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ORIGINAL PAPER

When Leaders Acknowledge Their Own Errors, Will Employees Follow Suit? A Social Learning Perspective

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Abstract

The literature on error sharing has focused on employees' cost–benefit assessment to predict whether employees will disclose self-made errors. Our study advances this line of research by adopting a different theoretical lens and examining leaders' role in promoting employee error sharing. Drawing primarily upon social learning theory, we expected that when team leaders openly talk about their own errors within teams, through their behavior, they would set an example for team members and encourage members' error sharing with team leaders. Based on a sample of 353 employees within 95 teams, we found a positive link between leader error sharing and team member error sharing; in addition, we found that ethical leadership evaluation partially mediates this positive link. Moreover, we found that leader error sharing was positively related to the team error management climate, which moderated the relationship between ethical leadership evaluation and team member error sharing in such a way that the positive relationship becomes stronger under a higher error management climate. Our findings highlight the critical roles played by leaders in promoting employees' error sharing.

Keywords Error sharing · Ethical leadership · Team error management climate · Social learning theory

Introduction

Errors refer to unintended deviations from pre-specified task goals, rules, and standards that potentially lead to negative outcomes (Frese & Keith, 2015; Hofmann & Frese, 2011; Lei et al., 2016). Errors are common in the workplace, especially in today's business context full of volatility, uncertainty, complexity, and ambiguity (VUCA). Hence, how to respond to and manage errors becomes critical (Carroll et al., 2021). Error management has been regarded as a useful tactic for minimizing the negative consequences of errors (e.g., reputation damage, business losses, customer dissatisfaction, patient mortality, etc.) and maximizing the positive value of errors (e.g., learning from errors, error correction and performance improvement, increased quality and safety) (Dahlin, et al., 2018; Frese & Keith, 2015; Van Dyck et al., 2005). However, if employees choose not to reveal the errors they make to management, effective error management is difficult to achieve (Lei et al., 2016; Zhao & Olivera, 2006). Error sharing refers to "the conscious and voluntary disclosure of self-made errors to others in the organization" (Dahl & Werr, 2021, p. 510) and has been regarded as a crucial preliminary step for effective error management (Carroll et al., 2021; Frese & Keith, 2015; Zhao & Olivera, 2006). Despite the importance of error sharing, our knowledge regarding *why* and *when* employees will engage in error sharing with management is still partial and limited.

Prior research has mainly examined error sharing as a risky behavior that is determined by employees' cost–benefit evaluations (e.g., Lee et al., 2015; Russo et al., 2015; Zhao & Olivera, 2006). We contend that employees' error sharing can also be studied as an ethical behavior. By definition, error sharing is a discretional behavior of employees and involves one's "voluntary" decision to share self-made errors. It is not a part of job responsibility or rule-following activities at the workplace. It refers to situations in which employees have the discretion and can choose not to share if they so desire. When employees choose to disclose self-made errors with management, they are acting honestly and

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authentically, despite the risks of being judged negatively by others and the potential tangible and intangible costs (e.g., image damage, penalties, loss of promotion, or salary raise, etc. [Frese & Keith, 2015; Zhao & Olivera, 2006]). As defined in the ethical behavior literature (Treviño et al., 2006, 2014), being honest is one type of ethical behavior. For example, Treviño et al. (2014) specified honest behavior as "routine ethical behavior that meets the minimum moral standards of society" (p. 637). Moreover, error sharing involves self-sacrifice, suggesting that one has high ethics and moral standards and is willing to risk one's best interest for the good of others, the team, or the organization.

According to the research on ethical behavior in the workplace, studies have consistently shown that employees' ethical behavior can be socially learned or adopted from the immediate work context (see Treviño et al. (2014) for a review). Therefore, we adopt a social learning lens to study employee error sharing. In particular, according to social learning theory (Bandura, 1977a, 1977b, 1986), people learn by observing and copying the values and behaviors of role models in a particular context. Given that team leaders closely work with and exert substantial influence on team members (e.g., team leaders are in charge of assigning organizational resources, guiding and evaluating subordinates' performance, and controlling rewards and penalties [e.g., Liu et al., 2012; Yukl, 2004]), team leaders serve as highly visible and influential role models within teams. Team leaders' words and actions tend to attract team members' attention and lead to mimicking behavior (e.g., Lian et al., 2022; Ogunfowora et al., 2021). Therefore, we focus on team leader error-sharing behavior and propose that, when team leaders openly acknowledge and share information on their self-made errors within teams, they set an example for team members regarding a proper response after error detection, which team members will notice and copy. Therefore, we posit that team members' error-sharing behavior can be socially learned from team leaders when these leaders honestly share their own errors.

Furthermore, based on social learning theory, learning is achieved most effectively when observers evaluate and perceive role models as legitimate and credible (Bandura, 1986). Therefore, we further examine team members' evaluations of team leaders in response to leader error sharing as a key mechanism in the social learning process. In particular, we propose that leader error sharing can promote team members' error sharing via ethical leadership evaluation. Ethical leadership is highly relevant because, in essence, ethical leadership is about being honest and transparent and clearly communicating to one's followers what is regarded as "normatively appropriate conduct" through leader actions (Brown et al., 2005, p. 120). Error sharing by team leaders is an example of a form of behavioral demonstration of what is seen as normatively appropriate behavior following error detection at work. Team members will imitate error sharing by their leaders and engage in error sharing when they consider their leaders to be ethical, wanting to engage in similar ethical behaviors (e.g., Den Hartog, 2015; De Hoogh & Den Hartog, 2008; Mayer et al., 2009).

In addition, team leaders usually set the tone and are the major driving force for creating a team climate (e.g., Kozlowski & Doherty, 1989). We speculate that, when team leaders share their own errors within a team, such behaviors help build the team error management climate, where team members believe that errors are a normal part of work and should be openly communicated, discussed, and analyzed to ensure functional error handling (Van Dyck et al., 2005, 2013). The team error management climate would then work as an important social contextual factor to provide cues for guiding employees' behaviors (Bandura, 1986; Mawritz et al., 2012; Salancik & Pfeffer, 1978). Specifically, the team error management climate serves as an example of "ambient group stimuli" that shapes the behavioral tendencies of team members (Choi et al., 2003, p. 357) and signals to employees that open error communication is expected and endorsed (Van Dyck et al., 2005), enhancing the likelihood of team members' learning of their leaders' error-sharing behavior. Integrating insights from the social information processing theory (Salancik & Pfeffer, 1978), we thus study the team error management climate as a moderator in the link between ethical leadership evaluation and team members' error sharing, as well as in the indirect link between leader error sharing and team member error sharing via ethical leadership evaluation. Our model is summarized in Fig. 1.

Our study makes three major contributions. First, we take a social learning view and examine error sharing as an ethical behavior. This helps us move beyond the cost–benefit framework and not view error sharing only as a risky behavior. In so broadening the focus, this study offers a new theoretical perspective to examine the antecedents of employee error sharing in organizations (Dahl & Werr, 2021; Zhao & Olivera, 2006). In particular, it helps us understand employee error sharing not solely as a decision based on an estimate of potential costs and benefits associated with error disclosure (i.e., employees will reveal errors when they perceive greater benefits than costs [Zhao & Olivera, 2006]) but also as an ethical behavior that can be socially learned from leaders and the work environment.

