (coded 1), '6–10 years' (coded 2), '11–15 years' (coded 3), '16–20 years' (coded 4) and '21 years or more' (coded 5). The *subsector of employment* was measured using a single nominal item providing three options to the respondent: 'Industrial', 'Commercial' and 'Service'. This item was dummy, so coded with the response 'Industrial' as the reference category.

#### Assessing the discriminant validity of the questionnaire.

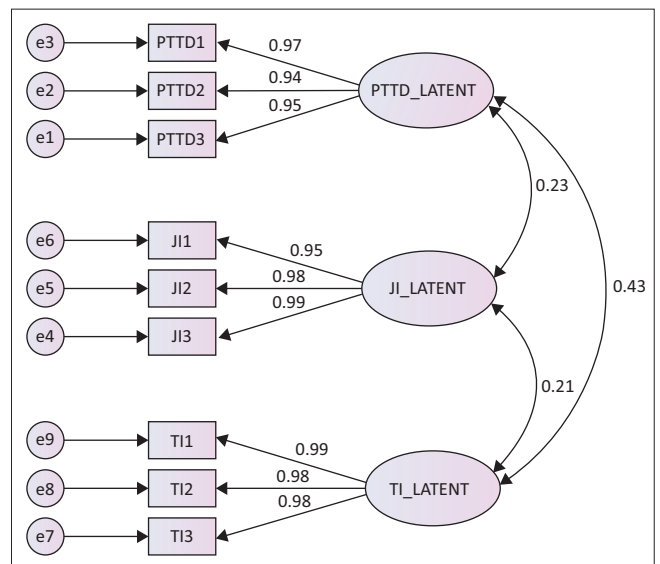
Figure 2 presents the results of the questionnaire's discriminant validity assessment, conducted through confirmatory factor analysis (CFA) using SPSS AMOS (version 24.0). The evaluation involved a structural model consisting of three latent constructs corresponding to PTTD, JI and TI items. As shown in Figure 2, no pair of latent constructs exhibits a standardised covariance exceeding an absolute value of 0.70, indicating acceptable discriminant validity. Furthermore, all items load strongly onto their respective latent constructs, with all standardised factor loadings being statistically significant at the 0.05 level and the lowest loading reaching 0.94. The overall model demonstrates a good fit: Chi-square = 29.86, degrees of freedom = 24,  $P > 0.05$ ; goodness of fit index = 0.98; normed fit index = 0.99; Tucker-Lewis index = 0.99 and root mean square error of approximation = 0.03.

#### Assessing the common method bias in the questionnaire:

Common method bias in the questionnaire was assessed using Harman's (1967) one-factor test (Table 2). An exploratory factor analysis was performed in SPSS (24.0), examining a single factor comprising all the questionnaire items. The findings, as indicated in Table 2, reveal that the total variance explained by this single factor is 38.18%, which is below the 50% threshold, indicating the absence of a common method bias problem.

#### Research procedure

The data required for the present study were collected using a questionnaire administered online *via* Google Forms (a widely accessible, respondent-friendly platform). The survey was carried out in March 2024 and April 2024. A snowball sampling design was used. The survey link was shared *via* WhatsApp with 38 personal and professional contacts of the researchers, who were requested to further disseminate the survey within their own personal and professional networks.



PTTD, perceived threat of technological disruption; TI, turnover intention; JI, job insecurity.

**FIGURE 2:** Results of assessing the questionnaire's discriminant validity using confirmatory factor analysis.

**TABLE 2:** Harman's One-Factor test results.

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	4.58	38.18	38.18	4.52	37.68	37.68
2	2.45	20.44	58.62	-	-	-
3	1.65	13.72	72.34	-	-	-
4	1.11	9.28	81.62	-	-	-
5	0.99	8.27	89.89	-	-	-
6	0.86	7.19	97.08	-	-	-
7	0.11	0.87	97.95	-	-	-
8	0.08	0.64	98.59	-	-	-
9	0.07	0.59	99.18	-	-	-
10	0.04	0.35	99.53	-	-	-
11	0.03	0.24	99.77	-	-	-
12	0.03	0.23	100.00	-	-	-

Note: Extraction Method: Principal Component Analysis.

