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Contingent reward versus punishment and compliance behavior: the mediating role of affective attitude and the moderating role of operational capabilities of artificial intelligence

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Previous research has long focused on the positive effect of contingent reward on employees' psychological states and outcomes. Recent studies show that contingent punishment can also positively impact employees' outcomes. Whether contingent reward can improve employees' compliance behavior more than punishment can, has not been adequately studied. Exploring this issue can help researchers understand contingent reward and punishment from the perspective of the relationship norms between leaders and employees. Drawing on the planned behavior theory and cognitive appraisal theory, we developed and tested a model specifying why and how contingent reward (relative to contingent punishment) increase employees' compliance behavior. Using a scenario-based experiment across two-stage surveys of 309 participants, we found that contingent reward (relative to contingent punishment) could influence compliance behavior by increasing and decreasing distinct types of affective attitudes (i.e., self-esteem and anxiety). Moreover, the perceived operational capabilities of artificial intelligence (AI) moderated the effect of contingent reward on self-esteem and anxiety. High perceived operational capabilities of AI enhanced the positive effect of contingent reward (relative to contingent punishment) on self-esteem and its negative effect on anxiety as well. This research yields innovative insights for the improvement of compliance behavior.

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Introduction

Organizations rely on their employees to comply with their procedures and rules because compliance behavior can help organizations achieve effective coordination and function (Tyler and Blader, 2005). Researchers have studied different facilitators of employees' compliance behavior, such as reward and punishment expectations (Li et al., 2021; Liang et al., 2013) and customer orientation norms (Li et al., 2021). Organizations expect leaders to apply reward and punishment incentives to influence employees' compliance behavior (Liang et al., 2013). Contingent reward (CR) refers to the rewards provided by leaders based on employees' performance and the extra work undertaken by them. On the other hand, contingent punishment (CP) refers to the degree to which leaders utilize the punitive events (e.g., disapproval, reprimands) contingent upon employees' unsatisfactory performance, which reflects leaders' interventions to their unfulfilled expectations (Ge et al., 2020; Podsakoff and Todor, 1985). CR and CP reflect that the leader clarifies expectations, rewards employees for meeting these expectations, and punishes employees for violating these expectations or rules. Therefore, CR and CP can be seen as the leaders' reward expectations and punishment expectations based on employee performance (Podsakoff et al., 2006). However, there is no consensus on the impacts of CR and CP on employees' compliance behavior (Li et al., 2021; Liang et al., 2013). For example, previous literature suggests that employees' punishment expectations (CP) can increase compliance behavior, whereas the effect of reward expectation (CR) is not significant (Liang et al., 2013). A recent study stated that CR can increase compliance behavior, whereas CP can decrease this behavior (Li et al., 2021). Issues in the comparison of punishment and reward remain unresolved (Choi and Ahn, 2013). Does CR promote employees' compliance behavior more than what CP does? How and when does CR (relative to CP) influence compliance behavior? This study investigates this relationship and its mechanisms with the aim of improving the efficiency of employees' compliance behavior from a contingent incentive perspective.

Although research has confirmed that CR can help leaders improve employees' beneficial outcomes (e.g., creativity, job engagement; Ge et al., 2020), CP may not yield positive outcomes (e.g., competition, performance; Ge et al., 2020; Aji, 2022). However, the effect of CR (relative to CP) on compliance behavior and its mechanisms have not yet been explored. Probing these relationships is important for the following reasons: First, researchers commonly focus on employees' compliance with consumer requests and information security policies (D'Arcy and Lowry, 2019; Hwang et al., 2021) but ignore compliance with general organizational rules and policies (Murphy and Tyler, 2008). Investigating the CR (relative to

CP) effect can help managers expand the solutions for ensuring employees' overall compliance behavior from external and incentive contingency perspectives (Tyler and Blader, 2005). Second, based on the theory of planned behavior (TPB; Ajzen, 1991) and cognitive appraisal theory (CPT; Lazarus and Folkman, 1984), we explore mechanisms of the "CR-compliance" relationship and its conditions. This is crucial for scholars to better understand employees' psychological processes in the formation of compliance behavior.

The aforementioned literature reveals no consensus on the impacts of CR and CP on employees' compliance behavior (Li et al., 2021; Liang et al., 2013). These studies have primarily focused on marketing and information security (Hwang et al., 2021) while ignoring the compliance behavior of a wide range of employees within an organizational structure. Considering that employees can widely perceive CR and CP at the workplace, we intend to compare their impacts on compliance behavior. Doing so can help managers improve leaders' incentives for employee compliance behavior. Therefore, our research aimed to explore the effect of CR (relative to CP) on employees' compliance behavior and its mechanisms.

We built a theoretical framework based on the TPB and CPT (Fig. 1). As shown in Fig. 1, we first hypothesized that CR (relative to CP) tends to increase compliance behavior. CR and CP can be seen as employees' subjective norms because they reflect leaders' reward and punishment expectations towards employees' performance-based behavior (Yang et al., 2021). Second, we assumed that self-esteem and anxiety may mediate the relationship between CR and compliance behavior. TPB suggests that subjective norms can influence individuals' affective attitudes (Hsu and Kuo, 2003), which spontaneously affect future behavior (Hagger et al., 2022). Third, AI is playing a significant role in shifting HR functions as society enters the digitization era (Singh and Shaurya, 2021). Employees' perceived operational capabilities of AI can exemplify their technological experience; employees usually believe that AI can perform tasks flexibly and have reliable and integrated capabilities. We hypothesized that this would moderate the relationship between CR (relative to CP) and self-esteem and anxiety. Our research confirms these hypotheses through a scenario-based experiment across a two-stage surveys of 309 undergraduates of universities in China. We estimated the theoretical model by conducting structural equation modeling (SEM) using Mplus Version 7.0, and the PROCESS model using SPSS version 22. SEM using latent variables helps explain measurement errors more precisely than simply aggregating measurement errors in a residual error term would do (Sheng et al., 2018). The PROCESS model can test the moderating effects of categorical variables (Hayes, 2018).
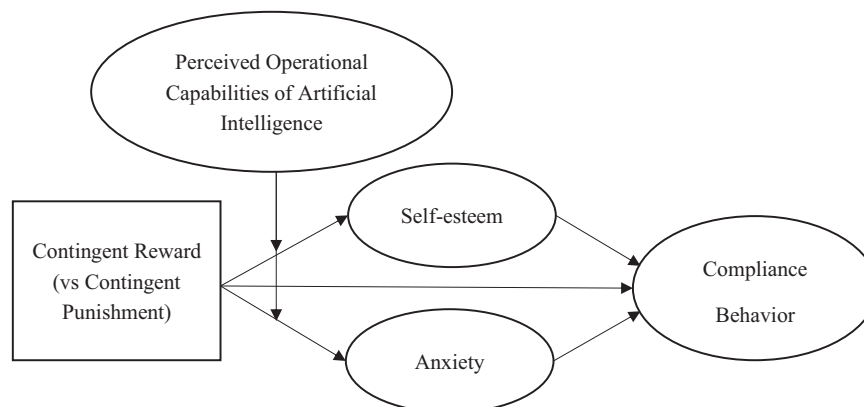
Fig. 1 The theoretical model.

