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From Errors to OCBs and Creativity: A Multilevel Mediation Mechanism of Workplace Gratitude

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From Errors to OCBs and Creativity: A Multilevel Mediation Mechanism of Workplace Gratitude

Abstract

This study uses organizational support theory and broaden-and-build theory to examine the antecedents and consequences of workplace gratitude. Specifically, we explored the moderating role of job satisfaction and the mediating role of gratitude at work, including team error management climate as a predictor and OCBs and creativity as outcome variables. Using multiphase, multisource, and multilevel data of 229 employees from 33 teams of two architectural companies located in the east of China, we found that team error management climate is conducive to enhancing employees' workplace gratitude, and that increased workplace gratitude then stimulates more organizational citizenship behaviors (OCBs) and creativity among employees. The positive effect of team error management climate on workplace gratitude and the indirect effect of team error management climate on OCBs and creativity are stronger for employees with lower job satisfaction. We discuss the theoretical and practical implications of these findings for managing employees' gratitude in the workplace.

Keywords: workplace gratitude; team error management climate; organizational citizenship behaviors (OCBs); creativity

Introduction

Gratitude has gradually received attention from organizational scholars in recent years. Though not well-established yet, emerging research has, to some degree, shown that gratitude in the workplace could benefit not only the well-being of individuals but also that of organizations (Emmons 2003; McCullough et al. 2001). Specifically, extant research has suggested that gratitude could help offset negative emotions and attitudes in the workplace (e.g., envy, greed, resentment; Michelle and John 2015), cultivate psychological safety and interpersonal trust, and promote employees' moral behaviors (e.g., prosocial behavior, voice, helping), which fuels organizational optimal and effective functioning and prompts organizations to thrive and prosper (Emmons 2003; Grant and Gino 2010; Hu and Kaplan 2015; Kim et al. 2018; Müceldili et al. 2015; Ng 2015).

Nevertheless, existing knowledge on how and when workplace gratitude forms (i.e., antecedents) and what other important impacts workplace gratitude has (i.e., consequences) remains limited. In contrast with increasing research on the consequences of workplace gratitude, only a handful of literature has paid attention to the antecedents of gratitude in terms of organizational factors. Some extant research lacked empirical examination and mostly focused on the event or individual level, such as interactional justice, perceived organizational support, leadership style (e.g., servant leadership), helping behavior from others, perceived respect from coworkers, and recipients' attributions of helping (Ford et al. 2018; Kim et al. 2018; Lee et al. 2019; Ng 2015; Ouyang et al. 2018; Sun et al. 2019). However, considering the nested nature in organizations, some factors at the higher level, especially at the team-level, necessarily have

important influences on developing workplace gratitude among employees, which is unfortunately overlooked by extant research. There is a dearth of examination about contexts in which workplace gratitude is more likely to arise, especially in terms of individual differences.

Unanswered questions also remain regarding the consequences of workplace gratitude. Although scholars have noticed the unique and substantial effects of gratitude on organizations, the effects of gratitude on some important outcomes (e.g., creativity) are even still understudied. Limited knowledge of the antecedents and consequences of workplace gratitude greatly hinders the understanding of both researchers and practitioners about the effectiveness and cultivation of gratitude in the workplace.

In response, the present study aims to examine the antecedents and consequences of workplace gratitude. Concerning antecedents, drawing upon organizational support theory, we posit that team error management climate that encourages detecting, communicating, sharing about, analyzing, and correcting errors could serve as organizational support to stimulate employees' workplace gratitude (Eisenberger et al. 1986; Frese and Keith 2015; van Dyck et al. 2005). To understand the boundary condition of team error management climate, we theorize and examine the moderating effect of employees' job satisfaction. Specifically, we expect that for employees with lower (vs. higher) job satisfaction, team error management climate becomes a more salient source of support at work and has a much stronger positive effect on workplace gratitude.

In terms of the consequences, drawing upon broaden-and-build theory, we propose that increased workplace gratitude stimulated by team error management climate will contribute to

"broadening employees' momentary thought-action repertoires" (Fredrickson 2004, p.147). It will help employees to be more aware of and attentive to others' needs, thus enhancing their organizational citizenship behaviors (OCBs; Cain et al. 2019; Fredrickson 2004), providing employees with more flexible cognitions and more resilience, thereby promoting employees' creativity (Fredrickson and Branigan 2005; George and Zhou 2001; Miron-Spektor and Beenen 2015). As such, we posit a mediating role of workplace gratitude. Finally, we also propose a moderated mediation effect of job satisfaction, namely that the indirect effect of error management climate on employees' OCBs and creativity via workplace gratitude is moderated by job satisfaction.

Based on a multi-wave, multi-source, and multi-level field study in China, we expect to contribute to previous research on gratitude in at least three ways. First, we introduce team error management climate as an antecedent of employees' workplace gratitude to better understand how and when workplace gratitude is formed, which enriches our knowledge of the cultivation of gratitude in organizations. Second, extending extant research on the consequences of workplace gratitude, this study contributes to extant research by examining the effects of workplace gratitude on employees' OCBs and creativity, which further indicates the essential role of gratitude in organizations. Third, in addition to the direct effect of team error management climate on workplace gratitude, we explore the moderating effect of job satisfaction, which leads to better understanding of the contextual factors in terms of individual differences in affecting workplace gratitude. The theoretical model is illustrated in Figure 1.

[Figure 1 near here]

Theoretical Framework and Hypotheses

Gratitude at work

The core idea related to gratitude is the awareness or acknowledgment of what individuals received externally from material or nonmaterial sources (e.g., emotional or spiritual), and further motivation to reward (Di Fabio et al. 2017; Emmons and McCullough 2003; Weiner 1986). In particular, according to Fehr et al. (2017), gratitude in organizations can be conceptualized as an episodic emotion following a specific event, a persistent tendency for individuals to feel grateful, as well as a shared and collective sense of gratitude of the whole organization. These three levels of gratitude (i.e., within-person level, between-person level, and organizational level) do not exist separately but reciprocally relate to each other. Specifically, collective gratitude and persistent gratitude can reinforce episodic gratitude through top-down processes; meanwhile, episodic gratitude and persistent gratitude can also have bottom-up effects on the emergence of collective gratitude (Fehr et al. 2017).

Although each level of gratitude is worthy of study, given the reciprocal relations among them, this study follows Cain et al. (2019), and mainly focuses on the persistent gratitude in the workplace. Accordingly, workplace gratitude herein is defined as the tendency to notice and be grateful for various experiences working at the current job (Cain et al. 2019). Further, following organizational support theory and broaden-and-build theory, we propose that team error management climate could enhance workplace gratitude, and then promote employees' OCBs and creativity. As such, workplace gratitude serves as a mediator turning the effect of team-level

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climate into concrete behaviors among employees. In addition, we posit a moderated mediation effect of employees' job satisfaction on affecting the relationship between team error management and workplace gratitude and subsequent OCBs as well as creativity.