The questionnaire began with an assurance of anonymity and nondisclosure to minimise socially desirable response bias, and respondents were instructed to participate only if they were Egyptian full-time employees working in the Egyptian private sector. Van Widenfelt et al.'s (2005) forward-backward translation procedure was employed to ensure the conceptual equivalence of the Arabic PTTD, JI and TI items employed in the present research to the original English items.

### Statistical procedure for testing the study hypotheses

$H_1$ ,  $H_2$  and  $H_3$  were tested using Hayes PROCESS Model 14 in SPSS (24.0). Perceived threat of technological disruption was entered as the independent variable, TI as the dependent variable, JI (mean-centred) as the mediator, age (mean-centred) as the moderator and gender, tenure and subsector of employment as controls. More details on this statistical procedure can be found in the works of Preacher et al. (2007) and Hayes (2013).

### Ethical considerations

This study received formal ethical approval from the Department of Human Resources at Cairo University on 07 February 2024, following an assessment by a tripartite committee, as confirmed by an official letter dated 25 March 2024. Observing the revised Helsinki Declaration's (2013) ethical principles and code of conduct for research involving human participants, careful attention was given to study design, data confidentiality and informed consent for participation procedures. Written informed consent was obtained through participants' decision to complete the survey, which included an introductory statement that clearly outlined the study's purpose and explicitly stated that proceeding with the survey constitutes explicit informed consent for participation in the study.

## Results

### Descriptive statistics and correlations

Table 3 reveals the present study variable descriptive statistics and correlations among them. As shown in the table, PTTD averaged 3.38 (standard deviation [SD] = 1.25), JI averaged 3.10 (SD = 1.66) and TI averaged 3.14 (SD = 1.22).

### Results of testing the study hypotheses

Table 4 shows hypothesis testing results. Firstly, PTTD's direct effect on TI is positive and significant ( $b = 0.40, p < 0.05$ ), supporting  $H_1$  and indicating a positive PTTD-TI relationship. Secondly, PTTD's indirect effect on TI through JI is also positive and significant ( $b = 0.024, 95\% \text{ CI} = [0.001, 0.054]$ ), supporting  $H_2$  and suggesting JI as a mechanism through which PTTD influences TI.

Thirdly, the interaction term JI\*Age is a significant negative predictor of TI ( $b = -0.11, p < 0.05$ ), and the index of moderated mediation is negative and significant ( $b = -0.032, 95\%$

**TABLE 3:** Descriptive statistics and correlations.

Variable	Descriptive statistics			Correlations				
	Mean	SD	PTTD	JI	TI	Gender	Age	Tenure
PTTD	3.38	1.25	1.00	-	-	-	-	-
JI	3.10	1.66	0.23*	1.00	-	-	-	-
TI	3.14	1.22	0.43*	0.20*	1.00	-	-	-
Gender	0.44	0.50	0.06	0.06	0.09	1.00	-	-
Age	2.71	1.09	-0.01	-0.08	0.02	-0.13*	1.00	-
Tenure	2.76	1.15	-0.04	-0.07	-0.01	0.02	0.01	1.00

PTTD, perceived threat of technological disruption; TI, turnover intention; JI, job insecurity; SD, standard deviation.

\*,  $p < 0.05$  (2-tailed).

**TABLE 4a:** Results of testing the study hypotheses using Hayes PROCESS Model 14.

Variable	Effect	SE	T	VIF	R <sup>2</sup>	f
<b>Mediator model (Outcome variable: JI)</b>						
Constant	-0.62	0.41	-1.50	-	0.06	4.49*
PTTD	0.30*	0.07	4.25	1.01		
Gender	0.15	0.18	0.85	1.00		
Tenure	-0.09	0.08	-1.17	1.01		
Commercial_Dummy	-0.15	0.28	-0.52	2.49		
Service_Dummy	-0.30	0.27	-1.09	2.48		
<b>Dependent variable model (Outcome variable: TI)</b>						
Constant	1.79*	0.28	6.42	-	0.22	12.18*
PTTD	0.40*	0.05	8.22	1.06		
JI	0.08*	0.04	2.31	1.07		
Age	0.04	0.05	0.68	1.02		
JI*Age	-0.11*	0.03	-3.20	1.03		
Gender	0.15	0.12	1.28	1.02		
Tenure	0.00	0.05	0.03	1.01		
Commercial_Dummy	-0.12	0.19	-0.61	2.54		
Service_Dummy	-0.07	0.18	-0.38	2.51		

Note: Number of bootstrap samples = 5000.