Second, our study advances the literature on error sharing by answering important questions that until now have remained unaddressed. In an organizational context, it can be risky to share information about self-made errors due to the potential for negative consequences, such as impaired image and reputation, punishment, or termination (e.g., Dahl & Werr, 2021; Zhao, 2011; Zhao & Olivera, 2006). Therefore, it remains unclear, when team leaders openly talk about their own errors, whether team members will emulate such

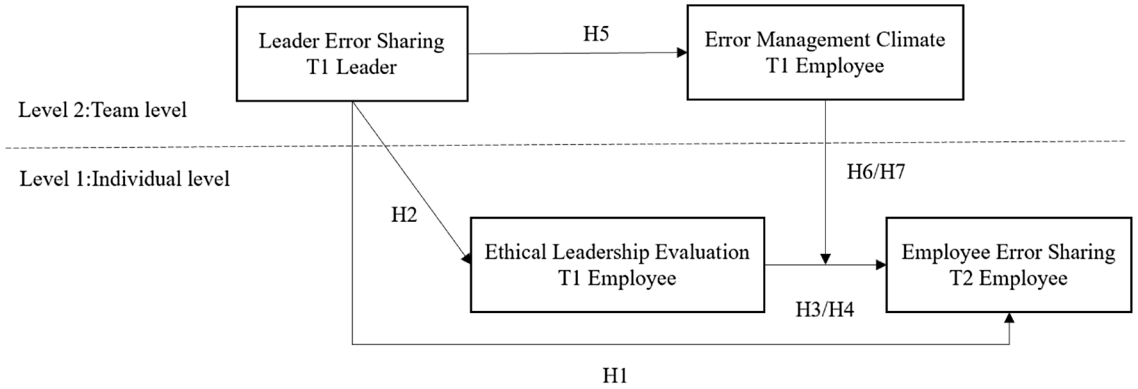

Fig. 1 The hypothesized model

"risky" behavior, although they lack the managerial power and authority to protect themselves from potential risks. Additionally, *why* and *when* does this form of social learning occur? Our theorization and investigation of different ways of relating leader error sharing to employee error sharing will help answer these important questions. In particular, we address the "*why*" question by studying ethical leadership evaluation as the mediator in the link between leader error sharing and employee error sharing. We answer the "*when*" question by examining the team error management climate as a moderator in both the direct and indirect links between leader error sharing and employee error sharing, highlighting the influence of contextual factors in the social learning process.

Third, our study contributes to the ethical leadership literature by revealing a unique antecedent and outcome of ethical leadership. In particular, we integrate the error-sharing literature with ethical leadership research to show how leader error-sharing behavior can enhance employees' perceptions of ethical leadership, which, in turn, promotes employee error sharing, a risky yet functional behavior that facilitates effective error management in the workplace. On the one hand, this study enriches the ethical leadership literature that has primarily focused on leader traits as antecedents (e.g., Banks et al., 2021; Bedi et al., 2016; Mayer et al., 2009), which is less explicit and actionable in promoting ethical leadership; on the other hand, studying employee error sharing as the outcome offers further evidence that ethical leadership can lead to a wider range of favorable outcomes in organizations (e.g., Brown et al., 2005; Den Hartog, 2015; Mayer et al., 2012), highlighting the unique value of ethical leadership.

Theory and Hypothesis Development

A Social Learning Perspective of Employee Error Sharing

Open communication of errors is critical for effective error management, which enables organizations to avoid or minimize negative consequences caused by errors (Carroll et al., 2021; Van Dyck et al., 2005; Zhao & Olivera, 2006). Error sharing is a proactive, discretionary behavior of employees revealing their self-made errors to managers or supervisors (e.g., Emby et al., 2019; Zhao & Olivera, 2006). Although errors are unintentional deviations, different from intentional acts such as violations (Dahlin et al., 2018), errors are still unpleasant and may be taken as an indicator of lack of effort or competence (Frese & Keith, 2015). As errors indicate negative discrepancies between the desired and actual performance, admitting errors at work can be risky for employees (Dahlin et al., 2018; Tavris & Aronson, 2007; Zhao & Olivera, 2006). For instance, revealing errors to team leaders may harm the error sharer's performance ratings, reputation, and career progress (Dahl & Werr, 2021; Zhao & Olivera, 2006). Therefore, error sharing has been studied mostly as a risky behavior that is determined by employees' evaluations of costs and benefits associated with error admission (e.g., Dahl & Werr, 2021; Wang et al., 2020). However, error sharing can also be viewed as an ethical behavior because it involves employees choosing to be honest and

telling the truth, which is consistent with societal ethical/moral norms (Gronewold et al., 2013; Treviño et al., 2006; Wolf & Hughes, 2008). Ethical behavior research shows that employees' ethical behavior can be socially learned and framed by their immediate work environment (e.g., Kohlberg, 1969; Treviño et al., 2006, 2014). For instance, Kohlberg's (1969) work on moral reasoning argued that people look outside themselves for guidance when deciding whether to engage in ethical behaviors. Applying this to the organizational context, Treviño et al. (2014) supported this argument and revealed the powerful influence of other parties (e.g., leaders) on employees' ethical actions in organizations. Therefore, we posit that employees' error-sharing behavior can be socially learned by observing others at work.

Research on social learning and behavioral role modeling has shown that individual behavior is partially driven by observing the behaviors of role models or authority figures and then emulating those behaviors (Bandura, 1986). In organizations, leaders have been shown to play critical and salient roles in affecting employee behavior (Mayer et al., 2009; Yukl, 1998, 2004). Team leaders, in particular, are prime models due to their frequency of interactions with and proximity to employees (MacKenzie et al., 1999; Ogunfowora et al., 2021). Therefore, this study examines employee error sharing by focusing on team leaders as role models for employees. In particular, we examine how team leaders' error sharing, a behavioral response to their own errors, affects team members' error sharing.

We must point out that we examine error sharing as a general behavioral tendency of team leaders and team members, not as their response to a particular error or to a particular type of error. If we focus on whether organizational members disclose a particular error committed, we can get a good record of error sharing they are doing, but little information regarding the occasions when they choose not to share their errors. Studying error sharing as a behavioral tendency, we ask team leaders/members to think about all the errors they typically make at work and how often they share these errors with others within teams. This allows us to capture the *extent* of error sharing relative to error occurrence.

Leader Error Sharing and Team Members Error Sharing

Following the definition of error sharing (Dahl & Werr, 2021), we define leader error sharing as the extent to which leaders openly talk about their self-made errors within the team. Defined as such, leader error sharing involves proactive actions that leaders take to acknowledge the errors they commit at work that result in unintended deviations from desired performance (Frese & Keith, 2015; Ingardi et al., 2021).

According to social learning theory (Bandura, 1977a, 1977b, 1986), people learn by observing and duplicating the behaviors of their role models. In organizational settings, leaders, especially direct supervisors, often serve as such models for determining appropriate behavior, given their position in the hierarchy and substantial social influence on employees (e.g., Bandura, 1986; Ogunfowora et al., 2021; Wo et al., 2015; Yukl, 2004). Accordingly, we argue that when team leaders share errors within the team, they act as targets of identification and emulation for team members, which promotes team members' error sharing. Leaders also play an effective modeling role when they are able to focus team members' attention on a particular message or behavior (Brown et al., 2005). When committing errors at work, team members will read the work environment and look at salient parties such as team leaders for clues about how errors may be received and what they are expected to do about their errors (Dahl & Werr, 2021; Russo et al., 2015; Zhao, 2011). Therefore, when team leaders openly acknowledge self-made errors, team members will notice and register these behaviors (i.e., attention and retention, two primary conditions necessary for successful role modeling [Bandura, 1986]).