Error management climate and gratitude at work

Research on organizational support theory suggests that employees form overall perceptions of the extent to which their organizations value their contributions and concern about their well-being through accumulated experiences in organizations (Eisenberger et al. 1986). These beliefs can constitute favorable treatments from organizations and increase employees' workplace gratitude (Ford et al. 2018; McCullough et al. 2001). As a kind of organizational support (e.g., Guchait et al. 2014a; Guchait et al. 2014b), team error management climate, which encourages employees to approach errors positively and constructively, is positively related to employees' workplace gratitude (van Dyck et al. 2005).

First, referring to deviations from an expected outcome or standard, errors often carry severe potential costs for employees (e.g., blame attribution, impaired reputation, additional work effort, and potential financial loss) and occupy employees with negative emotions (e.g., embarrassment, anxiety, stress, and guilt; Catino and Patriotta 2013; Gronewold et al. 2013; Shepherd et al. 2011; Zhao and Olivera 2006). Furthermore, employees' perceptions of organizational aversion, intolerance, and the prevention of errors (from organizational "zero-tolerance" attitudes and measures towards errors) will intensify the deeply rooted link between errors and the aforementioned negative emotions (van Dyck et al. 2005; Zhao 2011), and even induce some

unethical behaviors, such as deceiving and hiding errors, to avoid potential costs after erring (Gronewold et al. 2013). In comparison, different from simply basing on punishment and blaming to avoid errors, an error management climate signals a tolerant, positive, and constructive attitude towards erring, which can help increase employees' psychological safety and alleviate their negative emotions and stress after erring (Frese and Keith 2015; Shepherd et al. 2011; van Dyck et al. 2005). Such emotional support for relieving negative emotions owing to their teams could serve to benefit employees' well-being and promote employees to be more grateful for their current work experience within a team (Ford et al. 2018).

Second, within teams high in error management climate, when employees make errors, they could feel free to communicate, share and analyze about their errors with other team members, and rely on other members for advice and help when they are unable to correct errors by themselves (van Dyck et al. 2005). Consequently, employees could receive more task-related support from their team members about how to effectively address particular problems during work, which further promotes their task competence and proficiency (Maurer et al. 2017). Such supportive experiences from teams could enhance employees' gratitude in the workplace.

Finally, owing to encouragement about information sharing related to errors under a high team error management climate, team members are willing to proactively share about their errors and corresponding solutions, through which employees could develop a higher awareness of what errors might be made and how to deal with them in advance (Guchait et al. 2014a; van Dyck et al. 2005). As such, employees could learn from errors not only made by themselves but also made by others within their teams, which could contribute to early detection and handling of possible

errors, mutual learning from errors, and develop employees' confidence, perceived control, and psychological safety when performing tasks (Frese and Keith 2015; Guchait et al. 2014b). As a consequence, employees are more likely to feel grateful for such positive experiences working at current jobs within their teams that benefit not only their present but also future work (Emmons and McCullough 2003).

Altogether, error management climate within teams could provide various aspects of support (e.g., emotional, psychological, task-related, etc.) for employees, which serves as both material and nonmaterial sources of instilling gratitude in employees. Therefore, drawing on organizational support theory and research on gratitude, we hypothesize a positive relationship between team error management climate and employees' workplace gratitude.

Hypothesis 1: Team error management climate is positively related to employees' workplace gratitude.

The moderating effect of job satisfaction

Job satisfaction refers to a pleasurable or positive emotional state arising from the appraisal of one's job or experiences at work (Locke 1976). In general, employees develop more job satisfaction towards such jobs that can help achieve or facilitate their job values (Locke 1969). Therefore, owing to value differences in a job, different employees may differ in their job satisfaction even towards a similar job within the same team. Different levels of job satisfaction may in turn lead to employees' differences in perception, intention, and action (Kinicki et al. 2002). Accordingly, in this study, we posit that the relationship between team error management

climate and workplace gratitude may differ for different employees with different levels of job satisfaction. Specifically, we expect a moderating effect of job satisfaction on the influence of team error management climate, namely that the positive influence of team error management climate on workplace gratitude among employees with lower job satisfaction is stronger than that for more satisfied employees.

As job satisfaction arises from the fit between employees' jobs and their job values, fewer satisfied employees tend to perceive their jobs less matched with them and obtain less support (both extrinsic and intrinsic) when performing jobs (Gabriel et al. 2014; Maden and Kabasakal 2014). Such a dearth of support from the job itself could prompt employees to be more sensitive to other evidence of support or more likely to proactively find other sources of support. Therefore, even under the same error management climate, employees with lower satisfaction towards their job could be more attentive to and further feel more of that various support from such team climate, which renders them to feel more grateful about their experiences during work within their teams.

Extant research has proposed that when individuals are losing resources or in lack of resources, the infusion of resources could become more important in "engaging gain momentum and strength" (Hobfoll et al. 2018, p.106). Likewise, for employees who are less satisfied with their jobs and get fewer supporting resources from performing jobs, support from team error management climate could gain in value and exert more powerful impacts on motivating them. Therefore, employees with lower job satisfaction could benefit more from a team error management climate, thereby feeling more workplace gratitude.

In contrast, employees who are more satisfied with their jobs could find the characteristics of the job itself more rewarding, fulfilling, and satisfying, and are more likely to feel supported through performing their jobs (de la Torre-Ruiz et al. 2019; Meneghel et al. 2016). Further, with full support in their jobs, employees may be less sensitive to support from the external environment. Therefore, employees with higher job satisfaction could either feel less support from team error management climate or respond less actively to such climate, which implies a weaker relationship between team error management climate and workplace gratitude.

In summary, we posit that for employees who are less satisfied with their jobs, the relationship between team error management climate and workplace gratitude is stronger compared to that of more satisfied employees.

Hypothesis 2: Employees' job satisfaction negatively moderates the effect of team error management climate on their workplace gratitude, such that the positive relationship between team error management climate and workplace gratitude is stronger for employees who are lower on job satisfaction.

Gratitude facilitates OCBs and creativity

Previous research has indicated that OCBs and creativity both share the characteristic that the employees go above and beyond the call of duty and constitute the primary two forms of employees' discretionary behaviors (Demerouti et al. 2015; Podsakoff et al. 2000). OCBs focus on doing something more, whereas creativity centers on doing something novel and useful, both of which serve to fuel organizational effective functioning and sustain organizational competitive

advantages (Alge et al. 2006; Lin et al. 2017; Organ 1988). Based on broaden-and-build theory, we propose that workplace gratitude can promote these two important discretionary behaviors of employees.