PTTD, perceived threat of technological disruption; TI, turnover intention; JI, job insecurity; SE, standard error; VIF, variance inflation factor.

\*,  $p < 0.05$ .

**TABLE 4b:** Results of testing the study hypotheses using Hayes PROCESS Model 14.

Effect	Boot SE	Boot 95% CI lower limit	Boot 95% CI upper limit
<b>Indirect effect of PTTD on TI through JI</b>			
Overall	0.024	0.014	0.054
Low age ( $\mu - 1SD$ )	0.060	0.022	0.107
Mean age	0.025	0.014	0.056
High age ( $\mu + 1SD$ )	-0.010	0.017	0.022

Note: Number of bootstrap samples = 5000.

PTTD, perceived threat of technological disruption; TI, turnover intention; JI, job insecurity; SD, standard deviation; SE, standard error; CI, confidence interval.

**TABLE 4c:** Results of testing the study hypotheses using Hayes PROCESS Model 14.

Effect (index of moderated mediation)	Boot SE	Boot 95% CI lower limit	Boot 95% CI upper limit
<b>Moderating effect of age on the indirect effect of PTTD on TI through JI</b>			
-0.032	0.013	-0.061	-0.011

Note: Number of bootstrap samples = 5000.

PTTD, perceived threat of technological disruption; TI, turnover intention; JI, job insecurity; SE, standard error; CI, confidence interval.

$\text{CI} = [-0.061, -0.011]$ ), supporting  $H_3$ . These results indicate that PTTD's indirect effect on TI through JI gets weaker with age. Further simple slopes analysis – at low ( $M - 1SD$ ), mean ( $M$ ) and high ( $M + 1SD$ ) ages – showed that the indirect effect is significant for younger employees ( $b = 0.060, 95\%$

CI = [0.024, 0.107]) and those of mean age ( $b = 0.025$ , 95% CI = [0.002, 0.056]) but not for older employees ( $b = -0.010$ , 95% CI = [-0.045, 0.022]).

## Discussion

### Outline of the results

The findings of the present study disclose a statistically significant positive relationship between PTTD and TI, a statistically significant positive indirect effect of PTTD on TI through JI, and that age significantly mitigates the positive indirect effect of PTTD on TI through JI.

The disclosed positive relationship between PTTD and TI indicates that as employees become more aware of the potential threats posed to their jobs by technological advancements, they exhibit a greater willingness to quit their jobs. The norm of reciprocity provides a robust framework for understanding this dynamic. In line with Brougham and Haar (2018), when employees perceive that the organisation actively explores new technologies to replace them, they perceive that they are less appreciated by the organisation, become less emotionally attached to it and consequently exhibit higher intentions to withdraw from the organisation. The CRT (Hobfoll, 1989, 2002) also provides a robust framework for understanding the positive relationship between PTTD and TI. According to Hobfoll (1989), individuals strive to acquire and maintain resources (including mental energy) and stress arises from threats to these resources. Smart Technology, Artificial Intelligence, Robotics and Algorithms awareness has been shown to lead to emotional exhaustion, depression and negative emotions (Dou, 2023; Teng et al., 2023; Xu et al., 2023), all of which deplete employees' mental energy. Furthermore, employees may feel compelled to invest significant time and effort to enhance their skills to remain competitive amidst STARA, further straining their resources. This resource depletion can heighten stress levels, prompting employees to consider voluntary withdrawal from the organisation to conserve their resources and alleviate stress (Richter et al., 2020).