This study makes four theoretical contributions to literature. First, we considered CR and CP to be employees' perceptions of relationship norms with leaders. We investigated the influence of CR (relative to CP) on compliance behavior, thereby expanding the antecedents of compliance behavior in the TPB from a contingent incentive perspective. Second, we responded to the call to compare the punishment and reward effects (Choi and Ahn, 2013) by testing the effect of CR (relative to CP) on employees' compliance behavior and affective attitudes, thus expanding the literature on the CR and CP of TPB. Third, our research attempted to explore the mediating roles of affective attitudes on the relationship between subjective norms and compliance behavior, expanding the "subjective norm-behavior" and "attitude-behavior" models of the TPB. Fourth, we examined the moderating role of the perceived operational capabilities of AI on the effect of CR on employees' self-esteem and anxiety, thereby contributing to the perceived behavioral control literature on TPB.

The remainder of this paper is organized as follows: First, we present a literature review combined with the hypotheses to help researchers better understand our theoretical model. Second, we explain our research method, including the participants, procedures, measures, and analyses. Third, we provide the results, including the manipulation checks and the results of the analyses. Finally, we explain the theoretical and practical implications of this study, note its limitations, list possible future research opportunities, and summarize our conclusions.

Literature review and hypotheses

The effect of contingent reward (vs. contingent punishment) on compliance behavior. We built a theoretical model (Fig. 1) based on the TPB (Ajzen, 1991) and CPT (Lazarus and Folkman, 1984). TPB frameworks have an apparent application to the study of compliance behavior (Spitzmuelle and Stanton, 2006), such as the "subjective norm-behavior" and "attitude-behavior" models (Ajzen, 1991; Hagger et al., 2022). Firstly, in this model, we hypothesized that CR (relative to CP) has a positive effect on employees' compliance behavior according to the TPB. Gaining employees' adherence to general rules is crucial for the overall success of organizational functions (Tyler and Blader, 2005). Based on the TPB, individuals tend to act on behavioral intentions and report them as being aligned with their subjective norms (Hagger et al., 2022).The TPB posits that individuals' subjective norms can influence their behavior (e.g., compliance; Li et al., 2021; Hagger et al., 2022; Moody et al., 2018). Subjective norm refers to the perceived social pressure to perform or not perform a behavior (Ajzen, 1991). CR and CP can be considered as employees' perceptions of relationship norms with leaders, because they can perceive leaders' reward and punishment expectations towards performance-based behavior. Thus, they enable employees to perceive the incentives offered and pressures applied by leaders for the employees to perform the required behavior. Although previous studies have demonstrated that CR can significantly increase employees' motivation, emotions, psychological states, behaviors, and outcomes (Puni et al., 2018; Tremblay et al., 2013; Jiang et al., 2019), CP can also positively influence employees' outcomes (e.g., creativity, job engagement, and competition; Ge et al., 2020). The literature reveals no consensus on the impacts of CR and CP on employees' compliance behavior (Li et al., 2021; Liang et al., 2013). Scholars have suggested that the comparison of punishment and reward effects on behaviors such as compliance behavior remains unresolved (Choi and Ahn, 2013). Meanwhile, these studies have primarily focused on marketing and information security (Hwang et al., 2021) while ignoring the compliance behavior of a wide range of employees

within an organizational structure. Investigating the effect of CR (relative to CP) on compliance behavior will help researchers better understand the relationship norms of TPB and help managers improve employees' adherence to organizations' rules and policies from a contingent incentive perspective. Based on the TPB (Hagger et al., 2022), we propose that CR (relative to CP) positively affects employees' compliance behavior.

CR reflects leaders' expectations of rewards for employees' behaviors (Podsakoff, 1982). This commonly enables employees to perceive their leader's effectiveness, thereby increasing their satisfaction with the leader (Podsakoff et al., 2006). Employees who are satisfied with their leaders tend to have increased information exchange with leaders and organizations, and thus increased cooperation with them. Choi and Ahn (2013) suggested that reward (rather than punishment) was likely to increase employees' cooperation with the organization. Employees' perceptions of cooperation with the organization, in turn, enabled them to be more compliant. In contrast, CP may enable employees to perceive that their leaders focuses on their weaknesses and ignore their strengths, thus reducing the employees' satisfaction with their leaders. Employees then tend to exhibit reduced information exchange and cooperation with leaders and organizations, resulting in reduced compliance behavior.

H1: Contingent reward (relative to contingent punishment) has a positive effect on employees' compliance behavior.