Broaden-and-build theory focuses on discrete positive emotions (e.g., joy, interest, pride) and posits that experiencing these emotions can broaden individuals' momentary thought-action repertoires, which then contributes to building their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources (Fredrickson 2001). A subsequent analysis adds gratitude to this framework and suggests that gratitude likewise can broaden people's modes of thinking and build enduring resources (Fredrickson 2004). Though the tenets of broaden-and-build theory initially applied to fleeting gratitude, we expect that this theory likely generalizes to rather persistent affective experiences of gratitude (e.g., workplace gratitude), owing to the reciprocal relations between episodic gratitude and persistent gratitude (Fehr et al. 2017; Vandenberghe et al. 2019).

Although consistent evidence has somewhat illustrated a positive relationship between gratitude and OCBs, most research has been focusing on either broader or more specific forms of OCBs rather than one that includes citizenship behaviors towards both individuals (OCBI) and organizations (OCBO). For example, based on a meta-analytic review, Ma et al. (2017) concluded that gratitude is positively linked to pro-sociality (a broader concept of OCBs). Some research has indicated that gratitude is positively associated with some specific forms of OCBs, such as interpersonal citizenship behaviors (Sun et al. 2019), helping (Kim et al. 2018), and OCBOs (Ford et al. 2018). Despite one study wherein scholars have paid attention to the

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relationship between gratitude and the complete form of OCBs, they mostly focused on the effect of state gratitude on daily OCBs at the event level based on two experience sampling studies (Spence et al. 2014), which lacked between-person examination of the relationship between workplace gratitude and OCBs. Therefore, drawing on broaden-and-build theory and extending previous research on gratitude, we propose that workplace gratitude positively relates to OCBs at the individual level.

First, workplace gratitude manifests as employees' positive feelings towards work experiences within organizations, which could help broaden the scope of employees' attention, thus leading employees to be more aware of and attentive to others' needs (Cain et al. 2019; Fredrickson 2004). Specifically, once other members of the team are in need, such as having problems at work or being rushed in completing a project, employees with higher workplace gratitude are more likely to take notice of these needs, constituting one of the prerequisites of employees' OCBs (Carlson et al. 2011). Second, beyond more awareness of others' needs, broadened attention could equip employees with a broader range of ideas about what behaviors are acceptable within teams. Coupled with outward orientation of feeling gratitude, this could facilitate employees' more timely and appropriate response to others' needs, thereby increasing OCBs (Carlson et al. 2011; Carlson et al. 2014). Third, according to broaden-and-build theory, employees with more gratitude in the workplace are more likely to form a rather inclusive sense of others, under which circumstance employees are more willing to see ''them'' as ''us'' (Johnson and Fredrickson 2005; Waugh and Fredrickson 2006). Further, this in-group identity arising from workplace gratitude as well as its moral motive function can promote employees to respond more

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favorably to others' needs, conduct more cooperative and prosocial behavior, and go the extra

mile to make contributions to the team (Forgas 2002; van Dick et al. 2006; Waugh and

Fredrickson 2006). Therefore, a positive relationship between employees' workplace gratitude

and OCBs is posited.

Hypothesis 3a: Employees' workplace gratitude is positively related to their OCBs.

Serving as another important discretionary behavior, creativity refers to the generation of

new and useful ideas regarding products, processes, or procedures by employees (Baer and

Oldham 2006; Zhou and George 2001), which can be fostered by workplace gratitude as well.

First, according to broaden-and-build theory, workplace gratitude can widen the scope of

employees' attention and increase their openness to new experiences, which contributes to the

increased number of cognitive processes and information available for association (Amabile et al.

2005; Fredrickson 1998; Fredrickson and Branigan 2005; Ouweneel et al. 2012). As such, during

completing tasks or when facing problems, employees with more gratitude are more capable to

make diverse connections between different experiences and information, more immune to the

limitation on attention capacity, and thus produce more creative ideas and solutions (Gong et al.

2013; Madjar and Shalley 2008).

Second, broaden-and-build theory indicates that workplace gratitude is associated with

broadened cognition and improved processing capability of different cognitive sets (Ashby et al.

1999; Fredrickson 1998). Such expansion of cognition and enhancement of processing capability

is conducive to more flexible and divergent thinking, and thus a higher likelihood to develop and

elaborate creative ideas (Binnewies and Wornlein 2011; Davis 2009). Similarly, previous research

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has illuminated that individuals with more cognitive flexibility are more likely to explore and integrate diverse knowledge, which helps enhance the potential to identify novel solutions for a given problem. This promotes employees' creativity (Fredrickson and Branigan 2005; George and Zhou 2001; Miron-Spektor and Beenen 2015).

Finally, employees with more workplace gratitude tend to be more resilient and can solve the problems proactively and adaptively (Fredrickson and Joiner 2002; Hayward et al. 2010). Since proposing creative ideas or undertaking creative behaviors exposes employees to considerable uncertainty, even failure, resilience deriving from workplace gratitude could enable employees to cope with these possible negative effects to generate creative and useful thoughts (De Clercq 2019; Gupta and Singh 2014). Therefore, we propose a positive relationship between employees' workplace gratitude and creativity.

Hypothesis 3b: Employees' workplace gratitude is positively related to their creativity.

Previous researchers have reasoned that employees' emotions are likely the most direct, immediate response to perceptions of organizational practices or situations, and proposed a perception-emotion-behavior model to explain how broad perceptions of an organization are gradually translated into employees' functional behaviors through emotions or affect (Ng et al. 2019; Weiner 1980). Accordingly, we propose that workplace gratitude acts as a more proximal result of team error management climate, and serves as a mediator linking error management climate and employees' behaviors (i.e., OCBs and creativity).

Hypothesis 4a: Team error management climate is positively related to OCB through employees' workplace gratitude.

Hypothesis 4b: Team error management climate is positively related to creativity through employees' workplace gratitude.

Considering hypotheses 1-4, we further expect a moderated mediation effect of job satisfaction on the indirect relationship between team error management climate and employees' OCBs as well as creativity through workplace gratitude. Therefore, we hypothesize that:

Hypothesis 5a: Employees' job satisfaction negatively moderates the indirect effect of team error management climate on their OCBs via workplace gratitude, such that the positive indirect relationship between team error management climate and OCBs is stronger for employees with lower job satisfaction than for those with higher job satisfaction.