### Theoretical contributions of the study

The first finding of the study aligns with previous research indicating a positive association between PTTD and TI (e.g. Brougham & Haar, 2018; Li et al., 2019; Kurniawan et al., 2022). Similarly, the second finding supports prior research reporting that JI mediates the relationship between PTTD and TI (e.g. Brougham & Haar, 2020; Dou, 2023; Gödöllei & Beck, 2023; Koo et al., 2021; Mukhlis et al., 2023; Priyadarshi & Premchandran, 2022; Zhang et al., 2023). These results, replicated in the Egyptian context, indicate that heightened awareness of potential technological disruption contributes to TI through JI across diverse cultural settings. While Hofstede's (2001) framework suggests that the impact of PTTD on TI through JI would be disrupted in cultures with high levels of collectivism and lower levels of long-term

orientation, the present study findings challenge this expectation and call for a more globalised understanding of individual-level outcomes as consequences of technological disruption. Lastly, the third finding supports prior research indicating that older people have higher stress-coping efficacy (e.g. Aldwin & Yancura, 2010; Charles et al., 2009; Diehl & Hay, 2010; Lachman & Weaver, 1998) and provides new insight into the impact of PTTD on TI through JI.

However, it is important to acknowledge that the present findings are derived from the Egyptian private sector and the patterns observed may differ in other contexts. For instance, public sector employees, who typically enjoy higher job security, might perceive technological disruption as a less immediate threat, which could weaken the pathway from PTTD to JI and ultimately to TI. Similarly, in more technologically advanced economies where digital transformation is more deeply embedded in organisational routines, employees may experience lower perceived threats and more adaptive coping strategies, potentially altering the observed relationships.

### Practical implications of the study

The present study findings offer valuable practical implications for managers in Egyptian organisations. Firstly, as the findings indicate that PTTD can positively influence TI, therefore, managers should implement measures to mitigate the perceived threats of STARA to maintain committed workforces. In line with Ersoy and Ehtiyar (2023), such measures include: organisational development preparations for STARA adoption and continuous learning opportunities and reskilling programmes that can help employees adapt to new roles created by STARA advancements. Additionally, managers should ensure that STARA applications align with the organisation's values, reinforcing trust, engagement and commitment among the workforce. Additionally, managers must emphasise STARA's role in augmenting rather than replacing human work through emphasising its ability to increase efficiency, offload mundane tasks and consequently allow employees to focus on more strategic, value-added activities.

Secondly, as the findings reveal that PTTD impacts TI through JI, therefore, managers should adopt strategies to address insecurity resulting from PTTD. According to Ding (2021), such strategies include: communication that provides frequent, honest and relevant information to help employees manage the negative emotions associated with job insecurity and involving employees in decisions related to STARA adoption to reduce their fear of obsolescence and boost their sense of ownership.

Thirdly, the moderation effect of age suggests tailoring retention strategies to different age groups. For younger employees, who are more susceptible to the adverse impact

of PTTD on TI through JI, managers should prioritise building resilience and offering career development pathways to offset insecurity. For older employees, interventions might focus more on leveraging their coping strengths and encouraging mentorship roles, which could simultaneously strengthen intergenerational collaboration and reduce turnover risk in the broader workforce.

### Study limitations and recommendations for future research

The present study has several limitations. Firstly, all the constructs were measured using the same measurement instrument, which, according to Podsakoff et al. (2003), can contribute to common method bias. This limitation was, however, partially addressed by running Harman's (1967) one-factor test and obtaining satisfactory results. Secondly is its cross-sectional design. According to Cooper and Schindler (1999), determining the chronological order of variables in cross-sectional research is difficult, and thus establishing causal relationships using cross-sectional data is problematic. Thirdly pertains to its generalisability. As the study utilised a non-probability sample comprising only Egyptian full-time employees from the Egyptian private sector, the findings must be cautiously applied to other Egyptian employees. Given those limitations, it is recommended to tackle the present research's objectives with longitudinal data from a more diverse, random sample.