The effect of contingent reward (vs contingent punishment) on self-esteem and its mediating role. TPB frameworks have an apparent application in the study of compliance behavior (Spitzmuelle and Stanton, 2006), such as the "subjective norm-behavior" and "attitude-behavior" models (Hagger et al., 2022). However, the mediating role of attitude in the relationship between subjective norm and behavior, specifically regarding how CR (relative to CP) influences employees' compliance behavior, has not yet been explored. Current studies have suggested that researchers should investigate its differential psychological processes (Kwaadsteniet et al., 2013). Based on the TPB, scholars have suggested that individuals' attitudes can be divided into affective (i.e., positive or negative feelings) and instrumental (i.e., the evaluations of costs and benefits of conducting the behaviors) aspects (Goldoust et al., 2022; Phipps et al., 2021; Wan et al., 2017). Self-esteem is affectively based on feelings of self-regard (Joshanloo, 2022; Kruzan et al., 2022). Thus, self-esteem can be seen as an affective attitude toward the self (Rentzsch and Schröder-Abé, 2022). Self-esteem refers to a positive or a negative attitude on the part of individuals towards themselves (Alkhateeb, 2014; Reitz, 2022; Rosenberg, 1965). Research has shown that self-esteem can mediate the relationship between leader-member exchange and behavior or outcomes (Su et al., 2022). We propose that CR (relative to CP) tends to increase employees' compliance behavior through self-esteem.

Compared with CP, CR tends to enable employees to perceive leaders' benevolence because they can gain leaders' recognition and guidance, which increases their satisfaction with their leaders. Employees are likely to generate positive emotional responses so as to increase employee recognition such as self-fulfillment. Employees' self-fulfillment has been shown to be positively associated with self-esteem (Chang and Suttikun, 2017), which in turn increases compliance behavior (Gudjonsson and Sigurdsson, 2003). Therefore, we hypothesized the following:

H2: Contingent reward (relative to contingent punishment) has a positive effect on employees' self-esteem (*H2a*);

Self-esteem mediates the beneficial effect of contingent reward (relative to contingent punishment) on employees' compliance behavior (*H2b*).

The effect of contingent reward (vs contingent punishment) on anxiety and its mediating role. The TPB is widely used to explain the "attitude-behavior" relationship (Hagger et al., 2022); it posits that employees' affective attitudes tend to be experienced through their behaviors (Goldoust et al., 2022; Phipps et al., 2021). Employees' anxiety can be viewed as an affective attitude because it reflects their tension in job completion (McCarthy et al., 2016). Workplace anxiety is conceptualized as feeling nervous and apprehensive about accomplishing job tasks (McCarthy et al., 2016). A majority of the literature has demonstrated anxiety's mediating role in the relationship between individual or organization supervision and behaviors or outcomes (e.g., compliance; Huang et al., 2019; Hwang et al., 2017). Therefore, based on the TPB, we propose that CR (relative to CP) may decrease employees' workplace anxiety, which influences their compliance behavior.

Compared with CP, CR tends to increase employees' perceptions of their capabilities. Employees are likely to improve their self-reinforcement to reduce workplace anxiety (Kocovski and Endler, 2000). Empirical research has demonstrated that individuals' perceived competence is significantly negatively related to anxiety (Cangiano et al., 2019). When employees' anxiety decreases, their emotional exhaustion tends to decrease as well (McCarthy et al., 2016), resulting in increased compliance behavior. In contrast, compared with CP, other studies show that CR tends to increase employees' workplace anxiety so as to decrease compliance behavior. For example, anxiety leads to non-compliant behavior (e.g., work disability, absenteeism; Deady et al., 2022). Therefore, we propose the following hypotheses:

H3: Contingent reward (relative to contingent punishment) has a negative effect on employees' anxiety (H3a);

Anxiety mediates the beneficial effect of contingent reward (relative to contingent punishment) on employees' compliance behavior (H3b).

The role of perceived operational capabilities of AI as a moderator. Although the current literature on the TPB suggests that subjective norms can influence individuals' affective attitudes (Li et al., 2021; Hsu and Kuo, 2003), the boundary conditions under which CR affects affective attitudes have not been studied further. CR can be viewed as the expectations set by leaders and the rewards employees receive for meeting these expectations. Thus, CR reflects the performance-based relationship norm between employees and leaders. Based on the TPB (Hagger et al., 2022) and CPT (Chiu et al., 2021), we hypothesized that the perceived operational capabilities of AI tend to moderate the effects of CR on employees' self-esteem and anxiety. A recent meta-analysis of the TPB suggested that the individuals' perceived behavioral control played a moderating role in the formation of their behavior (Hagger et al., 2022). Furthermore, the TPB also posits that technological experience can help employees perceive their behavioral control to intervene in the formation of compliance intentions (Spitzmuelle and Stanton, 2006). The perceived operational capabilities of AI exemplify employees' technology experience, which is defined as their perceived reliability of AI in flexibly performing tasks and the ability to integrate with other systems (Chiu et al., 2021). Meanwhile, the CPT posits that individuals experience emotions during the cognitive appraisal process (Watson and Spence, 2006), which could help explain the intervention of employees' AI cognitive evaluations in the formation of affective attitudes. CPT can explain the coping process that occurs when employees faced new or challenging situations (Lazarus and Folkman, 1984). AI reflects the ability of a machine to learn from experience and adjust to new inputs to execute human-like tasks (Duan et al., 2019). However, it has the potential to dehumanize work and replace human employees

(Chiu et al., 2021). Thus, AI usually creates a stressful and challenging situation for employees; even if some organizations and employees do not use it at present, employees will still conduct cognitive appraisals towards AI (Chiu et al., 2021). The perceived operational capabilities of AI can reflect employees' cognitive appraisal of AI, which influences their affective attitudes (Chiu et al., 2021). The literature on CPT shows that the perceived operational capabilities of AI significantly influence employees' affective attitudes (Lazarus and Folkman, 1984). Therefore, by integrating TPB with CPT, we hypothesized that the perceived operational capabilities of AI may moderate the relationship between CR (relative to CP) and affective attitudes (i.e., self-esteem and anxiety).