Hypothesis 5b: Employees' job satisfaction negatively moderates the indirect effect of team error management climate on their creativity via workplace gratitude, such that the positive indirect relationship between team error management climate and creativity is stronger for employees with lower job satisfaction than for those with higher job satisfaction.

Method

Organizational Setting and Participants

Our sample includes two architectural companies located in the east of China. One is an architectural engineering project management company, and the other one is an architectural design and research institute. Although these two companies are different, they are both project-oriented and contain many work teams. With the help of the organizations' Human Resources Management Departments, we attained approval to invite 237 employees in two companies to

participate in our study. Participants were informed that the goal of this study was to examine how team management impacts job-related attitudes and performance of their teams. They were assured of confidentiality and were given full privacy during the data collection process. Participants' answers across periods were connected through confidential codes.

Data were collected at two stages. At Time 1, team members completed all of our Time 1 questions, which included demographic information, team error management climate, and job satisfaction. At Time 2, one month later, all team members filled out the questions about gratitude at work; meanwhile, team leaders filled out the Time 2 questions, evaluating the OCB and creativity of each team member.

For our initial sample of 237 individuals, however, we eliminated eight individuals who failed to respond to either of the two surveys. We obtained a final focal sample of 229 individuals which reached the response rate of 96%. This high response rate was facilitated through constant communication with senior management and the company's willingness to give employees time during the workday to complete the surveys. These individuals were members of 33 teams with an average team size of 6.94 (SD=3.58). Their average age was 31.09 years (SD=5.81) and most were male (61.6%). The majority (58.1%) had a bachelor's degree, 32.8% had a master's degree, and 9.2% finished high school. The average tenure in the current team was 3.43 months (SD=3.10).

Measures

As the original scales of our study were all developed in English, we followed the procedure

recommended by Brislin (1970) to prepare Chinese questionnaires. Two bilingual research

assistants independently completed the process of translation and back-translation, and then our

author team discussed and solved the discrepancy problems encountered in these processes.

Unless noted, all measures except for demographic variables were reported on a 7-point Likert

scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Participants rated all the measures

according to their work experiences during the past month.

Team error management climate

At Time 1, we adopted the sixteen-item measure developed by van Dyck et al. (2005) to

assess team error management climate. Employees answered their agreement on each item

according to their feelings and the atmosphere within the team. The sample items were "If team

members are unable to continue their work after an error, they can rely on others", "When

mastering a task, team members can learn a lot from their mistakes", and "When someone makes

an error, (s)he can ask others for advice on how to continue". Cronbach's alpha coefficient

was .96.

Employees' responses were aggregated to the team level. According to the suggestions of

James and his colleagues (1982, 1984), we adopted three indicators (r_{wg}, ICC1, and ICC2) to

evaluate the appropriateness of accumulating individual scores to the team level. The r_{wg}

represents the degree of agreement within teams, the ICC1 shows the proportion of the total

variance explained by teams, and the ICC2 estimates the reliability of team means (Raudenbush

et al. 2004). The results of *Median* r_{wg} = .92 and ICC1 =.11 (p < .001) demonstrate an acceptable level of within-team agreement and reliability. Although the ICC2 is .45, less than the cutoff .70 (Kozlowski and Hattrup 1992), the aggregation is still feasible because the team error management climate has high r_{wg} and significant ICC1 (Chen and Bliese 2002).

Job satisfaction

At Time 1, we adopted the three-item scale developed by Meneghel et al. (2016) to assess employees' job satisfaction. Employees specified their level of agreement with each item about their feelings during the past month. The items were "I feel fairly satisfied with my job", "I am enthusiastic about my work", and "I am finding real enjoyment in my work". Cronbach's alpha coefficient was .94.

Gratitude at work

At Time 2, we adopted the ten-item measure developed by Cain et al. (2019) to assess employees' workplace gratitude. Specifically, participants evaluated how often they feel grateful for the aspects listed below during the past month: "the atmosphere/climate of your work environment?", "your ability to grow and learn from your job?", and "the support you receive from your co-worker (s)" (0 = never, 6 = always). Cronbach's alpha coefficient was .96.

Organizational citizenship behaviour

At Time 2, team leaders evaluated employees' OCB with a fourteen-item measure (Williams and Anderson 1991), which is designed to capture both OCBI and OCBO in the workplace. Sample items include "This employee helps others who have heavy workload", "This employee

takes a personal interest in other employees", and "This employee adheres to informal rules devised to maintain order". Cronbach's alpha coefficient was .92.

Creativity

At Time 2, team leaders evaluated employees' creativity using Baer and Oldham (2006) four-item measure. The items include "This employee suggests many creative ideas that might improve working conditions", "This employee often comes up with creative solutions to problems at work", "This employee suggests new ways of performing work tasks", and "This employee is a good source of creative ideas". Cronbach's alpha coefficient was .96.

Analytic Strategy

Since our data has a hierarchical structure (i.e., participants nested within teams), we relied on Mplus 7.4 (Muthén and Muthén 2014) and used the multilevel path analysis (Preacher et al. 2016) to estimate the proposed model. The Level 2 predictor was centered at its grand mean to test the interaction effect. Simple-slopes analysis (Aiken and West 1991) was used to explain the interaction effect. Mediation hypotheses and moderated mediation hypotheses were tested via Monte Carlo simulation procedures using the RMediation add-on package for the R statistical software environment (Tofighi and MacKinnon 2011). This method was used to accurately reflect the asymmetric characteristic of the sampling distribution of a multilevel indirect effect (Preacher et al. 2010) and recently applied by Lanaj et al. (2014) and Lim et al. (2018).

Results

Confirmatory Factor Analyses

Descriptive statistics of means, standard deviations, and intercorrelations among the study

variables are displayed in Table 1. Multilevel confirmatory factor analyses (MCFAs) were

conducted to examine the convergent validity of the multi-item scales. We specifically employed

a parceling technique (Bagozzi and Edwards 1998; Little et al. 2013), creating parcels for team

error management climate, gratitude at work, and OCB, which have more than five measurement

items. We created three parcels for error management climate and gratitude at work since they are

single-factor variables, with two parcels for OCB according to its sub-dimensions, OCBI and

OCBO. Thus, we have five focal variables with sixteen factors in the MCFAs.

[Table 1 near here]

The distinctiveness of the five constructs (i.e., team error management climate, job

satisfaction, gratitude at work, OCB, and creativity) was tested by contrasting this five-factor

model against one three-factor model (by grouping job satisfaction and gratitude at work, as well

as OCB and creativity, respectively) and one two-factor model (by grouping all level 1 variables).