Another critical condition for social learning to occur is that learners observe or perceive positive outcomes associated with the modeled behavior (Bandura, 1977a, 1977b, 1986). Within the social context of a particular team, the team leader, by the nature of his/her hierarchical position, has the legitimate power and authority to control rewards and punishments of team members (Mawritz et al., 2012; Yukl, 2004). Therefore, when the team leader admits self-made errors, team members will perceive such behaviors to be recommended, endorsed and rewarded by the team leader (Manz & Sims, 1981; Ogunfowora et al., 2021). Consequently, team members will copy the behavior and follow suit because error sharing is deemed to be associated with positive outcomes by team members. Referring to social learning theory (e.g., Bandura, 1986), we hypothesize that team leaders' error sharing is directly and positively related to team members' error sharing. This argument is consistent with the trick-down model of leadership and supervision. For example, prior research has consistently shown that leaders' behavior in the workplace (e.g., abusive supervision (Liu et al., 2012), ethical leadership (Mayer et al., 2009)) can directly lead to followers' mimicking behavior. When leaders model certain behaviors, even negative behaviors such as abusive supervision, followers tend to perceive that it is safe to emulate them because leaders are regarded as authority figures who determine consequences in the workplace: If leaders are doing it, there might or might not be reward, but no punishment would be expected following such behavior. Integrating the above arguments, we thus hypothesize as follows:

Hypothesis 1 Team leader error sharing is positively related to team member error sharing.

The Mediating Role of Ethical Leadership

Ethical leadership is defined as "the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making" (Brown et al., 2005, p. 120). Errors are an unpleasant part of work and tend to be taken as a form of negative performance feedback (e.g., Frese & Keith, 2015; Lei et al., 2016). It is not natural or easy to share our own errors with others, especially for leaders, as leaders tend to be implicitly associated with infallible prototypes (Hunter et al., 2011; Meindl et al., 1985; Meindl & Ehrlich, 1987). People usually have a romanticized, heroic view of leaders (Giessner & Van Knippenberg, 2008; Meindl et al., 1985); they are supposed to be problem-solvers, not problem-creators. According to the ethical leadership literature, several leader behaviors contribute to such leadership evaluations; among them, leaders' honest or trustworthy behavior has been considered a crucial contributing factor (e.g., Banks et al., 2021; Brown et al., 2005; Den Hartog, 2015). When leaders exhibit a general behavioral tendency to disclose their own errors, especially when they are not required to, they acknowledge their fallibility and choose to be honest and authentic with the team members. Honest behavior is one type of routine, ethical behavior (Treviño et al., 2006, 2014). Such behavior leads to perceptions of leaders being honest and tends to be evaluated by followers as normatively appropriate, which enhances employees' ethical leadership evaluation (Brown & Treviño, 2006; Brown et al., 2005).

Furthermore, while leaders are expected to be honest and genuine about their own errors, admitting errors may lead to negative consequences such as impaired reputation or professional image (e.g., Follmer et al., 2019). For example, prior research has found that awareness of a leader's errors could impair employee perceptions of the leader's effectiveness (Thoroughgood et al., 2013). According to the implicit leadership theories (Meindl et al., 1985; Meindl & Ehrlich, 1987), leaders tend to be implicitly associated with infallible prototypes—errors undermine their hero status and create a perception of incompetence. Therefore, even for leaders, error sharing is a discretional and potentially risky behavior but suggests that the leader is willing to self-sacrifice and risk his/her own best interests for the good of others, the team, or the organization. Employees might well evaluate such leaders of high ethics and moral standards to be ethical. To conclude, we contend that leader error sharing is positively related to ethical leadership evaluation.

Hypothesis 2 Leader error sharing is positively related to team members' ethical leadership evaluation.

Prior research has found a positive relationship between ethical leadership and proactive functional behaviors of employees, such as affiliative (helping) and challenging (initiative) citizenship behavior (e.g., Kalshoven et al., 2013; Piccolo et al., 2010) and whistle-blowing (e.g., Mayer et al., 2013). Referring to this line of research, we posit that ethical leadership evaluation is positively related to employee error sharing. Ethical leaders are perceived to be honest and transparent, and they promote ethical behaviors in the workplace by setting clear expectations about appropriate conduct and ethical expectations (Brown et al., 2005; Treviño et al., 2003). When team leaders are perceived to be ethical, members tend to believe that their leaders value candid and open communications and thus would appreciate their honest error sharing. Consequently, they are more likely to comply with their leaders' expectations to be forthright and transparent, and so engage in error sharing.

Moreover, it can be risky for team members to share information about self-made errors due to the potential for negative consequences, such as impaired image and reputation, punishment, or termination (e.g., Zhao, 2011; Zhao & Olivera, 2006). When team leaders are evaluated to be ethical, members perceive their leaders as trustworthy, caring, and of high integrity (Brown et al., 2005; Ng et al., 2021; Treviño et al., 2003). Therefore, they are less likely to believe that their leaders will penalize them in any sense for being honest by admitting to making mistakes at work.

To summarize, we hypothesize that team members would be more likely to mimic their leaders' error-sharing behavior and engage in error sharing when perceiving ethical leadership.

Hypothesis 3 Ethical leadership evaluation is positively related to team member error sharing.

Combining Hypotheses 2 and 3, we further hypothesize that team leader error sharing promotes team member error sharing via ethical leadership evaluation. Social learning does not occur blindly. Effective role modeling requires attention to not only the behavior being modeled but also the role models (Wood & Bandura, 1989). That is, whether team members imitate a leader's error-sharing behavior when they handle their own errors also depends on team members' evaluation of the leader. When members evaluate the leader as ethical based on error-sharing behavior, such a positive evaluation of the leader would enhance the likelihood of behavioral imitation. In short, we propose that ethical leadership evaluation in response to leader error sharing works as an important mediating mechanism in the link between leader error sharing and team member error

sharing. However, since leader error sharing is also directly related to team member error sharing, we thus propose a partial mediation relationship.

Hypothesis 4 Ethical leadership evaluation partially mediates the relationship between leader error sharing and team member error sharing.

The Moderating Role of Team Error Management Climate

The team error management climate refers to shared perceptions among team members that errors are expected to be openly communicated, shared, quickly detected, and handled within a team (Frese & Keith, 2015; Van Dyck et al., 2005). Research has demonstrated team leaders' crucial role in fostering such a climate (e.g., Edmondson, 1999; Emby et al., 2019). Team leaders serve as a salient role model, setting and promoting social rules and norms regarding appropriate and acceptable behaviors endorsed within teams (Hofmann & Frese, 2011; Van Dyck et al., 2013). Thus, team leaders have been found to play a key role in creating an error management climate that promotes open error communication and learning from errors (e.g., Farnese et al., 2018). In line with prior research, we propose that leader error sharing is positively related to the team error management climate.

Communicating about errors and sharing knowledge about potential error situations are among the most important practices that constitute the error management climate (Frese & Keith, 2015). Team leaders who openly discuss their errors with team members send a clear signal regarding how errors are supposed to be handled within teams. As highly visible role models, team leaders' actions speak louder than their words. Team leaders' walking the talk and openly discussing their own errors promotes candid error communication within teams more effectively than merely talking about the importance of doing so. Team members will notice such signals and fully trust that their team will not punish them for admitting self-made errors (Guchait et al., 2016; Van Dyck et al., 2013). In other words, team members take leader error sharing as a signal suggesting that everyone is supposed to do the same to facilitate effective and timely error handling within the team—acknowledging one's fallibility and treating errors as a normal part of work because errors, if reported and discussed, can lead to improved knowledge and performance (Edmondson, 2012; Emby et al., 2019; Frese & Keith, 2015). Such a positive mindset and practices toward errors directly contribute to building the team error management climate. Following the above logic, we thus hypothesize:

Hypothesis 5 Leader error sharing is positively related to the team error management climate.

Team climate has been studied as a key contextual factor that moderates the relationship between leadership and desired employee attitudes and behaviors (e.g., Ostroff et al., 2012). The most common theoretical account for why team climate moderates the link between leadership and employee behaviors relies on social information processing theory (Salancik & Pfeffer, 1978). This theoretical perspective argues that employees' behavior is largely influenced by the social context, which provides expectations regarding appropriate or acceptable behavior and creates pressure to follow social norms in that particular context.