First, the perceived operational capabilities of AI may enhance the positive effect of CR (relative to CP) on employees' self-esteem due to the increasing trend of self-fulfillment. Perceived operational capabilities of AI cause employees to realize that AI can automate repetitive and formulaic tasks and greatly improve the speed and reliability of data analysis (Tarafdar et al., 2019). AI is helpful in increasing employees' ability to make informed decisions to improve their positive emotions (e.g., confidence; Chiu et al., 2021), which enhances their self-fulfillment. The CPT posits that individuals experience emotions during the cognitive appraisal process (Lazarus and Folkman, 1984; Watson and Spence, 2006). Thus, in the CR compared to the CP norm, the high perceived operational capabilities of AI can make employees perceive an increasing trend of self-fulfillment, which in turn enhances self-esteem.

Furthermore, the perceived operational capabilities of AI tend to strengthen the negative effect of CR (relative to CP) on employees' anxiety by increasing their perceptions of competence. Based on TPB, the high perceived operational capabilities of AI as a technological experience help employees perceive behavioral control (Spitzmuelle and Stanton, 2006). This may improve employees' perceptions of reducing repetitive and tedious tasks and increase their likelihood of making informed decisions (Chiu et al., 2021), thereby making the role of CR (relative to CP) in anxiety more salient. Specifically, among employees with a high level of perceived operational capabilities of AI, CR, compared with CP, is likely to be accompanied with an increasing trend of perceived self-competence, which increases their self-reinforcement. Empirical research has demonstrated that self-reinforcement can significantly decrease an individuals' anxiety (Kocovski and Endler, 2000). We thus expect that:

H4: The perceived operational capabilities of AI moderate the positive relationship between contingent reward (relative to contingent punishment) and self-esteem such that the relationship is stronger for people with high perceived operational capabilities of AI.

H5: The perceived operational capabilities of AI moderate the negative relationship between contingent reward (relative to contingent punishment) and anxiety, such that the relationship is stronger for people with high perceived operational capabilities of AI.

Method
Participants and procedures. This study used a scenario-based experimental method. This scenario-based model can help us precisely manipulate the information on CR and CP. Manipulating CR and CP helped participants understand the independent variables effectively. Moreover, the scenario model allowed us to assess the influence of CR (relative to CP) on individuals' psychological states (i.e., self-esteem and anxiety) and behavior (i.e., compliance behavior). We followed a common thumb rule, whereby the sample selection criterion should be the ten

participants for each item of the questionnaire (Nunnally, 1978; Hua and Wang, 2019; Sveinbjornsdottir and Thorsteinsson, 2008; Khalil et al., 2021). In our experimental study, the latent variables at Time 1 and Time 2 contained 37 measurement items. Following the thumb rule (Nunnally, 1978), the sample size should be at least 370. Considering the possibility of incomplete responses, we recruited 380 potential participants from two universities in China. We used simple random sampling as the sampling technique, and the population of the study has 28,000 potential participants. Researchers invited potential participants who were undergraduates at these two universities and met specific requirements (i.e., participants were aged 18 years and trained in business courses). As the study was scenario based, we did not require respondents to be currently employed. The participants were informed that the study involved two rounds of surveys conducted 1 week apart. Participants were also provided with general information on the purpose of the study, the general themes covered in each of the two surveys, and the anticipated time demands of each survey. Lastly, they were assured that their participation would be voluntary.

In the T1 survey, participants were asked to respond to items covering demographic, dispositional, moderating, and other control factors, including personality factors (i.e., neuroticism), demographic variables (i.e., age, gender, and tenure), perceived operational capabilities of AI, and compliance behavior. We hypothesize that CR (vs. CP) positively influenced employees' compliance behavior. We included compliance behavior in the T1 survey and treated it as a control variable when testing the direct and indirect effects. For the T2 stage, T1 participants were randomly assigned in equal numbers to one of the two hypothetical scenario conditions: CR and CP. Participants were asked to imagine that they worked in the organization described in the scenario and then to respond to the survey items included, with each item being prefaced with a brief reminder of the relevant scenario condition. The T2 instrument included a manipulation check for CR and CP. It also included scale items on self-esteem, anxiety, and compliance behavior. Neuroticism was measured by the scores on the 7-point Likert scale (i.e., "totally agree = 7" and "totally disagree = 1") of the 4-item Mini-IPIP scale (e.g., "have frequent mood swings"; Donnellan et al., 2006). Finally, 309 undergraduates completed the questionnaires (effective response = 81.32%, mean age = 21.04, SD = 1.16, male = 57%, female = 43%). In this study, the 28 items were used to test the direct and mediating effects in SEM, and the sample size of the thumb rule was 280 (Nunnally, 1978). Our final sample comprised 309 participants, which was larger than the minimum sample size required.

Measures. Responses for each item construct were scored on a 7-point Likert scale (i.e., 1 = strongly disagree, 7 = strongly agree).

Contingent reward and contingent punishment. For the manipulation check, we used a 10-item scale to measure CR (e.g., "If I do well, I know my supervisor will reward me."; $a = 0.94$) and a five-item scale to measure contingent punishment (e.g., "My supervisor shows his/her displeasure when my work is below acceptable standards"; $a = 0.91$). Both these scales were developed by Podsakoff et al. (1984).

Self-esteem. We used a 10-item scale developed by Rosenberg (1965) to measure self-esteem (e.g., "I feel that I have a number of good qualities"; $a = 0.91$).

Anxiety. We used an eight-item workplace anxiety scale developed by McCarthy et al. (2016) to measure anxiety (e.g., "I worry that my work performance will be lower than that of others at work"; $a = 0.93$).

Perceived operational capabilities of artificial intelligence. We used a nine-item scale developed by Chiu et al. (2021) to measure the perceived operational capabilities of AI, including three items each for reliability (e.g., "I think the AI system would operate reliably"), flexibility (e.g., "I think the AI system could be adapted to meet a variety of needs"), and integrability (e.g., "I think the AI system could effectively integrate data from different areas of the company"; $a = 0.91$).

Compliance behavior. We used a three-item scale developed by Murphy and Tyler (2008) to measure compliance behavior (an example of a reverse item is "neglect to follow work rules or the instructions of your supervisor"; compliance behavior at T1: $a = 0.86$; compliance behavior at T2: $a = 0.78$).