The Satorra-Bentler scaled chi-square difference tests were applied in model comparisons

(Satorra & Bentler, 2010). The fit indexes revealed that the proposed five-factor model fit the

data well, with $\chi^2 = 79.38$, $df = 48$, $p < .06$, CFI $=.98$, TLI $=.97$, SRMR$_{(within)} =.03$, SRMR$_{(between)}$

$=.00$, RMSEA $=.05$. This five-factor model fit the data better than the three-factor model: $\chi^2 =$

506.17, $df = 53$, $p < .001$, CFI $=.72$, TLI $=.64$, SRMR$_{(within)} =.13$, SRMR$_{(between)} =.00$, RMSEA

$=.19$; $\Delta\chi^2 = 179.95$; $\Delta df = 5$, $p < .001$, and the two-factor model: $\chi^2 = 1017.87$, $df = 54$, $p < .001$,

CFI =.41, TLI =.24, SRMR$_{(within)}$ =.28, SRMR$_{(between)}$ =.00, RMSEA =.28; $\Delta\chi^2$ = 300.20; Δdf = 6,

p < .001, yielding the best result and supported discriminant validity.

Hypotheses Testing

In our analyses, we controlled for employees' age, gender, team tenure, and company type at

the individual level, as well as team size at the team level. All results remain the same whether

those variables are controlled or not. Table 2 shows the results of the multilevel path models.

Table 3 reports the indirect effects as well as the conditional indirect effects (at high and low

levels of job satisfaction) resulting from our analyses.

[Table 2-3 near here]

Beginning with our cross-level direct effect, for Hypothesis 1, we proposed a direct

influence of team error management climate on workplace gratitude. As shown in Table 2 and

consistent with Hypothesis 1, team error management climate has a positive effect on gratitude at

work (γ = .52, p < .001).

Turning to Hypothesis 2, we examined a cross-level interaction of team error management

climate with employees' job satisfaction on the gratitude they experienced at work. The results

revealed a significant cross-level moderating effect on employees' gratitude at work (γ = -.43, p

< .001). When job satisfaction is lower, the positive influence of team error management climate

on gratitude at work is stronger. We plotted the interaction effect to confirm the direction of these

effects. As shown in Figure 2, the relationship between team error management climate and

employees' gratitude at work proceeded in an expected direction; the simple slope coefficient for

employees with low job satisfaction (1 *SD* below the mean) was .996 (p < .001) and .040 (p

= .832) for employees with high job satisfaction (1 *SD* above the mean). Thus, the moderated

relationship between team error management climate and gratitude at work was positive and

significant for employees with low job satisfaction, but not significant for those with high job

satisfaction.

[Figure 2 near here]

Next, Hypotheses 3a to 3b concerned the relationship between employees' workplace

gratitude with (a) OCBs and (b) creativity. The results of Table 2 indicate that employees'

workplace gratitude had a positive effect on (a) OCBs (γ = .10, *p* < .01) and (b) creativity (γ

= .13, *p* < .01), yielding support for Hypotheses 3a and 3b.

Hypotheses 4a to 4b proposed a pair of multilevel indirect effects, with the team error

management climate exhibiting indirect effects on employee (a) OCBs and (b) creativity via their

workplace gratitude. We tested for these indirect effects using the Monte Carlo method to

compute confidence intervals (CIs; Preacher and Selig 2012; Selig and Preacher 2008). With

20,000 Monte Carlo replications, the indirect effect of the team error management climate on

employee OCBs via gratitude at work was significant (*ab* = .055, *p* < .05; 95% CI [.007, .102]).

Thus, Hypothesis 4a was supported. Similarly, Hypothesis 4b, which proposed that the team error

management climate would have an indirect effect on employee creativity via gratitude at work,

was supported (*ab* = .67, *p* < .05; 95% CI [.000, .134]). In tandem, these results show that

workplace gratitude played a mediating role between team error management climate and (a)

OCBs and (b) creativity.

Finally, for Hypotheses 5a and 5b, we predicted multilevel moderated mediations that the indirect effects of team error management climate on (a) OCBs and (b) creativity through gratitude at work are stronger when employees' job satisfaction is low than high. Conditional indirect effects (at one *SD* above and below the mean for job satisfaction) are shown in Table 3. Specifically, the positive indirect influence of team error management climate on OCBs (estimate = .104, 95% CI [.020, .187]) through gratitude at work was significant and stronger for employees with low job satisfaction. Similarly, the positive indirect effect of team error management climate on creativity (estimate = .130, 95% CI [.018, .241]) through gratitude at work was significant and stronger for employees with low job satisfaction. These suggest that employee job satisfaction moderated the mediating effect of gratitude at work. Figure 3 shows the final results of our theoretical model with the eigen values.

[Figure 3 near here]

Discussion

This study examined the antecedents and consequences of workplace gratitude. In accordance with our conceptual analysis, we found that team error management climate had positive influences on employee OCBs and creativity through workplace gratitude. Second, we found that when employees experienced lower job satisfaction, the positive influence of team error management climate on workplace gratitude was stronger. Finally, we also found moderated mediation effects, namely that the indirect effects of team error management climate on employees' OCBs and creativity through workplace gratitude were moderated by job satisfaction. These findings generate several theoretical and managerial implications.

Theoretical Implications

Our findings contribute to research on gratitude in at least three ways. First, this study enhances our understanding of which factor would promote workplace gratitude by introducing a team-level factor, namely team error management climate, as an antecedent, which leads to a better understanding of the gratitude development in the workplace. Previous research on gratitude has successfully examined the effects of some influencing factors empirically (e.g., Ford et al. 2018; Sun et al. 2019), but these studies mostly focus on the discrete events or interactions with coworkers and behaviors of leaders at the individual level, whereas research on the effect of factors at a higher level, like team climate, has been missing. While some studies have noticed the effects of higher-level factors, most are just putting forward propositions, though constructively, lacking in empirical examination (e.g., Fehr et al. 2017; Hu and Kaplan 2015). Building on organizational support theory, this study brings attention to the effect of team error management climate, a team-level factor, on workplace gratitude. As found in this study, team error management climate can serve to give employees more support and benefit for their well-being. This can enhance employee gratitude in the workplace. Accordingly, this study empirically explicates that besides event-level or individual-level factors, the team-level factors could enhance gratitude among employees, which extends the literature on gratitude and inspires more research in the future on how workplace gratitude is formed.

Second, while recent studies have illustrated the benefits of gratitude to some important outcomes in the organizations, such as OCBs, helping, voicing behaviors and so on (e.g., Kim et al. 2018; Spence et al. 2014; Sun et al. 2019), a surprising dearth of studies exists on the

relationship between gratitude and employee creativity, especially considering the important roles of creativity in organizational success. Therefore, drawing upon broaden-and-build theory, this study examined the relationship between workplace gratitude and employee creativity and indicates that workplace gratitude is conducive to promoting employee creativity, which helps extend our knowledge of gratitude in the organizational context and highlights the positive effects of gratitude on organizational outcomes.