Following this theoretical perspective, we hypothesize that the team error management climate can strengthen the positive link between ethical leadership and team member error sharing by encouraging members to communicate openly about errors for the purpose of effective error handling. Error sharing is a potentially risky behavior for team members due to the possibility of negative consequences, such as impaired image and punishment (e.g., Edmondson, 1999; Zhao & Olivera, 2006). Different from team leaders, team members do not have the same protection and security warranted by a hierarchical position. Therefore, employees will examine the team context and look for external cues to be sure that it is safe to engage in error sharing. The existence of an error management climate creates a social context within a team that promotes and encourages candid error discussion and communication. In a team with a high error management climate, team members are more likely to appreciate ethical leadership and accept honest error communication as normatively appropriate behavior, which increases the likelihood that members will engage in error sharing. Furthermore, a high team error management climate helps employees accept their fallibility; it would prevent them from viewing errors as a threat to their image or reputation, which would further relieve team members' concerns about the potential for negative consequences of admitting errors at work (Edmondson et al., 2001). Thus, team members who perceive ethical leadership in a team would feel even further encouraged to reveal their own errors without fear of embarrassment and punishment. In contrast, the above relationship is expected to be attenuated when sharing errors or near misses are not endorsed in a team. Thus, we hypothesize the following:

Hypothesis 6 The team error management climate moderates the relationship between ethical leadership evaluation and team member error sharing such that, when the team error management climate is high, the positive relationship between ethical leadership evaluation and team member error sharing is enhanced compared with a climate of low team error management.

According to social learning theory and social information processing theory, the social learning and copying of leaders' behavior is further validated when the social context supports and confirms leaders' behavior as normatively appropriate (Mawritz et al., 2012; Salancik & Pfeffer, 1978; Wood & Bandura, 1989). Social learning theory posits that people learn by observing the behaviors of others and the outcomes of those behaviors (Bandura, 1986). Compared with low team error management climate, high team error management climate makes it more likely that team members perceive functional error handling, such as honest error communication, as endorsed behavior within the team and, therefore, are more likely to expect positive outcomes of error sharing (Emby et al., 2019). Consequently, social learning is more likely to occur; team members are more likely to learn from ethical leaders and follow what the leaders are doing because team members associate error sharing with positive outcomes. Therefore, we propose that the team error management climate moderates the indirect relationship between leader error sharing and team member error sharing via ethical leadership evaluation.

Hypothesis 7 The team error management climate moderates the positive indirect relationship between leader error sharing and team member error sharing via the role of ethical leadership, such that when the team error management climate is high, the positive indirect relationship between leader error sharing and team member error sharing is enhanced compared with that of the low condition.

Method

Sample and Procedures

With the consent and support from the CEO, we collected the data from teams of designers at an architectural design company in East China. All the designers worked in teams with a formally designated leader. Before formal data collection, we did preliminary interviews with the HR department and employee participants; we asked them whether there was a formal error-reporting system in the company and what types of errors employees usually made during their daily work activities. We were informed by the HR department that there was no formal error-reporting system but an incident reporting system. Employees were required to report incidents via a formal, structured system that had clear guidance regarding *how* and *what* to report. For instance, when incidents happened, employees were expected to submit a formal incident report, and then both the employee and the direct supervisor needed to sign the incident report before submitting it to the upper management. Errors differ from incidents in that errors, if corrected in time, will not lead to incidents. Incidents typically involve negative consequences and substantial costs caused by errors (e.g., financial loss, injuries, etc. [Hofmann & Frese, 2011]). Also, the error sharing we examine in this study differs from formal error reporting because error sharing includes both formal and informal error communication, when employees choose to inform their direct supervisors informally about self-made errors (Dahl & Werr, 2021). Therefore, the error sharing we focus on includes but goes beyond what the company's formal error-reporting system expects employees to do. During these interviews we explained our error definition and offered examples before asking participants what errors they typically made at work. The types of errors employees shared with us are consistent with our conceptualization of errors. Examples offered include errors such as that an architectural design turned out to block daylight and that the color chosen did not match the color theme. Findings from these preliminary interviews confirm that errors were quite common in this sample.

For formal data collection, the human resource manager assisted us in distributing the study announcement, an invitation letter soliciting voluntary participation, and the hard copy questionnaire. One hundred and five teams agreed to voluntary participation. Before participants started working on the questionnaire, we assured them of the confidentiality of the data and that no one inside the company would be able to access their responses. To avoid any confusion, in addition to clearly defining errors in the instructions included at the beginning of our survey, we also offered quick examples of errors one commonly made at work, such as errors when one fails to execute tasks by following the appropriate technical requirements (Ramanujam & Goodman, 2003). After offering these examples, we asked participants to respond to survey questions about errors and error-sharing experiences. We had a research assistant on site to collect all the responses sealed in an envelope to protect data confidentiality. We collected data in two waves. At Time 1, we collected leader error-sharing data from the team leaders and ethical leadership evaluation and the team error management climate from team members. Six weeks later, at Time 2, we collected data on error sharing from team members. We matched team leader and team members' data by referring to their employee ID.

We received responses from 100 out of 105 teams that volunteered to participate (response rate for teams = 95.24%).[1] Consistent with prior work (e.g., Peng et al., 2019), we included only teams where at least 50% of the members responded to the two-wave questionnaire survey. Thus, our final sample included 353 member respondents from 95 teams. All of these teams consisted of a leader

[1] Five teams failed to return their responses due to business travel during the on-site data collection.

respondent and three or more team member respondents (average team member response rate = 66.56%). In the member sample, 71.95% were male; their average age was 39.64 years (*SD* = 9.94), and the average tenure with the current organization was 7.28 years (*SD* = 6.71). In the leader sample, 78.18% were male, the average age was 44.63 years (*SD* = 8.01), and the average organizational tenure was 14.05 years (*SD* = 9.11).

Measures

We followed Brislin's (1980) translation/back-translation procedure to translate the measures from English to Chinese. Ethical leadership was measured by using a five-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*), and the team error management climate was measured by using a seven-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). For leader and team member error sharing, we used a seven-point Likert-type scale (0 = *none of the errors*, 6 = *all of the errors*).

Leader Error Sharing[2]

We used five items to measure leader error sharing by integrating insights from the literature on self-disclosure and error reporting. In particular, we modified three items from the self-disclosure scale to focus on workplace errors (Goldberg et al., 2006). These three items were "I disclose my errors to my team," "I was open to my team about my errors," and "I share my errors with my team." We adopted and modified two items of the error-reporting scale (Gronewold et al., 2013; Van Dyck et al., 2013). These two items were "I communicate my errors with my team" and "I talk with my team about my errors." The reliability for this scale was .91.[3]

Ethical Leadership

We assessed ethical leadership behavior using the 10-item Ethical Leadership Scale (ELS) developed by Brown et al. (2005). Employees were asked to evaluate their team leaders with items such as "[My team leader] has the best interests of employees in mind," "[My team leader] makes fair and balanced decisions," "[My team leader] disciplines employees who violate ethical standards," and "[My team leader] defines success not just by results but also the way that they are obtained." The reliability for this scale was .95.

Team Error Management Climate

We used seventeen items from Van Dyck et al. (2005) to measure the team error management climate. Sample items were "For our team, errors are very useful for improving the work process" and "After an error has occurred, it is analyzed thoroughly." The reliability for this scale at the individual level was .96, $awg_{median} = .80$ and $awg_{mean} = .69$,[4] supporting data aggregation to the team level ($awg \geq .70$ indicating acceptable agreement, and values between .60 and .69 indicating reasonable agreement [Brown & Hauenstein, 2005]). Additional support for aggregating the individual responses regarding error management perception to the team level was provided by intraclass correlation coefficients (ICC [Bliese, 2000]), as ICC (1) = 0.11 and ICC (2) = 0.31. Although ICC (1) met the basic requirement for aggregation (LeBreton & Senter, 2008), ICC (2) value was a bit lower than Glick's (1985) recommended minimum of .60. Since both homogeneity statistics were not significant, the ICC (2) value suggested homogeneity only in a restricted sense. Thus, we further performed the one-way analysis of variance (ANOVA) to show the between-group variance (Naveh et al., 2015). Results showed that there were significant differences in team psychological safety across teams (F (94, 258) = 2.45, $p < .01$).