### Conclusion

In summary, the aim of this study was to examine the relationship between PTTD and TI and the mediating role of JI in this relationship in the Egyptian private sector. Additionally, the study aimed to elucidate this mechanism through scrutinising the moderating effect of age on JI's mediating role. The findings revealed a significant positive relationship between PTTD and TI and a significant positive indirect effect of PTTD on TI through JI, and that age significantly mitigates the positive indirect effect of PTTD on TI through JI. The study offers valuable insights into the interplay among PTTD, JI and TI within the Egyptian context. The findings do not merely replicate previous research but also question the assumption that cultural differences can significantly influence these tackled relationships, suggesting that employees' psychological responses to STARA awareness may be universally applicable. Additionally, the study elucidates the mechanism through which PTTD relates to TI through JI by disclosing the moderating effect of age on JI's mediating role.

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#### Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

### Authors' contributions

M.H.K.: Conceptualisation, data curation, formal analysis, investigation, methodology, validation, visualisation and writing - the original draft. G.M.S.: Conceptualisation, methodology, project administration, supervision and writing - reviewing and editing.

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### Data availability

The data that support the findings of this study are available from the corresponding author, M.H.K., upon reasonable request.

### Disclaimer

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### References

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Aldwin, C.M., & Yancura, L.A. (2010). Effects of stress on health and aging: Two paradoxes. *California Agriculture*, 64(4)183–188. <https://doi.org/10.3733/ca.v064n04p183>
- Announcement of Fifth Economic Census Results. (n.d.). *Central agency for public mobilization and statistics*. Retrieved from [https://www.capmas.gov.eg/Admin/News/PressRelease/202041511295\\_%D8%A8%D9%8A%D8%A7%D9%85%20%D8%A7%D9%86%D8%AC%D9%84%D9%8A%D8%B2%D9%89%20%D8%B1%D8%B3%D9%85%D9%89%20%D9%81%D9%89%20%D8%B4%D9%83%D9%84%D9%87%20%20\[%20%D8%AC%D8%AF%D9%8A%D8%AF%20%D8%AC%D8%AF%D9%8A%D8%AF%20%D9%86%D9%87%D8%A7%D8%A6%D9%89%20%D8%B5%zD8%AD%D9%81%D9%8A%20%20Copy%20-%20Copy.pdf](https://www.capmas.gov.eg/Admin/News/PressRelease/202041511295_%D8%A8%D9%8A%D8%A7%D9%85%20%D8%A7%D9%86%D8%AC%D9%84%D9%8A%D8%B2%D9%89%20%D8%B1%D8%B3%D9%85%D9%89%20%D9%81%D9%89%20%D8%B4%D9%83%D9%84%D9%87%20%20[%20%D8%AC%D8%AF%D9%8A%D8%AF%20%D8%AC%D8%AF%D9%8A%D8%AF%20%D9%86%D9%87%D8%A7%D8%A6%D9%89%20%D8%B5%zD8%AD%D9%81%D9%8A%20%20Copy%20-%20Copy.pdf)
- Arasanmi, C.N., & Krishna, A. (2019). Employer branding: Perceived organisational support and employee retention—the mediating role of organisational commitment. *Industrial and Commercial Training*, 51(3), 174–183. <https://doi.org/10.1108/ICT-10-2018-0086>
- Bort, J. (2014). Bill Gates: People don't realise how many jobs will soon be replaced by software bots. *Business Insider*. Retrieved from <https://www.businessinsider.com/bill-gates-bots-are-taking-away-jobs-2014-3>.
- Brougham, D., & Haar, J. (2018). Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*, 24(2), 239–257. <https://doi.org/10.1017/jmo.2016.55>
- Brougham, D., & Haar, J. (2020). Technological disruption and employment: The influence on job insecurity and turnover intentions: A multi-country study. *Technological Forecasting and Social Change*, 161, 120276. <https://doi.org/10.1016/j.techfore.2020.120276>
- Burchell, B. (2011). A temporal comparison of the effects of unemployment and job insecurity on wellbeing. *Sociological Research Online*, 16(1), 66–78. <https://doi.org/10.5153/sro.2277>
- Carstensen, L.L. (1991). Selectivity theory: Social activity in life-span context. *Annual Review of Gerontology and Geriatrics*, 11, 195–217.
- Carstensen, L.L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging*, 7(3), 331–338. <https://doi.org/10.1037/0882-7974.7.3.331>
- Charles, S.T., Piazza, J.R., Luong, G., & Almeida, D.M. (2009). Now you see it, now you don't: Age differences in affective reactivity to social tensions. *Psychology and Aging*, 24(3), 645. <https://doi.org/10.1037/a0016673>
- Cheng, T., Mauno, S., & Lee, C. (2014). Do job control, support, and optimism help job insecure employees? A three-wave study of buffering effects on job satisfaction, vigor and work-family enrichment. *Social Indicators Research*, 118, 1269–1291. <https://doi.org/10.1007/s11205-013-0467-8>