This study also examined the effect of workplace gratitude on OCBs at the individual level, which has been tested in some previous studies (Ford et al. 2018; Kim et al. 2018; Ma et al. 2017; Spence et al. 2014; Sun et al. 2019). We focused on the more comprehensive form of OCBs, namely citizenship behaviors towards both coworkers and organizations, and found that increased workplace gratitude could promote more citizenship behaviors towards coworkers as well as organizations, which helps to confirm the motivational value of workplace gratitude (McCullough et al. 2001).

Altogether, this study examined the relationship between workplace gratitude and two important extra-role behaviors (i.e., OCBs and creativity), which highlights the beneficial role of gratitude and thus entails the cultivation of employees' gratitude in the workplace. As such, combining organizational support theory and broaden-and-build theory, this study shows the mediating role of workplace gratitude in turning the effect of team error management climate into employees' concrete behaviors (i.e., OCBs and creativity).

The third theoretical implication of this study is that it explores the moderating role of job satisfaction on the influence of team error management climate. More specifically, we found that

team error management climate could exert stronger effects on enhancing employees' gratitude in the workplace when they feel less satisfied with their jobs. This finding suggests that gratitude is not only related to the receipt of valuable outcomes from external sources, namely support from team error management climate herein, but also depends on some individual factors, like job satisfaction in this study. Previous research has paid attention to some external causes that contribute to enhancing employees' workplace gratitude (e.g., Ford et al. 2018). However, they lacked in examination on the boundary conditions, especially some individual factors concerning the cultivation of employees' gratitude in the workplace. The current study indicates that employees differ in experiencing gratitude even within the same team and under the same climate owing to the differences in their attention and reaction towards the external environment, which is consistent with previous discussions on the preconditions of experiencing gratitude (McCullough et al. 2001). Accordingly, this study broadens our understanding of how and when workplace gratitude is formed and underlines the importance of contextual factors.

Practical Implications

The findings of this study also offer some useful insights for organizational leaders. On the one hand, our study shows that employees' gratitude in the workplace indeed matters in facilitating two of their extra-role behaviors, namely OCBs and creativity, which is greatly conducive to organizational prosperity. Therefore, organizations must bear in mind the significant positive effect of employees' gratitude and take the measures to cultivate their gratitude in the workplace. Through this process, organizations could build emotional exchanges with employees

in addition to instrumental exchanges and promote more discretionary behaviors to achieve sustainable success.

This study examined the relationship between team error management climate and workplace gratitude and explicates that the team climate which tolerates erring and encourages learning from errors could contribute to breeding employees' gratitude at work. We also found a combined effect of job satisfaction and error management climate on workplace gratitude. Employees' satisfaction towards their jobs depends on the fit between their values and the jobs. Furthermore, previous research has shown a lot of factors that could influence this fit and improve employees' job satisfaction. However, it can be challenging for organizations to keep all employees' job satisfaction at the same high level. Accordingly, the above two findings of our study serve as important guides for organizations to enhance employees' gratitude in the workplace to facilitate organizational effective functioning. More specifically, organizations could build a high error management climate within teams through relevant policies and norms to stress the importance of holding positive attitudes to erring and learning from errors. This could promote employees' workplace gratitude.

Limitations and Directions for Future Research

Despite the above contributions, some limitations of this study should be noted; these suggests meaningful directions for future research. First, drawing on organizational support theory, we elucidated the positive effect of team error management climate on workplace gratitude mainly through arguing that team error management climate could provide support for

employees. However, we did not empirically test the mediating role of perceived organizational support on this positive relationship. Although previous research has illustrated the positive relationship between perceived organizational support and gratitude (Ford et al. 2018), future research is needed to examine whether perceived organizational support serves as a mediator of the relationship between team error management climate and workplace gratitude. Whether there are other possible mechanisms (e.g., psychological safety) that take effect could be explored, as well.

Second, future research can examine other factors in the management of organizations that could help promote workplace gratitude. For example, Hu and Kaplan (2014) suggested that organizational policies and procedures that increase employee voice are positively associated with gratitude. Fehr et al. (2017) proposed that factors related to human resource management, like developmental feedback policies, could help enhance employees' gratitude. However, these two reports are theoretical, and more research is needed. In an extension of this study, future research could also investigate the roles of other kinds of team climate (e.g., justice climate, safety climate) or the interaction effects of factors at different levels on cultivating gratitude.

Third, it might be argued that the finding of the positive relationship between team error management climate and workplace gratitude was owing to common method bias since these two variables are both reported by employees. However, we have aggregated team members' evaluations of team error management climate to the team-level, which has somewhat ameliorated concerns about common method bias (Kock 2015). Future research may measure these variables from different sources to replicate our results. For example, team error

management climate could be reported by every team leader, and the outcome variables could be

measured from objective sources to minimize the common method bias.

The final limitation rests on the cross-sectional research design, which could not ensure

conclusions regarding causality. Although we have introduced time lag when collecting data, and

some of the effects in our model are less likely to work the other way around, future research

could apply a more rigorous research design, like an experiment or a longitudinal research

design, to claim causality. Also, although we have already controlled employees' team tenure in

the data analysis, the young teams (Mean = 3.43 months, SD = 3.10 months), who may make

more mistakes due to lack of cooperation experiences, could be more grateful for team error

management climate. Thus, we call for future research to explore whether team tenure influences

the positive effect of team error management climate on workplace gratitude.

Conclusion

The findings of this study suggest that team error management climate is significantly and

positively related to workplace gratitude, which in turn promotes employees' OCBs and

creativity. Thus, workplace gratitude has a mediating influence. Also, the results reported herein

show that job satisfaction could moderate the influences of team error management climate on

workplace gratitude and subsequent OCBs and creativity. We believe these findings could make

contributions to the literature on gratitude as well as management practices. Hopefully, this study

will stimulate future research on workplace gratitude in organizations.

Conflict of interest statement

On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical Approval

The present study was carried out following the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or compare ethics commitment. Our study was conducted with the consent of the ethics committee of Tsinghua University and Renmin University of China.

Informed Consent

The corresponding author is sure that informed consent, written, was obtained from all participants and clearly state it. And written informed consent to participate was obtained from the parents/guardians of the minors included in this study.