Common method bias and construct validity. We collected participants' responses at two separate time points (T1 and T2) to reduce the possible influence of common method bias. T1 related chiefly to demographic, dispositional, and moderating variables, along with baseline response data on compliance behavior. The two T2 scenario instruments captured data for a contingent reward and contingent punishment manipulation check, and on the focal intervening (i.e., self-esteem, anxiety) and dependent variables (i.e., compliance behavior).

Table 1 presents the results of the confirmatory factor analysis (CFA), which indicates the chi-square differences and other fit indices using the maximum likelihood estimation in Mplus Version 7.0. Table 1 shows that the six-factor baseline model has a better model fit than that of other competing models (e.g., $\chi^2 = 675.64$, df = 419, SRMR = 0.05, TLI = 0.94, CFI = 0.95, RMSEA = 0.05; $\chi^2 = 3097.82$, df = 433, $\triangle\chi^2 = 2422.18$, $\triangle$df = 14, SRMR = 0.15, TLI = 0.41, CFI = 0.45, RMSEA = 0.14), thereby supporting the validity of the latent constructs and demonstrating that the research does not have a strong possibility of common method bias.

As shown in Table 1, we compared the fit indices of a six-factor baseline model composed of self-esteem, anxiety, neuroticism, perceived operational capabilities of the AI, and compliance behavior at T1 and T2 with those of competing models. Table 1 shows the competing model 1: self-esteem and anxiety were

Table 1 The results of fit indices of confirmative factor analysis of measurements.

Model	χ^2	df	$\triangle\chi^2$	$\triangle$df	SRMR	TLI	CFI	RMSEA
Six-factor Baseline Model	675.64	419			0.05	0.94	0.95	0.05
The Competing Model 1	2064.50	424	1388.86**	5	0.13	0.63	0.66	0.11
The Competing Model 2	2548.18	427	1872.54**	8	0.14	0.53	0.57	0.13
The Competing Model 3	2867.30	431	2191.66**	12	0.16	0.46	0.50	0.14
The Competing Model 4	3097.82	433	2422.18**	14	0.15	0.41	0.45	0.14

Note: **$p < 0.01$.

merged into one factor; the competing model 2: based on model 1, compliance behavior at T1 and T2 were merged into one factor; the competing model 3: based on model 2, neuroticism and compliance behavior at T1 and T2 were merged into one factor; and the competing model 4: based on model 3: perceived operational capabilities of AI, neuroticism, and compliance behavior at T1 were merged into one factor, and other items were merged into another factor.

Meanwhile, the composite reliability of all latent variables exceeded the 0.7 thresholds, supporting the reliability of the constructs (Bagozzi and Yi, 1988). Additionally, the average variance extracted values exceeded 0.5 thresholds, supporting the convergent validity of the constructs (Fornell and Larcker, 1981).

Analyses. Following Bamberger and Belogolovsky's (2017) method, in the experimental study, we examined the direct and mediating effects of the hypotheses using structural equation modeling (SEM) in Mplus Version 7.0 (Muthén and Muthén, 1998–2017). All latent variables were tested using the observed items. This is because SEM using latent variables provides an effective way of explaining measurement errors more precisely than by simply aggregating measurement errors in a residual error term (Sheng et al., 2018). Based on the PROCESS model (Hayes, 2018), we tested the interaction effect of our theoretical model (Fig. 1) using SPSS version 22 by analyzing 95% bias-corrected bootstrapped confidence intervals ($N = 5000$).

Results

Manipulation check. Following the literature (Qin et al., 2018; Bamberger and Belogolovsky, 2017), we compared the means of contingent reward by conducting an independent t-test in our research. The t-test results demonstrated that the participants in the CR condition (Mean = 4.98, SD = 0.99) rated CR higher than the corresponding rating by participants in the CP conditions (Mean = 3.89, SD = 0.93), $t = 9.97$, $df = 307$, $P < 0.001$. These results provided the convincing evidence of the effective manipulation of the independent variable via the stage 2 scenario conditions. The standard deviations, means, and correlations among the variables were presented in Table 2.

Results of SEM analyses. Table 3 presents the SEM results for each of the six hypotheses. H1 tested the direct effect of CR (vs. CP) at T2 on employees' compliance behavior at T2. The results for Model 1 confirmed that CR (vs. CP) at T2 had a positive effect on employees' compliance behavior at T2 ($p < 0.01$, $B = 0.43$) after incorporating specific control variables (i.e., age, gender, and compliance behavior at T1), thus providing convincing evidence to support H1.

The results for Model 2 indicated that CR (vs. CP) at T2 was positively associated with employees' self-esteem at T2 after incorporating some specific control variables (i.e., age, gender, and neuroticism at T1) ($p < 0.01$, $B = 0.37$), thus supporting H2a. Furthermore, as shown in Model 3 of Table 3, CR (vs. CP) at T2

Table 2 Standard deviations, means, and correlations among the variables.

Variables	Mean	SD	1	2	3	4	5	6	7	8
Age (T1)	21.04	1.16								
Gender (T1)	1.43	0.50	−0.27**							
Neuroticism (T1)	3.75	0.99	−0.09	−0.01						
Compliance behavior (T1)	4.11	1.41	−0.12*	0.04	−0.11					
CR (T2) (CR = 1, CP = 0)	0.49	0.50	−0.18**	−0.06	0.11	−0.11				
Self-esteem (T2)	4.30	1.00	−0.00	0.02	−0.05	−0.10	0.33**			
Anxiety (T2)	4.38	1.01	−0.02	0.09	0.07	−0.02	−0.27**	−0.27**		
Perceived capabilities of AI (T1)	5.04	0.77	−0.02	0.05	0.00	−0.03	0.02	0.10	−0.02	
Compliance behavior (T2)	3.99	1.08	−0.11	0.03	0.04	0.02	0.40**	0.30**	−0.32**	−0.04

Note. * $p < .05$, ** $p < .01$. T represents the time of the questionnaire survey. CR contingent reward, CP contingent punishment.

