Adding Value to Employee Voice: Antecedent Mechanisms of Voice Quality

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Abstract

High-quality employee suggestions are an important pathway for enterprises to improve quality and efficiency. However, previous research has primarily focused on employees' "voice participation" and "voice quantity" , overlooking the most fundamental question—what about the quality of employee voice? To address this critical issue, a systematic research on employee voice quality is constructed from the perspectives of its connotation, measurement, and antecedent mechanisms. Study 1, based on grounded theory, explores the connotation and structure of employee voice quality and develops a measurement tool for employee voice quality; Study 2, based on implicit voice theory, examines the influence mechanisms of employees' and leaders' critical thinking on employee voice quality at both individual and team levels. The theoretical contributions lie in promoting the theoretical construction of employee voice quality and expanding the application of critical thinking theory and implicit voice theory.

Full Text

More Valuable Voice: Research on Antecedent Mechanisms of Employee Voice Quality

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Abstract: High-quality employee suggestions represent a critical pathway for organizational improvement and efficiency gains. However, previous research has predominantly focused on employees' "voice participation" and "voice quantity," overlooking the most fundamental question: what about the quality of

employee voice? To address this key issue, this study constructs a systematic investigation of employee voice quality from three perspectives: its conceptualization, measurement, and antecedent mechanisms. Study 1 employs grounded theory to explore the connotation and structure of employee voice quality and develops a measurement instrument. Study 2 draws upon implicit voice theory to examine the influence mechanisms of both employee and leader critical thinking on voice quality at individual and team levels. The theoretical contributions lie in advancing theoretical construction on employee voice quality and expanding the application of critical thinking theory and implicit voice theory.

Keywords: voice quality; measurement tool; critical thinking; implicit voice theory; impact mechanism

1. Problem Statement

Since ancient times, "making suggestions"(建言) has been a sophisticated art that requires not only courage and tact, but more importantly, substantive content that is well-founded, timely, and feasible. Historical exemplars such as Dong Zhongshu' s "Three Strategies for Worthy Officials," Chao Cuo' s "Memorial on Border Defense," and Wang Anshi' s "Ten-Thousand-Word Memorial" all represent high-quality proposals characterized by truth-seeking, practical relevance, and implementability. Today, from nations to enterprises, decision-makers actively seek development strategies that benefit their organizations. National leader Yu Zhengsheng has repeatedly emphasized the need to enhance suggestion quality and fully demonstrate the value of recommendations. The business community similarly recognizes that only high-quality suggestions can promote organizational improvement, with countless enterprises launching "golden ideas" initiatives to uncover employees'valuable insights. For instance, Jingliang Group' s adoption of employee suggestions in 2016 saved the company 23.7936 million yuan, while five technical transformation proposals from Tongshan Mining employees generated value exceeding 50 million yuan.

What constitutes a high-quality suggestion? Since Hirschman (1970) introduced the concept of voice behavior, scholars have conducted extensive research along three primary lines: First, individual factors (personal traits, motivations, attitudes, cognition) have been examined to identify what types of employees are more likely to speak up (e.g., Jiang, Gao, & Yang, 2018; Lam & Mayer, 2013; LePine & Van Dyne, 2001; Liang, Farh, & Farh, 2012; Tangirala, Kamdar, Venkataramani, & Parke, 2013). Second, contextual factors (leadership styles, supervisor-subordinate relationships, voice climate, institutional environment) have been investigated to understand how to encourage more voice (e.g., Chen & Hou, 2016; Detert & Burris, 2007; Frazier & Bowler, 2015; Hsiung, 2012; Liu, Zhu, & Yang, 2010; Raub & Robert, 2013; Zhang, Huai, & Xie, 2015; Duan, Zeng, & Yan, 2017). Third, interaction and cross-level analyses combining high-level contextual and low-level individual factors have explored how to make employees willing and courageous to voice (e.g., Farh, Hackett, & Liang, 2007; Frazier & Fainshmidt, 2012; Morrison, Wheeler-Smith, & Kamdar, 2011; Duan,

Shi, & Ling, 2017).

However, these studies have focused primarily on "voice participation"and "voice quantity," neglecting the most essential question: what is the quality of the voice itself? With rapid technological development and increasingly flattened, diversified internal communication channels, employees can now express opinions through various platforms (internal forums, direct Q&A channels with general managers, internal WeChat accounts) without face-to-face interaction with leaders. Moreover, new-generation employees, active on social networks, exhibit confident, individualistic personalities that emphasize rights and participation while showing diminishing respect for hierarchical authority (Hou, Li, & Tu, 2014; Liao & Chen, 2017; Zhao & Cui, 2017). Consequently, enabling employees to "dare to speak and speak more" is no longer the primary management challenge. The core concern has shifted to "what exactly are employees saying?" and "how can we determine whether what employees say has value?" —in other words, the quality of employee voice.