Data Availability Statements

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

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Table 1. Descriptive and Correlations for the Study Variables

		M	*SD*	1	2	3	4	5	6	7	8	9	10
Team level													
1.	Team Size	8.73	3.46										
2.	Team Error Management Climate T1	4.92	0.32	-.29**	(.96)								
Individual level													
3.	Age	31.09	5.81	.30**	-.18**								
4.	Sex	0.62	0.49	.01	-.11	.08							
5.	Employee Team Tenure	3.43	3.10	-.10	.84	.38**	-.06						
6.	Company Type	0.18	0.38	-.52**	.38**	-.19**	-.17**	-.07					
7.	Job Satisfaction T1	5.49	1.22	-.09	.16*	-.05	-.10	-.07	-.01	(.94)			
8.	Gratitude at Work T2	4.93	0.82	-.20**	.22**	-.17*	.06	-.13	.14**	.43**	(.96)		
9.	OCB T2	5.77	0.68	-.17*	.18**	-.01	.02	.07	.28**	.06	.13*	(.92)	
10.	Creativity T2	5.49	0.93	-.16*	.24**	-.05	.05	.08	.24**	.03	.12+	.70**	(.96)

Notes: Team Level, *N*= 33; Individual Level, *N*= 229. Sex coded as 1=male, 0=female. Company coded as 1= architectural engineering project management company, 0= architectural design and research institute. Employee Team Tenure is measured in months. Mean values of Cronbach's alpha coefficients are presented in parentheses along the diagonal.

+ $p < .01$.* $p < .05$. ** $p < .01$. (two-tailed)

Table 2. Multilevel Path Analysis Results of the Research Model

	Gratitude at work T2	OCB T2	Creativity T2
Team Level			
Intercept	5.07***	5.19***	4.74***
	(.07)	(.22)	(.30)
Team Size	-.04*	.02	.04
	(.02)	(.03)	(.05)
Team Error Management Climate T1	.52***	.08	.45
	(.15)	(.21)	(.41)
Residual Variances	.00	.24**	.52**
	(.02)	(.08)	(.16)
Individual Level			
Age	-.02*	.01	.02**
	(.01)	(.01)	(.01)
Sex	.05	.10	.17
	(.11)	(.06)	(.09)
Employee Team Tenure	-.03	-.00	.01
	(.02)	(.01)	(.01)
Company Type	-.09	.42*	.49
	(.12)	(.22)	(.37)
Gratitude at Work T2		.10**	.13**
		(.04)	(.05)
Job Satisfaction T1	.10*		
	(.05)		
Residual Variances	.55***	.19***	.32***
	(.05)	(.06)	(.09)
Cross Level			
Team Error Management Climate × Job Satisfaction	-.43***		
	(.12)		
Pseudo *R Squared*	0.14	0.04	0.09

Notes: Team Level, *N*= 33; Individual Level, *N*= 229. Sex coded as 1=male, 0=female. Company coded as 1= architectural engineering project management company, 0= architectural design and research institute. Employee Team Tenure is in measured months. Table entries represent unstandardized estimates with standard errors in parentheses.

* $p < .05$. ** $p < .01$. *** $p < .001$. (two-tailed)

Table 3. Indirect and Conditional Indirect Effects

Relationship	Estimate	95% Confidence Interval	
		LL	UL
Team Error Management Climate → Gratitude at work → OCB			
Indirect effect	.055*	.007	.102
Conditional indirect effect (High Job satisfaction)	.004	-.034	.042
Conditional indirect effect (Low Job satisfaction)	.104*	.020	.187
Difference between two conditional indirect effect	-.099*	-.190	-.009
Team error management climate → Gratitude at work → Creativity			
Indirect effect	.067*	.000	.134
Conditional indirect effect (High Job satisfaction)	.005	-.043	.053
Conditional indirect effect (Low Job satisfaction)	.130*	.018	.241
Difference between two conditional indirect effect	-.124*	-.239	-.009

Notes: Team Level, N= 33; Individual Level, N= 229. Conditional indirect effects are shown with job satisfaction at 1 SD above (high job satisfaction) and below (low job satisfaction) the mean.

* $p < .05$. (two-tailed)