- Çinar, O., Karcioğlu, F., & Aslan, I. (2014). The relationships among organizational cynicism, job insecurity and turnover intention: A survey study in Erzurum/Turkey. *Procedia-Social and Behavioral Sciences*, 150, 429–437. <https://doi.org/10.1016/j.sbspro.2014.09.045>
- Colarelli, S.M. (1984). Methods of communication and mediating processes in realistic job previews. *Journal of Applied Psychology*, 69(4), 633–642. <https://doi.org/10.1037/0021-9010.69.4.633>
- Cooper, D.R., & Schindler, P.S. (1999). *Business research methods* (8th ed.). McGraw-Hill Irwin.
- Country Comparison Tool. (n.d.). *The culture factor group*. Retrieved from <https://www.theculturefactor.com/country-comparison-tool>
- Coupe, T. (2019). Automation, job characteristics and job insecurity. *International Journal of Manpower*, 40(7), 1288–1304. <https://doi.org/10.1108/IJM-12-2018-0418>
- Dasgupta, P. (2016). Work engagement of nurses in private hospitals: A study of its antecedents and mediators. *Journal of Health Management*, 18(4), 555–568. <https://doi.org/10.1177/0972063416666160>
- De Witte, H. (1999). Job insecurity and psychological well-being: Review of the literature and exploration of some unresolved issues. *European Journal of Work and Organizational Psychology*, 8(2), 155–177. <https://doi.org/10.1080/135943299398302>
- Diehl, M., & Hay, E.L. (2010). Risk and resilience factors in coping with daily stress in adulthood: The role of age, self-concept incoherence, and personal control. *Developmental Psychology*, 46(5), 1132. <https://doi.org/10.1037/a0019937>
- Ding, L. (2021). Employees' challenge-hindrance appraisals toward STARA awareness and competitive productivity: A micro-level case. *International Journal of Contemporary Hospitality Management*, 33(9), 2950–2969. <https://doi.org/10.1108/IJCHM-09-2020-1038>
- Dou, Y. (2023). Does the application of artificial intelligence technology affect employees' turnover intention? In *Proceedings of the 2023 6th International Conference on Information Management and Management Science*, 25–27 August 2023 (pp. 283–287). Association for Computing Machinery (ACM).
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500–507. <https://doi.org/10.1037/0021-9010.71.3.500>
- Ersoy, A., & Ehtiyar, R. (2023). The impact of artificial intelligence on hospitality employees' work outcomes. *Advances in Hospitality and Tourism Research (AHTR)*, 11(4), 505–526. <https://doi.org/10.30519/ahtr.1264966>
- Gödöllei, A.F., & Beck, J.W. (2023). Insecure or optimistic? Employees' diverging appraisals of automation, and consequences for job attitudes. *Computers in Human Behavior Reports*, 12, 100342. <https://doi.org/10.1016/j.chbr.2023.100342>
- Harman, H.H. (1967). *Modern factor analysis* (2nd ed.). University of Chicago Press.
- Hayes, A.F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (1st ed.). Guilford Press.
- Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513. <https://doi.org/10.1037/0003-066X.44.3.513>
- Hobfoll, S.E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, 6(4), 307–324. <https://doi.org/10.1037/1089-2680.6.4.307>
- Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online Readings in Psychology and Culture*, 2(1), 8. <https://doi.org/10.9707/2307-0919.1014>
- Hom, P.W., Lee, T.W., Shaw, J.D., & Hausknecht, J.P. (2017). One hundred years of employee turnover theory and research. *Journal of Applied Psychology*, 102(3), 530. <https://doi.org/10.1037/apl0000103>
- Jiang, P. (2024). STARA awareness: Work stressors in the age of Industry 4.0. *Academic Journal of Science and Technology*, 10(1), 411–414. <https://doi.org/10.54097/fajref68>