Employee voice quality primarily refers to the merit of suggestions employees propose at work. Quality indicators mainly reflect whether the suggested content addresses important problems (severity, timeliness) and demonstrates implementation feasibility (risk assumption, resource investment) (Burris, Rockmann, & Kim, 2017; Whiting, Maynes, Podsakoff, & Podsakoff, 2012; Xu, Huang, Ouyang, Liu, & Hu, 2019; see Section 1.2.1 for details).

The academic community has recognized the importance of studying voice quality (Burris et al., 2017; Whiting et al., 2012). In 2017, Burris and colleagues strongly advocated for deeper research on voice content and its value. Unfortunately, theoretical understanding of "employee voice quality" remains limited. Although Whiting et al. (2012) explored voice message effectiveness, finding that suggestions involving solutions received higher performance evaluations, "solutions" represent only one aspect of voice content and cannot comprehensively measure quality. Burris et al. (2017) made a breakthrough contribution by identifying three indicators— "importance of the problem," "resources required for implementation," and "interdependencies required for implementation" —that effectively predict managers' perceived value of voice. However, their indicators were derived from employees at a large medical institution, limiting generalizability. Xu et al. (2019) empirically confirmed that employees tend to use official channels when three conditions are met: (1) the issue is important, (2) the leader is open to voice, and (3) the leader is in a positive mood when voice occurs. However, this study measured problem importance from employees' perspective rather than evaluating voice quality from leaders' perspective. More importantly, both Whiting et al. (2012) and Burris et al. (2017) examined voice content effectiveness through experimental studies. The lack of measurement tools for employee voice quality has significantly constrained in-depth research in this domain. Therefore, our first task is to define the connotation of voice quality and develop a reliable and valid measurement instrument.

Furthermore, while high-quality suggestions yield positive organizational out-

comes, another critical question emerges: how can we motivate employees to propose high-quality suggestions? We live in an era of information explosion, complex problems, and constant need for recognition, analysis, and judgment. Voice quality is closely related to how employees process information relevant to their suggestions (Burris et al., 2017). To identify organizational problems and propose valuable suggestions amidst complex information, employees must thoroughly demonstrate the importance and feasibility of their suggestions, demanding higher cognitive capabilities. Critical thinking, an important cognitive ability, helps individuals distinguish reasons and evidence, explore implicit assumptions and value standards, uncover deeper meanings and roots, and seek different perspectives through clarification, analysis, inference, evaluation, interpretation, and self-regulation (Facione, Facione, & Giancarlo, 1997; Facione, 2011). Implicit voice theory' s belief about needing solid data or solutions (hereinafter referred to as the implicit belief in reliability demand) posits that employees develop a psychological schema through daily work experiences—that suggestions must be well-considered, well-founded, and supported by reliable data or evidence demonstrating importance and feasibility, preferably with solutions provided. Employees choose to remain silent or speak up based on such schemas, and these cognitive beliefs are influenced by individual traits and environmental factors (Detert & Edmondson, 2011).

Based on this theory, at the individual level, employees with critical thinking, who maintain rational thinking habits, unconsciously form implicit beliefs that voice must be well-founded (Facione, 1990; Facione et al., 1997), striving to propose valuable suggestions through demonstration. At the team level, leaders with strong critical thinking subtly instill schemas in employees that voice must be well-reasoned and logically clear (Detert & Edmondson, 2011; Facione et al., 1997), encouraging employees to propose high-quality suggestions through reasonable, sufficient logical demonstration. When all employees' implicit voice schemas converge at the team level, they form collective understanding and beliefs about voice rules—the implicit voice climate of reliability demand—which further promotes voice quality. Thus, both employee and leader critical thinking play important roles in enhancing voice quality. Our second task is to examine the influence of employee and leader critical thinking on voice quality from individual and team perspectives.

In summary, this study systematically answers "what is employee voice quality?" and "how can we improve it?" through qualitative and empirical research. First, we define the connotation of voice quality and develop a measurement instrument using grounded theory, literature analysis, open-ended questionnaires, and in-depth interviews to clarify the basic connotation and structure of voice quality. We strictly follow scale development procedures advocated in management literature (Flynn & Pearcy, 2001; Hinkin, 1995, 1998). Second, based on implicit voice theory of reliability demand, we explore the influence mechanisms of employee and leader critical thinking on voice quality at both levels. At the individual level, we examine how employee critical thinking affects voice quality through strengthening implicit beliefs in reliability demand, with voice efficacy

as a boundary condition. At the team level, we investigate the cross-level effect of leader critical thinking on employee voice quality through strengthening the team-level implicit voice climate and individual beliefs, with voice reward mechanisms as a boundary condition.