Figure 1. Proposed Theoretical Model

Team Error Management Climate
T1

Team Level

Individual Level

Job Satisfaction
T1

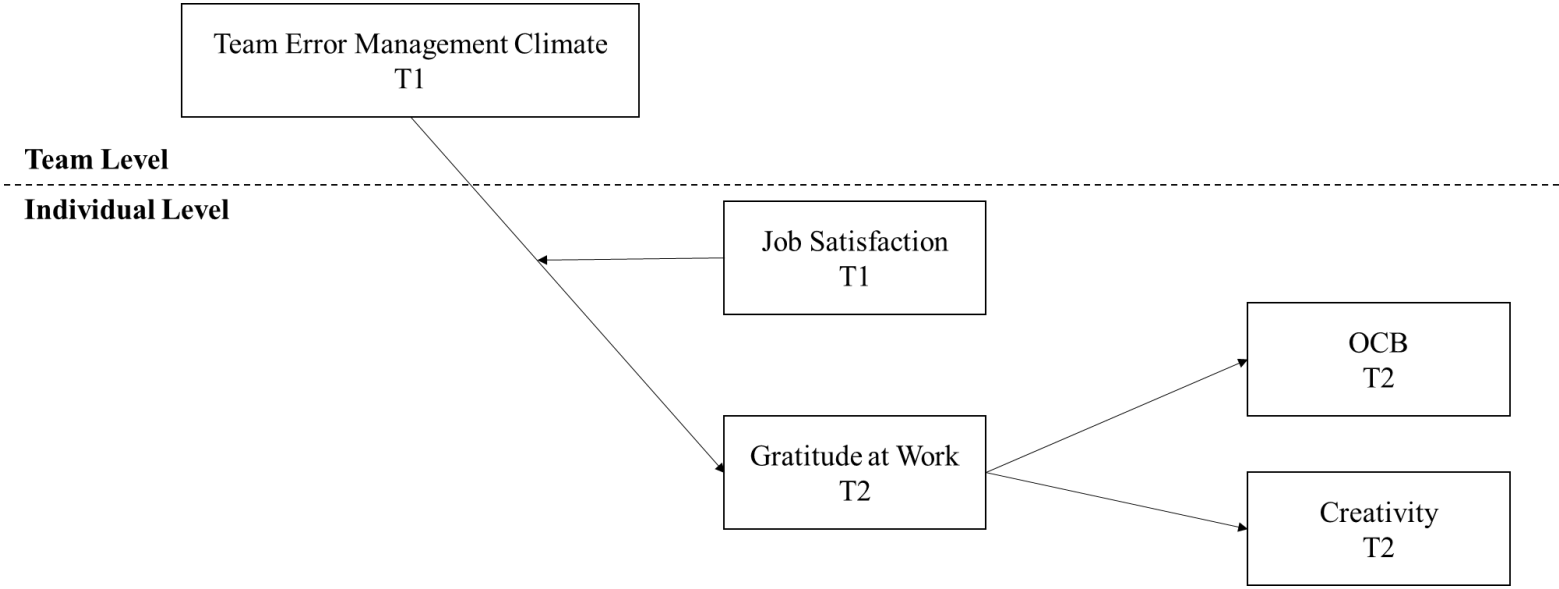Gratitude at Work
T2

OCB
T2

Creativity
T2

Figure 2. The Moderating Effects of Job Satisfaction on The Relationship Between Team Error Management Climate and Gratitude at Work
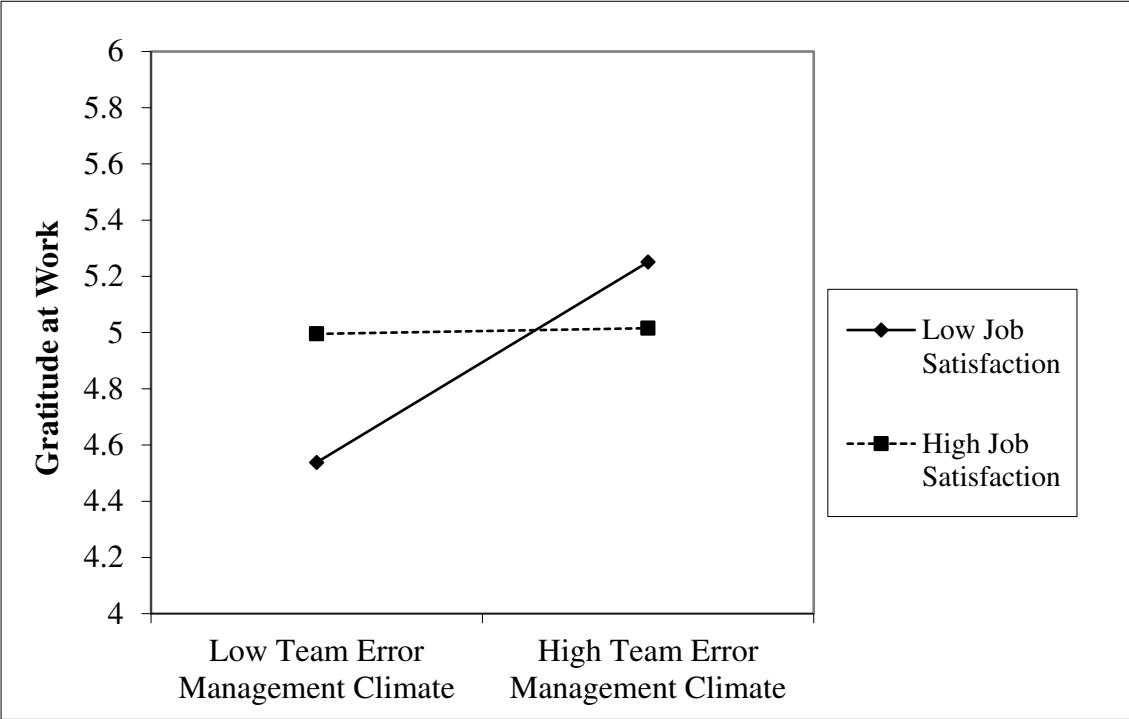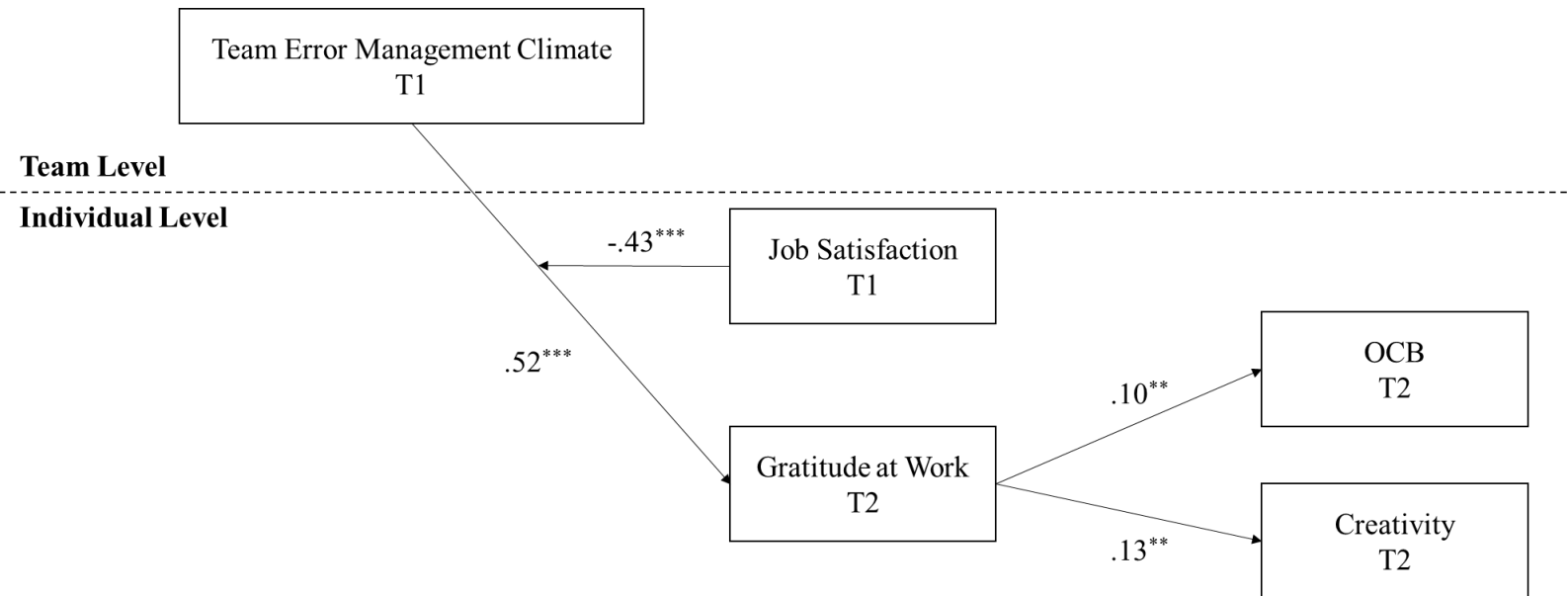
Figure 3. Proposed Theoretical Model (with eigen values)

Notes: Team Level, *N*= 33; Individual Level, *N*= 229. All values are unstandardized estimates. For brevity, the estimates of control variables are not shown in the figure. ** *p* < .01. *** *p* < .001. (two-tailed)