Team Member Error Sharing

Similar to leader error sharing, we used five items to measure team member error sharing with the team leader. Sample items were "I disclose my errors to my team leader" and "I

[2] We defined error sharing as one's general behavioral tendency, which captures the extent of error sharing relative to actual error occurrence. Therefore, self-evaluation is more accurate than others' evaluation, as others may notice only the frequency of error-sharing behavior while not being able to tell the extent of error sharing relative to actual error occurrence.

[3] Before collecting the data, we asked four experts (two professors and two junior faculties in I-O psychology) to evaluate whether the five items could capture leader error-sharing behavior well. The rwg_5 was .94, indicating that this five-item scale captures well the structure that is expected to be captured. We collected an independent sample to test the item validity for this scale. One hundred and fifty supervisors from a manufacturing company participated in this preliminary test. On average, the participants were 42.56 years old (*SD* = 6.05) and had worked in the organization for 19.2 years (*SD* = 7.90); among them, 52% were female. EFA results showed that leader error sharing explained 67.88% of the total variance with factor loadings greater than .63. Reliability for this scale was .88.

[4] Since *rwg* has several limitations (e.g., high dependence on the number of scale anchors, high dependence on the sample size, and valid null distribution assumption [see LeBretion & Senter, 2008]), we thus applied *awg* indices. We also calculated *rwg* indices: $rwg_{mean} = .93$, and $rwg_{median} = .98$, which also supported data aggregation to the team level.

communicate with my team leader about my errors."[5] The reliability for this scale was .92.

Controls[6]

Following the recommended practice of control variable inclusion (Becker, 2005; Bernerth & Aguinis, 2016), when the outcome variable was team member error sharing, at the individual level we controlled for team members' age, gender, organizational tenure, their error severity, and conscientiousness personality; at the team level, we controlled for team size and team psychological safety. We controlled for age and gender because both variables have been suggested to affect an individual's learning from others' ethical behavior (e.g., Kish-Gephart et al., 2010; Schminke et al., 2003). Organizational tenure was controlled, as it has been proposed to affect how employees evaluate and react to their errors (Kim et al., 2014). Team members' error severity was controlled, as it has been suggested as one important error attribute affecting error communication (e.g., Homsma et al., 2009; Horvath et al., 2021; Keith et al., 2020). Team members' conscientiousness personality was controlled because highly conscientious individuals are more likely to engage in error sharing when they perceive their leaders as ethical (Zhao & Olivera, 2006). At the team level, team size was controlled, as it may influence interaction dynamics within teams (Li & Hambrick, 2005), while team psychological safety was controlled because it has been identified as a crucial contextual factor encouraging error sharing (Edmondson, 1999; Lei et al., 2016). When treating team ethical leadership evaluation as the outcome variable, we controlled for employees age, gender, tenure in the organization, and leader-member exchange (LMX) at the individual level and team size and leader error severity at the team level. LMX was controlled because employees with high LMX may evaluate their leaders as more ethical when they notice the leaders' error sharing behavior (Graen & Uhl-Bien, 1995). When treating team error management climate as the outcome, we only controlled for team size and team leader error severity as team error management climate is only exist at the team level.

Age was measured by the year 2022 minus the birth year; gender was coded as a dummy variable with *0* = female and *1* = male; organizational tenure was also measured with the actual year employees worked in the current organization. Team psychological safety was measured using the seven-item scale from Edmondson (1999), and members were asked to report their perceived team psychological safety, which were aggregated to the team level to represent the team psychological safety climate. A sample item was "If I make a mistake on this team, it is often held against me." The reliability of this scale at the individual level was .78, $awg_{\text{median}} = .75$ and $awg_{\text{mean}} = .68$,[7] supporting data aggregation to the team level. Error severity was measured with six items adopted from Horvath et al. (2021) and Keith et al. (2020). Team leaders and team members were asked to evaluate error severity with the following items: "The errors would impede my performance goal achievement," "The errors would impede the team's performance goal achievement," "The errors would impede the organizations' performance goal achievement," "The errors would bring organizational financial costs," "The errors would harm the organization's reputation," and "The errors would impair our organizations' overall goal attainment" (1 = *none of the errors*; 7 = *all of the errors*). The reliability was .96 for team leader and .93 for team member. The conscientiousness personality was measured at Time 1 using 6 items from Shi et al. (2009). Sample items were "organized," "punctual," and "ambitious." The reliability for this scale was .87. LMX was measured at Time 2 with 7 items from Graen and Uhl-Bien (1995). A sample item for this scale was "I feel my team leader is satisfied with what I do." The reliability for this scale was .83.

Analytical Strategy

Because the data had a nested structure (members nested in teams), we tested our model with multilevel modeling using *Mplus* 8.4 to test all hypotheses (Muthén & Muthén, 1998–2017). Because we hypothesized effects of team-level variables (i.e., leader error-sharing behavior) on individual-level outcomes (i.e., team member error sharing and ethical leadership evaluation; Hypothesis 1 and 2), we thus decomposed ethical leadership evaluation at both the individual and the team levels to achieve analysis of variance at the

[5] Similar to the leader error-sharing scale, we did pretests to be sure about the scale validity of team member error sharing. The same four experts were asked to indicate whether the five items could well capture team members' error-sharing behavior. Rwg_5 was .97, indicating high agreement and suggesting that the five-item scale can well capture team members' error-sharing behavior. An independent sample for team member error-sharing scale was collected to do the EFA. Data were collected from a sample of 512 frontline employees (a 93.10% response rate) from different industries (16.60% from medical, 32.42% from service, and 50.98% from manufacturing). On average, the participants were 35.21 years old ($SD = 9.38$) and had worked in the current organizations for 2.44 years ($SD = 1.59$); among them, 36.35% were female. The EFA results showed that error sharing explained 69.37% of the total variance with factor loadings greater than .75. The reliability for this scale was .88.

[6] We also checked the robustness of our findings by removing all the controls. Results stayed virtually the same. Detailed results are available at https://osf.io/6jrhx/?view_only=b25991e2345943cdb22be112abf6e4e8.

[7] We calculated *rwg* indices for team psychological safety: $rwg_{\text{mean}} = .83$, and $rwg_{\text{median}} = .93$, which also supported data aggregation to the team level.

same level. This also allowed us to analyze the relationship between ethical leadership evaluation and team member error sharing (Hypothesis 3). Because Hypothesis 5 focuses on the relationship between leader error sharing and the team error management climate, which are at the same level, we thus only performed the analysis at the team level. Finally, Hypothesis 6 and 7 consist of the cross-level moderation effects; thus, we specified the individual-level relationship between team member error-sharing behavior and ethical leadership evaluation as a random slope and let this random slope regress on team-level error management climate. We used the "cluster" and "TYPE = Two-level random" commands to test our cross-level moderation effects (e.g., Preacher et al., 2010). To obtain accurate tests of the indirect effects and the moderated mediation in multilevel analyses (Hypothesis 4 and 7), we applied the Monte Carlo resampling method in *R* [http://quantpsy.org (see Selig & Preacher, 2008)]. Monte Carlo can attain accuracy, especially in computing confidence intervals (CIs) based only on a single sample of data (Bauer et al., 2006). Using the information from the asymptotic covariance and matrix-estimated model coefficients, this method repeatedly simulates indirect effects to obtain a distribution of the indirect effects. We tested indirect effects with 20,000 Monte Carlo repetitions at 95% CIs. Moreover, when testing the conditional indirect effect hypotheses, we tested the indirect effects of leader error sharing on team member error sharing through ethical leadership evaluation at one standard deviation above (+ 1 *SD*) and below (− 1 *SD*) the mean of the team-level error management climate. Analysis codes are available at https://osf.io/6jrhx/?view_only=b25991e2345943cdb22be112abf6e4e8.