Table 3 The direct and mediating effect analyses.

Independent Variable	Model 1		Model 2		Model 3		Model 4					
	Direct effect						Mediating effect					
	CB(T2)		Self-esteem(T2)		Anxiety(T2)		Self-esteem(T2)		Anxiety (T2)		CB(T2)	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Age (T1)	−0.02	0.06	0.07	0.05	−0.04	0.04	0.07	0.04	−0.04	0.04	−0.05	0.06
Gender (T1)	0.06	0.14	0.07	0.10	0.06	0.10	0.07	0.11	0.06	0.10	0.05	0.14
Neuroticism (T1)			−0.08	0.05	0.09	0.05	−0.10	0.06	0.10	0.06		
CB (T1)	0.05	0.05									0.05	0.05
CR (T2) (CR = 1, CP = 0)	0.43**	0.14	0.37**	0.11	−0.31**	0.10	0.37**	0.11	−0.31**	0.11	0.29**	0.15
Self-esteem (T2)											0.20**	0.09
Anxiety (T2)											−0.21**	0.10
χ^2	44.72		198		191.5		752.58					
df	23		115		86		419					
SRMR	0.05		0.04		0.05		0.07					
TLI	0.96		0.95		0.94		0.92					
CFI	0.97		0.96		0.95		0.93					
RMSEA	0.06		0.05		0.06		0.05					

Note. *$p < 0.05$, **$p < 0.01$. The standardized estimates and residuals were shown in this table. CR contingent reward, CP contingent punishment, CB compliance behavior.

Table 4 The isolated mediating effects.

Indirect path	Path coefficient (Unstandardized)		Isolated mediating effect	Sobel z-test	p-value
	M	N	(M * N)		
H2b: CR (vs CP) → SE → CM	0.65	0.32	0.21	2.97	p < 0.01
H3b: CR (vs CP) → AN → CM	−0.52	−0.34	0.18	2.89	p < 0.01

Note. *CR (vs CP)* contingent reward (vs contingent punishment), *SE* self-esteem, *AN* anxiety, *CM* compliance behavior. M: the path coefficient from the CR (vs CP) to SE and AN. N: the path coefficient from SE and AN to CM.

Table 5 The moderating effect of perceived operational capabilities of AI.

Variables	Self-esteem				Anxiety			
	B	SE	LLCI	ULCI	B	SE	LLCI	ULCI
Age (T1)	0.06	0.05	−0.04	0.15	−0.03	0.05	−0.13	0.06
Gender (T1)	0.09	0.11	−0.13	0.32	0.15	0.12	−0.08	0.38
Neuroticism (T1)	−0.08	0.05	−0.19	0.02	0.10	0.06	−0.01	0.21
CR (vs CP)	0.70**	0.11	0.49	0.92	−0.57**	0.11	−0.79	−0.34
Perceived capabilities of AI (T1)	0.01	0.09	−0.16	0.18	0.10	0.09	−0.08	0.27
Perceived capabilities of AI (T1) * Self-esteem (T2)	0.31*	0.15	0.02	0.60				
Perceived capabilities of AI (T1) * Anxiety (T2)					−0.35*	0.15	−0.65	−0.05
R^2	0.14**				0.10**			

Note. The unstandardized estimates and residuals were shown in this table. *CR (vs CP)* contingent reward (vs contingent punishment). *p < 0.05, **p < 0.01.

significantly decreased employees' anxiety at T2 after incorporating some specific control variables (i.e., age, gender, and neuroticism at T1) ($p < 0.01$, $B = -0.31$), thus supporting H3a. In Model 4, following Bamberger and Belogolovsky (2017) and Sheng et al. (2018), we examined the indirect effect of CR (vs. CP) on compliance behavior via self-esteem and anxiety using SEM. The results of Model 4 demonstrated that CR (vs. CP) increased employees' self-esteem at T2 ($p < 0.01$, $B = 0.37$) and decreased their anxiety at T2 ($p < 0.01$, $B = -0.31$). Then, CR (vs. CP) at T2 was still positively associated with compliance behavior at T2 ($p < 0.01$, $B = 0.29$), demonstrating the mediating effect of self-esteem and anxiety at T2. Thus, H2b and H3b were supported. We also tested the significance of the above mediating effects using the bootstrapping test (Preacher and Hayes, 2008; Zhao et al., 2010). The 95% bias-corrected confidence interval results showed that the interval did not include zero, thus supporting H2b and H3b.

Following Sheng et al. (2018) and Zhao et al. (2010), we tested the isolated mediating effects of self-esteem and anxiety through the Sobel z-test (Table 4). As shown in Table 4, the effects of CR (vs. CP) on compliance behavior via self-esteem ($p < 0.01$, $B = 0.21$) and anxiety ($p < 0.01$, $B = 0.18$) were both significant, thus supporting the H2b and H3b.

As shown in Table 5, we examined the moderating effect of the perceived operational capabilities of AI on the relationship between CR (vs. CP) and self-esteem, and between CR (vs. CP) and anxiety using the bootstrapping test ($N = 5000$; Preacher and Hayes, 2008; Zhao et al., 2010). We also investigated whether the interactions between CR (vs. CP) and the perceived operational capabilities of AI on self-esteem were significant ($p < 0.05$, $B = 0.31$, CI = [0.02, 0.60]). The results indicated that the interactions of CR (vs. CP) and the perceived operational capabilities of AI on anxiety were also significant ($p < 0.05$, $B = -0.35$, CI = [−0.65, −0.05]).

Following Aiken and West (1991), a simple-slopes analysis was conducted using SPSS version 22.0. The slope of CR (vs. CP) at T2 on self-esteem at T2 was stronger for participants with high perceived operational capabilities of AI at T1 ($+ 1\ SD$, $p < 0.01$,

$B = 0.94$) than for the ones with low capabilities ($-1\ SD$, $p < 0.01$, $B = 0.47$), thus supporting H4 (Fig. 2). In Fig. 2, the slope of CR (vs. CP) at T2 for anxiety was stronger for participants with high perceived operational capabilities of AI at T1 ($+ 1\ SD$, $p < 0.01$, $B = -0.84$) than those with low capabilities ($-1\ SD$, n. s., $B = -0.30$), thus supporting H5 (Fig. 3).