- Khalifa, M.H. (2023). The moderating effect of gender on the salary equity-affective commitment link: An empirical study of university academic staff in Egypt. *Cogent Business & Management*, 10(1), 1–10. <https://doi.org/10.1080/23311975.2023.2210894>
- Klug, K., Selenko, E., Van Hootegem, A., Sverke, M., & De Witte, H. (2024). A lead article to go deeper and broader in job insecurity research: Understanding an individual perception in its social and political context. *Applied Psychology*, 73(4), 1960–1993. <https://doi.org/10.1111/apps.12535>
- Koo, B., Curtis, C., & Ryan, B. (2021). Examining the impact of artificial intelligence on hotel employees through job insecurity perspectives. *International Journal of Hospitality Management*, 95, 102763. <https://doi.org/10.1016/j.ijhm.2020.102763>
- Kurniawan, D.T., Prameka, A.S., & Praktiko, H. (2022). STARA is in sight: The effect of STARA on job outcome through job insecurity perception about future workplace on private companies in East Java, Indonesia. In *Proceedings of the 2022 3rd International Conference on Big Data Analytics and Practices (IBDAP)*, 01–02 September 2022 (pp. 52–56). Institute of Electrical and Electronics Engineers (IEEE).
- Lachman, M.E., & Weaver, S.L. (1998). Sociodemographic variations in the sense of control by domain: Findings from the MacArthur studies of midlife. *Psychology and Aging*, 13(4), 553. <https://doi.org/10.1037/0882-7974.13.4.553>
- Lestari, D., & Margaretha, M. (2021). Work life balance, job engagement and turnover intention: Experience from Y generation employees. *Management Science Letters*, 11(1), 157–170. <https://doi.org/10.5267/j.msl.2020.8.019>
- Li, J.J., Bonn, M.A., & Ye, B.H. (2019). Hotel employee's artificial intelligence and robotics awareness and its impact on turnover intention: The moderating roles of perceived organizational support and competitive psychological climate. *Tourism Management*, 73, 172–181. <https://doi.org/10.1016/j.tourman.2019.02.006>
- Lynch, C. (2015). Stephen Hawking on the future of capitalism and inequality. *Counterpunch*. Retrieved from <http://www.counterpunch.org/2015/10/15/stephen-hawkings-on-the-tuture-of-capitalism-and-inequality/>
- Memon, M.A., Salleh, R., & Baharom, M.N.R. (2016). The link between training satisfaction, work engagement and turnover intention. *European Journal of Training and Development*, 40(6), 407–429. <https://doi.org/10.1108/EJTD-10-2015-0077>
- Meyer, J.P., & Allen, N.J. (1997). *Commitment in the workplace: Theory, research, and application*. Sage.
- Mowday, R.T., Porter, L.W., & Steers, R.M. (1982). *Employee-organization linkages: The psychology of commitment, absenteeism and turnover*. Academic Press.
- Mukhlis, I., Kurniawan, D.T., Firmansyah, R., & Prameka, A.S. (2023). How Smart Technology Artificial Intelligence Robotics Algorithms (STARA) awareness influence employee perception on companies in East Java, Indonesia? In *Proceedings of the 2023 4th International Conference on Big Data Analytics and Practices (IBDAP)*, 30–31 August 2023 (pp. 1–5). Institute of Electrical and Electronics Engineers (IEEE).
- Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. (2003). Common method variance in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Preacher, K.J., Rucker, D.D., & Hayes, A.F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research*, 42(1), 185–227. <https://doi.org/10.1080/00273170701341316>
- Priyadarshi, P., & Premchandran, R. (2022). Insecurity and turnover as robots take charge: Impact of neuroticism and change-related uncertainty. *Personnel Review*, 51(1), 21–39. <https://doi.org/10.1108/PR-06-2019-0310>