Results

Preliminary Analysis

We conducted a multilevel confirmatory factor analysis (MCFA) to examine the discriminant validity of our model focal variables (team leader/team member error sharing, ethical leadership, and team error management climate). To achieve an optimal ratio of the sample size to the number of estimated parameters, we followed previous research (e.g., Li et al., 2021; Lin et al., 2021; Qin et al., 2020) by randomly combining scale items into three parcels for each variable with more than three items (Landis et al., 2000; Little et al., 2002). We examined the MCFA by loading items and parcels on their assigned latent variables at the individual and team levels (leader error sharing was loaded only at the team level). The MCFA results revealed that our model demonstrated good fit to the data, χ^2 ($df = 72$, $N = 353$) = 118.24, $p < .001$, CFI (comparative fit index) = .98, TLI (Tucker-Lewis Index) = .97, RMSEA (root mean square error of approximation) = .043.[8]

We conducted a series of null (i.e., intercept-only) model testing for the dependent variables in our hypothesized model (ethical leadership evaluation and team member error sharing) to examine the variance components. These null models demonstrated substantial individual and team-level variance in our model variables (ethical leadership evaluation: 53% at the individual level and 47% at the team level; team member error sharing: 80% at the individual level and 20% at the team level), which justifies our multilevel modeling approach.

Table 1 presents descriptive statistics and correlations for the variables. At the individual level, ethical leadership evaluation was positively correlated with team member error sharing ($r = .31$, $p < .001$). At the team level, leader error sharing was positively correlated with ethical leadership evaluation ($r = .58$, $p < .001$) and the team error management climate ($r = .36$, $p < .001$).

Hypothesis Testing

The unstandardized results of multilevel path modeling are presented in Table 2. As Table 2 shows, leader error sharing was positively related to team member error sharing ($b = .13$, $se = .05$, $p = .017$), supporting Hypothesis 1; leader error sharing was also positively related to ethical leadership evaluation ($b = .31$, $se = .05$, $p < .001$), which supported Hypothesis 2. Ethical leadership evaluation was positively related to team member error sharing ($b = .30$, $se = .14$, $p = .030$), which supported Hypothesis 3.

Hypothesis 4 predicted that leader error reporting would have an indirect effect on team member error sharing via the role of ethical leadership evaluation. As presented in Table 3, this indirect effect was positive and significant (*indirect effect* = .09, 95% CI [.083, .19]). The change in the coefficient of leader error sharing on team member error sharing was significant before ($b = .19$, $se = .05$, $p < .001$) and after entering ethical leadership evaluation ($b = .13$, $se = 0.05$, $p = .017$); when the mediator (i.e., ethical leadership evaluation) was added to the model, the direct link between leader error sharing and team member error sharing was significant, and we thus conclude a partial mediation

[8] We specified a comparison model in which error management climate and ethical leadership were combined (χ^2(df = [77] = 605.73, CFI = .76. TLI = .69, RMSEA = 0.14; $\Delta\chi^2\Delta$df = 5[= 487.49, p < .001], a comparison model in which ethical leadership and employee error sharing were combined (χ^2[df = 77] = 8 94.32, CFI = 0.63. TLI = .51, RMSEA = .17; $\Delta\chi^2$ [Δdf = 5] = 776.08, p < .001), and a comparison model in which error management climate and employee error sharing were combined (χ^2[df = 77] = 653.47, CFI = .74. TLI = .66, RMSEA = .15; $\Delta\chi^2$[Δdf = 5] = 535.23, p < .001). The above models fit significantly worse than our hypothesized model.

effect (MacKinnon et al., 2002; Wood et al., 2008). Hence, Hypothesis 4 was supported.

In Hypothesis 5, we hypothesized that leader error sharing was positively related to the team error management climate. As shown in Table 2, this effect was positive and significant ($b = .16$, $se = .05$, $p = .001$). Thus, Hypothesis 5 was supported.

Hypothesis 6 predicted a cross-level moderation effect of the team error management climate on the relationship between ethical leadership evaluation and team member error sharing, such that this relationship would be stronger for teams with a high team error management climate. Table 2 shows that the cross-level interaction between ethical leadership evaluation and the team error management climate was positive and significant in predicting team member error sharing ($b = .42$, $se = .22$, $p = .054$). We plotted the interaction in Fig. 2 at one *SD* above and below the mean of the team error management climate. Simple slopes revealed that the relationship between ethical leadership evaluation and team member error sharing was positive and significant when the team error management climate was high ($b = .53$, $se = .16$, $p = .001$) and was insignificant when the team error management climate was low ($b = .07$, $se = .20$, $p = .741$). The difference between the high and low condition was .46 ($se = .24$, $p = .054$). Therefore, Hypothesis 6 was only significant at $p < .10$.

Hypothesis 7 predicted that the positive indirect effect of leader error sharing on team member error sharing via ethical leadership evaluation would be stronger for teams with a high error management climate. As shown in Table 3, for teams with a high error management climate, the indirect effect of leader error sharing on team member error sharing via ethical leadership evaluation was positive and significant (*indirect effect* = .16, 95% CI [.0578, .2996]). For teams with a low error management climate, this indirect effect was insignificant (*indirect effect* = .02, 95% CI [− .1013, .1313]). The difference between these two indirect effects was significant (*indirect effect* = 0.14, 95% CI [.0024, .3243]). Therefore, Hypothesis 7 was supported. We depicted all the results in Fig. 3.

Discussion

As a critical step of effective error management, employees' error sharing enables error detection, making it possible for valuable lessons to be learned from errors at the individual, team, and organization levels. Despite its importance, error sharing remains relatively understudied in management literature. The extant research views error sharing as risky behavior and thus has relied on a cost–benefit framework to predict whether employees engage in error sharing (Dahl & Werr, 2021; Russo et al., 2015; Zhao & Olivera, 2006). We posit that error reporting is also a type of ethical behavior and take a new theoretical perspective (i.e., social learning theory) to examine the effects of team leader error sharing on team member error sharing. Integrating insights from social learning theory and the literature on error management and ethical leadership, we have theorized and tested direct and indirect ways leader error sharing relates to team member error sharing as well as the moderating role of the team error management climate. Next, we will discuss the theoretical and practical implications of this study.

Theoretical Implications

Findings from this study advance the relevant research in several aspects. First and foremost, our study contributes a new theoretical perspective to the error-sharing literature. Empirical research on error sharing is still limited, and most prior work has relied on cost–benefit assessment to predict employee error sharing. Focusing on the ethical component of error sharing, this study has applied the social learning perspective to show why employees may engage in error sharing. Our findings—that leader error sharing is both directly and indirectly related to employee error sharing—confirm the relevance of social learning theory in studying employee error sharing. The social learning perspective advances research on error sharing by highlighting the critical modeling role played by leaders: Both the behavior modeled (leader error sharing) and the evaluation of the role model (ethical leadership evaluation) play a critical role in this social learning process.

Second, the examination of the team error management climate as a moderator in this study advances our understanding of *when* and *why* employees might or might not follow suit in emulating leaders in error sharing. In particular, the finding that ethical leadership was not positively related to employee error sharing when the team error management climate was low sheds light on this aspect. Social learning would not occur for error sharing when the team error management climate is low, even though employees might perceive their team leader as an ethical leader. This is understandable because a low team error management climate elicits employees' solid concerns about the potential for negative consequences of admitting and disclosing errors in a team (e.g., Edmondson, 1999). Team leaders might openly talk about their errors within the team even when the team error management climate is low because their position in the hierarchy offers them protection and security, which is not accessible to rank-and-file employees. In other words, although an ethical leader might set examples for open error communication, employees might not follow suit in doing the same because they do not have the same managerial power or authority to protect themselves from being excluded or punished.