Discussion

Theoretical implications. First, we investigated the influence of CR (relative to CP) on employees' compliance behavior, thereby expanding the antecedents of compliance behavior in the TPB (Ajzen, 1991) from a contingent incentive perspective. TPB frameworks have an apparent application in the study of compliance behavior (Spitzmuelle and Stanton, 2006). Research on the antecedent variables of compliance behavior has primarily focused on marketing and information systems (e.g., customer orientation norms, information security awareness, surveillance attitude; Hwang et al., 2021; Li et al., 2021; Spitzmuelle and Stanton, 2006), neglecting employees' compliance with the organizations' or leaders' general rules and policies. Our research considers CR and CP as employees' perceptions of relationship norms with leaders because employees can perceive leaders' reward and punishment expectations towards performance-based behavior. Thus, CR and CP reflected the relationship norm between employees and leaders at the workplace. Our research demonstrated the positive effect of CR (relative to CP) on employees' compliance behavior, thus expanding the antecedents of compliance behavior in the TPB from the contingent incentives perspective. Our results can help researchers better understand the contingent incentives offered by leaders.

Second, we responded to the call to compare punishment and reward effects (Choi and Ahn, 2013) by testing the effect of CR (relative to CP) on employees' compliance behavior and affective attitudes (i.e., self-esteem and anxiety), thus expanding the literature on the CR and CP of TPB (Ajzen, 1991). Much is known about the influences of CR and CP on employee motivation, psychological states, and behaviors (Ge et al., 2020;
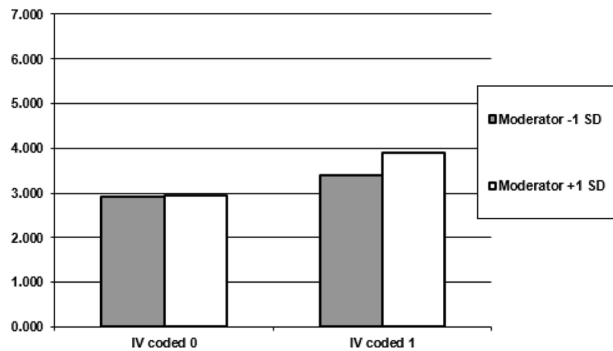
Fig. 2 The moderating role of perceived operational capabilities of AI on the relationship between CR (vs relative to CP) and self-esteem. Note. IV coded 0 represents contingent punishment. IV coded 1 represents contingent reward.
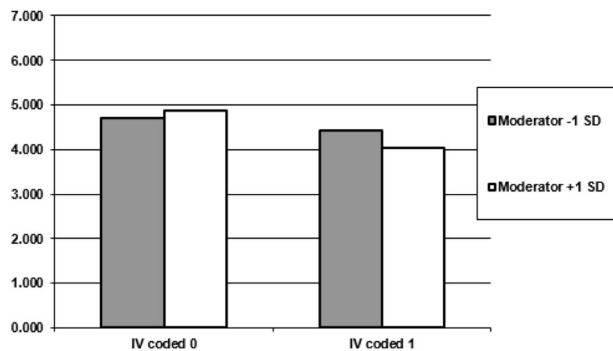
Fig. 3 The moderating role of perceived operational capabilities of AI on the relationship between CR (vs CP) and anxiety. Note. IV coded 0 represents contingent punishment. IV coded 1 represents contingent reward.

Wu et al., 2022; Puni et al., 2018). However, unresolved issues remain when comparing the punishment and reward effects (Choi and Ahn, 2013). For example, Choi and Ahn (2013) suggested that reward (rather than punishment) could increase individuals' cooperation in the workplace. Research on the effects of CR and CP on compliance behavior has not yielded consistent results (Li et al., 2021; Liang et al., 2013). Our research demonstrated that CR (relative to CP) could influence employees' self-esteem and anxiety and improve compliance behavior, thus facilitating the comparison of CR and CP effects and contributing to the literature on CR and CP in the TPB (Ajzen, 1991). Our research can help managers prompt employees' compliance behavior from a reward perspective.

Third, based on TPB, our research is an initial attempt to explore the mediating roles of affective attitudes (i.e., self-esteem, anxiety) on the relationship between subjective norms (i.e., CR, CP) and compliance behavior, thereby expanding the "subjective norm-behavior" and "attitude-behavior" models of TPB (Ajzen, 1991). The TPB posits that subjective norms and attitudes can influence individuals' behavior (Ajzen, 1991; Li et al., 2021; Spitzmuelle and Stanton, 2006), and also suggests that the attitudes include affective and instrumental aspects (Goldoust et al., 2022; Wan et al., 2017). Researchers have ignored the psychological process of the effect of subjective norms on compliance behavior (Li et al., 2021). Our research investigated mediating roles of self-esteem and anxiety in the relationship between CR (relative to CP) and compliance behavior, thus expanding the "subjective norm-attitude" and "attitude-behavior" models of the TPB (Ajzen, 1991). Self-esteem and anxiety have

been demonstrated to mediate the relationship between leaders' supervision and employees' behavior (Su et al., 2022; Huang et al., 2019). Scholars commonly view self-esteem and anxiety as affective attitudes toward the self and performance, respectively (McCarthy et al., 2016; Joshanloo, 2022; Kruzan et al., 2022; Wan et al., 2017). Our research confirmed the mediating effect of affective attitudes on the relationship between subjective norm and compliance behavior. This theoretical contribution can help researchers better understand individuals' psychological processes concerning the effect of subjective norm on behavior.