- Rainie, L., & Anderson, J. (2017). The future of jobs and jobs training. *Pew Research Center*. Retrieved from <https://www.pewresearch.org/internet/2017/05/03/the-future-of-jobs-and-jobs-training/>
- Reinhart, R.J. (2018). Americans upbeat on artificial intelligence, but still wary. *Gallup*. Retrieved from <https://news.gallup.com/poll/226502/americans-upbeat-artificial-intelligence-wary.aspx>
- Richter, A., Vander Elst, T., & De Witte, H. (2020). Job insecurity and subsequent actual turnover: Rumination as a valid explanation?. *Frontiers in Psychology*, 11, 523843. <https://doi.org/10.3389/fpsyg.2020.00712>
- Robinson, R.N., Kralj, A., Solnet, D.J., Goh, E., & Callan, V. (2014). Thinking job embeddedness not turnover: Towards a better understanding of frontline hotel worker retention. *International Journal of Hospitality Management*, 36, 101–109. <https://doi.org/10.1016/j.ijhm.2013.08.008>
- Rumangkhit, S. (2020). Mediator analysis of perceived organizational support: Role of spiritual leadership on affective commitment. *Jurnal Dinamika Manajemen*, 11(1), 48–55. <https://doi.org/10.15294/jdm.v11i1.21496>
- Shoss, M.K., Brummel, B.J., Probst, T.M., & Jiang, L. (2020). The joint importance of secure and satisfying work: Insights from three studies. *Journal of Business and Psychology*, 35, 297–316. <https://doi.org/10.1007/s10869-019-09627-w>
- Spielberger, C.D. (Ed.). (2004). *Encyclopedia of applied psychology*. Academic Press.
- Staufenbiel, T., & König, C.J. (2010). A model for the effects of job insecurity on performance, turnover intention, and absenteeism. *Journal of Occupational and Organizational Psychology*, 83(1), 101–117. <https://doi.org/10.1348/096317908X401912>
- Sverke, M., & Hellgren, J. (2002). The nature of job insecurity: Understanding employment uncertainty on the brink of a new millennium. *Applied Psychology*, 51(1), 23–42. <https://doi.org/10.1111/1464-0597.0077z>
- Teng, R., Zhou, S., Zheng, W., & Ma, C. (2023). Artificial intelligence (AI) awareness and work withdrawal: Evaluating chained mediation through negative work-related rumination and emotional exhaustion. *International Journal of Contemporary Hospitality Management*, 36(7), 2311–2326. <https://doi.org/10.1108/IJCHM-02-2023-0240>
- Tett, R.P., & Meyer, J.P. (1993). Job satisfaction, organizational commitment, turnover intention, and turnover: Path analyses based on meta-analytic findings. *Personnel Psychology*, 46(2), 259–293. <https://doi.org/10.1111/j.1744-6570.1993.tb00874.x>
- Van Widenfelt, B.M., Treffers, P.D., De Beurs, E., Siebelink, B.M., & Koudijs, E. (2005). Translation and cross-cultural adaptation of assessment instruments used in psychological research with children and families. *Clinical Child and Family Psychology Review*, 8, 135–147. <https://doi.org/10.1007/s10567-005-4752-1>
- Xiong, R., & Wen, Y. (2020). Employees' turnover intention and behavioral outcomes: The role of work engagement. *Social Behavior and Personality: An International Journal*, 48(1), 1–7. <https://doi.org/10.2224/sbp.8609>
- Xu, G., Xue, M., & Zhao, J. (2023). The association between artificial intelligence awareness and employee depression: The mediating role of emotional exhaustion and the moderating role of perceived organizational support. *International Journal of Environmental Research and Public Health*, 20(6), 5147. <https://doi.org/10.3390/ijerph20065147>
- Zhang, L.X., Li, J.M., Wang, L.L., Mao, M.Y., & Zhang, R.X. (2023). How does the usage of robots in hotels affect employees' turnover intention? A double-edged sword study. *Journal of Hospitality and Tourism Management*, 57, 74–83. <https://doi.org/10.1016/j.jhtm.2023.09.004>