Table 1 Descriptive statistics and correlations between study variables

Variables	Mean	Within SD	Between SD	1	2	3	4	5	6	7	8	9	10	11	12	13
Individual level																
1. Age	39.64	9.94	6.09	–	− 0.07	0.52**	00.11	0.14	0.22*	− 0.21*	− 0.09	0.07	0.15	0.10	0.11	0.03
2. Gender	0.72	0.45	0.35	− 0.03	–	− 0.20	0.10	− 0.13	0.26*	0.03	− 0.27**	0.07	− 0.08	0.001	− 0.05	− 0.09
3. Organizational tenure	7.28	6.71	4.56	0.46**	− 0.14*	–	0.10	0.18	0.09	− 0.03	0.03	0.11	0.03	− 0.02	0.06	0.01
4. Conscientiousness personality	5.46	1.00	0.64	0.05	0.03	0.06	(0.87)	0.17	− 0.01	0.17	0.12	− 0.06	− 0.09	− 0.08	0.20	− 0.23*
5. Leader− member exchange	5.42	0.90	0.62	0.08	− 0.05	0.09	− 0.001	(0.83)	− 0.17	0.04	0.05	0.13	0.18	0.11	− 0.03	0.04
6. Employee error severity	4.52	1.20	0.80	0.18**	0.20**	0.12*	− 0.09	− 0.03	(0.93)	0.07	0.03	0.04	0.25*	− 0.04	0.10	− 0.14
7. Psychological safety	4.64	0.91	0.53	− 0.08	− 0.07	0.02	0.12*	0.05	0.10	(0.78)	0.50**	0.20	0.45**	0.13	0.002	0.09
8. Error management climate	5.24	0.96	0.56	− 0.11*	− 0.23**	− 0.02	0.08	− 0.01	0.03	0.47**	(0.96)	0.32**	0.43**	0.01	0.02	0.36**
9. Ethical leadership evaluation	3.64	0.84	0.68	0.02	− 0.03	0.003	− 0.003	0.06	0.10	0.27**	0.23**	(0.95)	0.40**	0.12	− 0.10	0.58**
10. Employee error sharing	4.17	1.22	0.78	0.01	− 0.12*	0.03	− 0.08	0.09	0.22**	0.40**	0.40**	0.31**	(0.92)	0.20	0.01	0.39**
Team level																
11. Team size	3.72		0.78												− 0.06	0.03
12. Leader error severity	4.51		1.44												(0.96)	− 0.03
13. Leader error sharing	3.73		1.28													(0.91)

Correlations below the diagonal are within-level correlations and correlations above the diagonal are between-level correlations

Level 1 $N=353$, Level 2 $N=95$

*$p<0.05$. **$p<0.01$

Table 2 Unstandardized results of multilevel path modeling

Variable	Ethical leadership evaluation			Error management climate			Employee error sharing		
	Estimate	SE	*p*	Estimate	SE	*p*	Estimate	SE	*p*
Intercept	0.00	0.00	0.644	0.01	0.05	0.492	4.14**	0.06	< 0.001
Individual-level effects									
Age	0.001	0.01	0.854				− 0.02*	0.01	0.017
Gender	− 0.24†	0.14	0.093				− 0.55**	0.20	0.008
Organizational tenure	− 0.01	0.01	0.223				0.01	0.02	0.323
Leader-member exchange	− 0.02	0.06	0.694						
Conscientiousness personality							− 0.03	0.09	0.789
Employee error severity							0.18	0.11	0.110
Ethical leadership evaluation (EL)							0.30*	0.14	0.030
Residual variance	0.27**	0.04	< 0.001				0.87**	0.14	< 0.001
Team-level effects									
Team size	0.08	0.06	0.189	0.002	0.08	0.983	0.13†	0.07	0.053
Leader error severity	− 0.04	0.03	0.293	0.01	0.04	0.743			
Leader error sharing	0.31**	0.05	< 0.001	0.16**	0.05	0.001	0.13*	0.05	0.017
Ethical leadership evaluation_mean							0.19	0.15	0.206
Team psychological safety							0.44**	0.16	0.006
Team error management climate (EM)							0.22	0.14	0.120
Residual variance	0.30**	0.05	< 0.001	0.27**	0.04	< 0.001	0.14*	0.07	0.030
Cross-level interactions									
EL × EM							0.42†	0.22	0.054
Residual variance of random slopes							0.36**	0.12	0.002
Pseudo-R^2	24%			15%				56%	

Level 1 $N = 353$ Level 2 $N = 95$

†$p < 0.10$. *$p < 0.05$. **$p < 0.01$

Third, our study also enriches the ethical leadership literature by revealing a new behavioral antecedent and outcome of ethical leadership. The finding that leader error sharing is directly and positively related to ethical leadership will open up a potentially fruitful avenue for ethical leadership research, which has thus far mainly focused on leader traits as antecedents (e.g., Banks et al., 2021; Bedi et al., 2016; Kalshoven et al., 2011). Our findings also confirm the social learning view of ethical leadership by showing how leader error sharing can stimulate employee error sharing through the enhanced perception of ethical leadership. This finding also highlights the fact that, in addition to the typical positive outcomes examined in the ethical leadership literature (e.g., Brown et al., 2005; Mayer et al., 2009), there may be a wider range of favorable outcomes to examine, such as employee error sharing, reminding us of the importance and value of ethical leadership in organizations.

Finally, our findings contribute to the error management literature by revealing leader error sharing as a critical antecedent of the team error management climate. Prior research on the error management climate has consistently shown its value (e.g., promoting learning from errors [Frese & Keith, 2015]). However, limited work has been done to examine factors that contribute to the formation of the team error management climate. Our findings that leader error sharing can be positively related to the error management climate fill this gap. To promote effective and functional error handling, leaders need to "walk the talk" and "practice what they preach" (Guchait et al., 2016; Van Dyck et al., 2013).

Practical Implications

Our findings also have important implications for practitioners. By highlighting the role of leaders in setting role models for employees to mimic to honestly communicate about errors, leaders and managers alike can learn the most important actions to take to promote honest communication of errors so that negative consequences of errors can be minimized, while simultaneously making it possible for valuable lessons to be learned from these negative events. Doing so will also help leaders effectively address the call for increased transparency in business practices.

Leaders and managers can also reap useful insights from this study to help them build a strong error management climate in teams and organizations. Extant error management research has suggested that an environment and mindset that

Table 3 Results of mediation and moderated mediation tests

Indirect effect	Mediation	Moderated mediation		
	95% for the indirect effect	95% CI for the indirect effect at high error management climate	95% CI for the indirect effect at low error management climate	95% CI of the difference between indirect effects at high and low error management climate
Leader error sharing → Ethical leadership evaluation → Employee error sharing	0.09 [0.0083, 0.19]	0.16 [0.0578, 0.2996]	0.02 [− 0.1013, .1313]	0.14 [0.0024, 0.3243]

Level 1 $N = 353$ Level 2 $N = 95$

accepts errors as a normal part of work facilitates effective handling of and learning from errors. However, little work has been done to inform managerial practices regarding what managers can do to foster such norms and practices. Our findings reveal that leaders can not only work as role models but also directly contribute to building the team error management climate when they share information about their task errors within the team. They encourage functional and constructive error handling and management by sending clear signals about what responses are expected of employees after error commission.

For human resource management practices, our work also suggests the importance of leader training and development for promoting employees' ethical behaviors such as error sharing as well as for creating and sustaining an error management climate in the workplace. Hence, organizations, especially those in high-risk industries where high-reliability organizations are expected (e.g., medical and health care, oil and gas and petrochemical operations; e.g., Cowley et al., 2021), should set up leadership training and development programs to educate leaders about the importance of open error communication.