Fourth, by integrating the TPB (Ajzen, 1991) with CPT (Lazarus and Folkman, 1984), our study investigated the moderating role of the perceived operational capabilities of AI in the relationship between CR (relative to CP) and affective attitudes, thereby contributing to the perceived behavioral control literature of the TPB. The TPB posits that perceived behavioral control can intervene in the formation of individuals' behavior (e.g., technology experience and computer monitoring; D'Arcy and Lowry, 2019; Hsu and Kuo, 2003; Spitzmuelle and Stanton, 2006). For example, employees' direct experience and IT utilization can intervene in the formation of behavior (Al-Qatawneh et al., 2022; Kim and Kim, 2017). Perceived operational capabilities of AI can also exemplify employees' perceptions of behavioral control. However, its moderating role in the psychological mechanism of compliance behavior has not yet been explored. Our research demonstrated that the perceived operational capabilities of AI could strengthen the effects of CR (relative to CP) on self-esteem and anxiety. This exploration can help researchers understand how the operational capabilities of AI can reflect employees' cognitive responses to technology, leading them to perceive behavioral control. It is also helpful in determining the moderating effect of behavioral control on the relationship between subjective norms and affective attitudes, thereby contributing to the perceived behavioral control literature of the TPB (Ajzen, 1991).

Practical implications. The results of this study have several practical implications. First, managers should consider improving employees' expectations of rewards rather than punishments to promote compliance behavior. For example, when employees perform better, leaders can provide positive feedback to improve their expectations of rewards. Conversely, when employees' work performance is substandard, the leaders should positively guide employees rather than punish them (Chen et al., 2021), thus reducing employees' expectations of punishment. In doing so, leaders can improve employees' compliance behavior. Second, managers could focus on the changes in employees' attitudes towards themselves and their work (i.e., self-esteem and anxiety) to better predict their compliance behavior. Our research demonstrates that self-esteem and anxiety mediate the effect of CR on employees' compliance behavior. If managers want to improve employees' compliance behavior, we suggest that they should be aware of any changes in employees' self-esteem and anxiety, and guide them to improve their self-esteem and reduce anxiety from the leaders' CR perspective. Specifically, organizations can implement leaders' contingent incentives training programs (Chen et al., 2021) to help leaders or managers share reward or punishment behaviors toward employees. These items can help leaders revisit previous incentive behaviors in a more objective manner (Chen et al., 2021). After implementing these programs, leaders can further observe and measure changes in employees' self-esteem and anxiety in order to realize their future compliance behavior.

Third, the moderating roles of the perceived operational capabilities of AI suggests that employees' technical experience is

crucial for enhancing or weakening the effect of contingent incentives on their affective attitudes. We suggest that managers consider providing employees with training courses on how AI can improve work and business efficiencies. These courses can help employees understand the operational capabilities of AI in their jobs and businesses more realistically, thereby increasing their confidence in working with AI. Next, we suggest that organizations provide employees with training on how to use AI for their work, in order to improve their perceptions of AI operational capabilities. In doing so, organizations can intervene in the effectiveness of leaders' incentives for employees' affective attitudes by cultivating their technical experiences.

Limitations and future research. First, despite the various types of perceived behavioral control (Spitzmuelle and Stanton, 2006), our study investigated only one. Spitzmuelle and Stanton (2006) suggested that perceived behavioral control can be exemplified by personal control. Our research focused on the perceived operational capabilities of AI following the guidance of the TPB (Spitzmuelle and Stanton, 2006) and CPT (Chiu et al., 2021), which suggests that technology experience can be viewed as a type of perceived behavioral control to intervene in the psychological formation of compliance behavior. Furthermore, this indicates that employees' cognitive appraisal of technology (e.g., AI) can influence their affective attitudes. Therefore, future research should investigate other types of perceived behavioral controls that may promote positive contingent reward incentives (e.g., personal control).

The second limitation of our research stems from the use of self-reports and a single data source containing employees' subjective perceptions of some variables, which cannot completely rule out a common method bias. Nonetheless, our scenario-based experimental design can create psychological separation to reduce the severity of common method bias. Podsakoff et al. (2003) suggested that using a cover story to create psychological separation was beneficial for measuring predictors that were not associated with the measurement of outcomes. Scenario-based experiment is a significant means of examining the causality and is widely accepted in top journals (Dennerlein and Kirkman, 2022). Meanwhile, the two-stage surveys and CFA results further reduced the possible influence of common method bias. Future research should obtain data from a different source; for example, supervisors or customers could rate employees' compliance behavior.

Third, future research should investigate instrumental attitude mechanisms. The TPB suggests that individuals' attitudes can be divided into affective and instrumental dimensions (Goldoust et al., 2022; Phipps et al., 2021). Our research focused on the mediating role of affective attitudes (i.e., self-esteem and anxiety) in the relationship between subjective norm and behavior. This is because the TPB suggests that anticipated affective reactions may be an important predictor of behavior (Hagger et al., 2022) and the CPT posits that individuals' cognitive appraisal may influence affective attitudes (Chiu et al., 2021). Meanwhile, employees may evaluate the costs and benefits of relationship norms with leaders and then determine compliance or non-compliance with leaders' and organizational requirements and rules. Therefore, future research should investigate the mediating role of instrumental attitude (Phipps et al., 2021) in the relationship between incentives and compliance behavior.

Conclusion
Based on the TPB, we established and investigated the effect of CR (relative to CP) on compliance behavior and the mediating roles of self-esteem and anxiety in this relationship. By integrating the TPB with CPT, we adopted a technology experience perspective and investigated how the perceived operational capabilities of AI

moderated the influence of CR on self-esteem and anxiety. These findings help us understand whether, how, and when contingent incentives contribute to employees' compliance behavior.

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Author contributions

Regarding the contributions of all authors, NZ contributed to the development of the theoretical model, data collection and analysis and the draft of manuscript. Other authors provided significant suggestions and improved the manuscript. All authors contributed to the article and approved the submitted version.

Competing interests

The authors declare no competing interests.

Ethical approval

The study was reviewed and approved by Fujian Jiangxia University, and all procedures performed in this study were in accordance with 1964 Declaration of Helsinki and its later amendments or comparable ethical standards.

Informed consent

Participants were informed that the research was completely anonymous, with privacy fully protected and with the results being used for academic research purposes only. The informed consent was obtained from all participants.

Additional information

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