Limitations and Future Directions

Given that our data were collected from one company in China, the generalizability of our findings to different industries and counties remains an issue to be addressed by future research. Additionally, our study focuses on leader error sharing as the modeling behavior for employees to follow and does not examine when and why leaders are willing to share their errors. For instance, although leaders might commit errors at work, they might not choose to proactively share their errors with anyone within the team/organization due to various factors, such as worrying about their own image and reputation. The cost–benefit framework proposed by Zhao and Olivera (2006) can also be used to explain leader error sharing, especially when examining leader error sharing as a response to a particular error or a particular type of error (e.g., severe versus minor errors). That being said, we believe that exploring the antecedents of leader error sharing is a promising direction for future research, as these antecedents might be unique and differ from those for employee error sharing.

Using a social learning perspective to examine error sharing as an ethical behavior in organizations, we have proposed that ethical leadership evaluation would enhance employee error sharing. In addition to ethical leadership, leader error sharing might lead to other positive leader evaluations, which could reveal different ways leader error sharing relates to employee error sharing. For instance, Dimitrova and Van Hooft (2021) found that leader warmth and competence evaluations may work as the mechanism

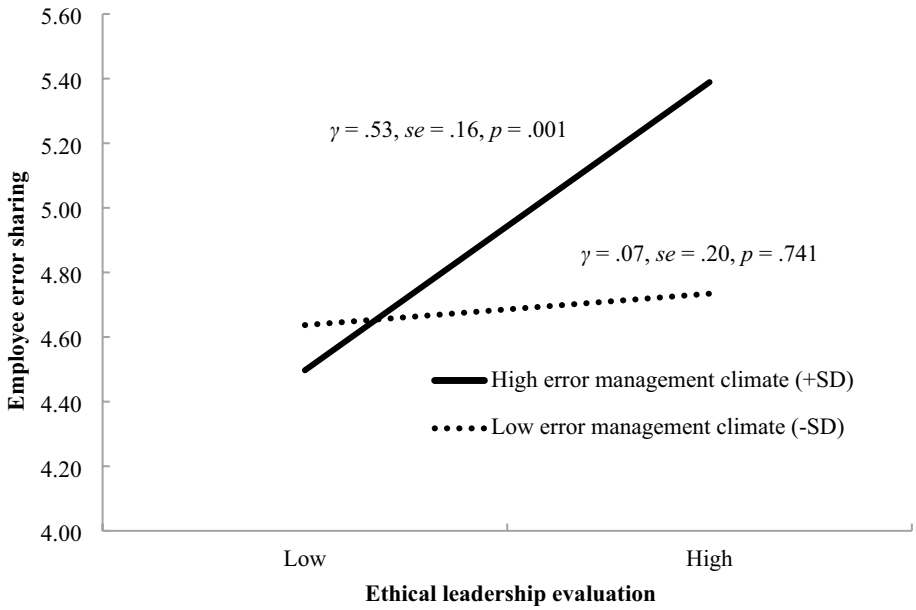

Fig. 2 Cross-level moderating effect of team error management climate on the relationship between ethical leadership evaluation and employee error sharing

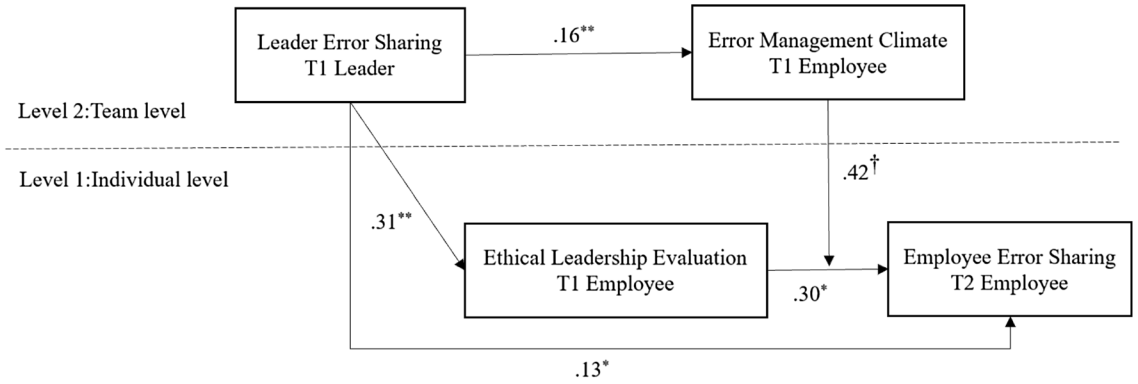

Fig. 3 Testing results of the hypothesized model

linking leader error orientation and employees' positive workplace outcomes (e.g., work engagement, job satisfaction, and employee job performance). Hence, we encourage future research to examine other mechanisms that may link leader error sharing and employee error sharing.

Our findings suggest that, when team leaders engage in error sharing as a general behavioral tendency, employees will evaluate such leaders as ethical. This finding may not hold in situations where we examine what would happen when leaders disclose a particular error. Particular errors may vary on dimensions such as causes (e.g., knowledge-based, skill-based, or rule-based errors; Reason, 1990) and levels of severity (e.g., severe or mild; Keith et al., 2020), which might affect the link between leader error sharing and ethical leadership evaluation.[9] In our study, we have collected leader error severity, which measures the errors leaders typically made at work. To offer clues about how error attributes might affect leaders error sharing and ethical leadership evaluation, we did an interactive effect test. However, the interactive effect between leader error sharing and leader error severity on employees' ethical leadership evaluation wad nonsignificant ($b = -.003$, $se = .03$, $p = .919$). However, this finding should be interpreted with caution because our leader error severity measure is not about any particular errors shared by a leader; we measured leader error severity as the extent to which errors a leader typically makes at work are perceived to be a barrier to the achievement of performance goals at the individual, team, and organizational levels (Horvath et al., 2021; Ramanujam & Goodman, 2003). It remains to be seen whether and how the relationship between leader error sharing and ethical leadership evaluation varies once we consider the level of severity of a particular error shared by a leader. Therefore, future studies may adopt different research method (e.g.,

[9] We thank an anonymous reviewer for raising this point.

case study, experiment) to show how sharing particular errors may lead to different leadership evaluations.

Another limitation is that we collected self-report data on leader error sharing and employee error sharing. This is because we focus on error sharing as a general behavior tendency that captures the extent of error sharing relative to error occurrence. Therefore, only error committers themselves can accurately report their error-sharing tendency relative to their actual error commissions. Given the modest level of error sharing in this study (*Mean* = 3.73, *SD* = 1.28 for leader error sharing; *Mean* = 4.17, *SD* = 1.22 for team member error sharing, using a seven-point scale with 0 = *none of the errors*, 6 = *all of the errors*), social desirability should not be a concrete issue in our data. However, we acknowledge the value of using others-rated evaluation to measure error sharing to conduct related research. For example, it is possible that team leaders may choose not to share certain errors with all the team members. Instead, they might share certain errors with only trusted team members. The question of how such selective sharing influences social learning within a team deserves research attention. In this scenario, team members' evaluation of leaders' error sharing may be more directly related to team members' learning. Hence, we encourage future research to incorporate differing theoretical perspectives to further examine social learning of error sharing by using employees' evaluation of leader error sharing.

Conclusion

Effective error management is imperative for success in organizations. But it will not occur without error sharing, and error sharing will not occur without the acknowledgment and acceptance of one's own fallibility. This is a humbling but necessary realization. Business leaders who recognize their great influence on those watching them can act as role models in organizations by honestly sharing information on their self-made errors. We trust that this study will help advance business research and practices on error sharing and management by highlighting the critical modeling role played by leaders.

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Data Availability Data relevant to this study is available upon reasonable request.

Declarations

Conflict of interest We have no conflict of interest to disclose.

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