2.1.1 Connotation of Voice Quality

Currently, no clear academic definition of voice quality exists, though scholars have explored voice content. Burris et al. (2017) studied a large hospital emergency center in the southern United States using grounded theory, analyzing and coding interview content to identify that suggestions including "importance of the problem addressed, resources required to achieve expected implementation effects, and interdependencies required to achieve expected implementation effects" were more likely to be perceived as valuable by managers. Whiting et al. (2012) noted that solution involvement in suggestion content is an important indicator of voice message effectiveness. These indicators provide a foundation for further clarifying the connotation of employee voice quality and developing scales.

2.1.2 Measurement of Voice Quality

Scholars have primarily used experimental manipulation to study voice content effectiveness (Burris et al., 2017; Whiting et al., 2012). Existing voice scales cannot directly evaluate voice quality. The widely used 6-item scale by Van Dyne and Lepine (1998) measures employees' promotive and prohibitive voice behavior for improving organizational status but does not reflect voice content, making quality evaluation difficult. Van Dyne, Ang, and Botero (2003) measured acquiescent, defensive, and prosocial voice based on motivational attribution, emphasizing voice behavior under different motivations. Liu et al. (2010) developed scales for voice toward supervisors and colleagues based on different voice targets, focusing on behavioral manifestations toward different audiences. Duan and Ling (2011), in the Chinese cultural context, divided voice into big-picture consideration type and self-advancement type based on employees' need for contextual integration, again emphasizing motivation. Liang et al. (2012) distinguished promotive voice (proposing new ideas to improve organizational functioning) from prohibitive voice (expressing concerns about detrimental practices) based on content, making important contributions to content-based voice behavior research. However, their measurement reflected the favorability of voice content to the organization ("promotive" vs. "prohibitive") rather than the merit of the suggestions themselves, such as the importance of the problem or feasibility of ideas, and thus cannot serve as a voice quality evaluation tool. Maynes and Podsakoff (2014) further refined these dimensions, with promotive dimensions including supportive and constructive voice, and prohibitive dimensions including defensive and destructive voice. Current voice behavior measurement tools are summarized in Table 1 .

2.1.3 Related Research on Voice Quality

Three important studies address voice content. First, Whiting et al. (2012) experimentally manipulated voice content among 292 business undergraduate students, finding that suggestions involving solutions were more favorably received, attributed to prosocial motivation, and earned higher performance ratings for the voicer. Second, Burris et al. (2017) systematically examined voice content through three studies. Study 1 used qualitative analysis at a large southern U.S. hospital emergency center to categorize voice content into three aspects: importance of the problem, resources required for implementation, and interdependencies required for implementation, constructing a theoretical framework of "professional identification, unit identification -voice content -voice value." Study 2 tested this framework with 27 managers and 97 employees from a small real estate company and a large defense contractor, showing that work identification mediated the relationship between unit-related voice and managers' perceived value, while professional identification mediated the relationship between profession-related voice and perceived value. Study 3 experimentally manipulated voice content among 396 managers, finding that suggestions addressing more important problems, requiring fewer resources, and involving less complex interdependencies were perceived as more valuable. Third, Xu et al. (2019) tested their model with 221 employees from a large Chinese communications company and 235 insurance salespeople across two studies, confirming that employees tend to use official channels only when three conditions are simultaneously met: (1) the issue is important, (2) the leader is open to voice, and (3) the leader is in a positive mood when voice occurs, which also increases adoption likelihood.

2.2.1 Historical Origins and Connotation of Critical Thinking

"Critical" derives from the Greek *Kriticos* (discerning judgment) and *Krinein* (standard), meaning to analyze and judge according to standards (Dong, 2011). Critical thinking has undergone a long historical evolution, from ancient Greek explorations by Parmenides and Socrates, to Descartes' universal doubt, Kant' s critical philosophy, Hegel' s reflective theory, and modern Marxist practical critique (Liu, 2010). Despite different manifestations across periods, three common elements persist: First, questioning forms the foundation—reflection on problems. Second, judgment constitutes the core—deciding what to believe through rational thinking and empirical evidence. Third, critical thinking encompasses not only necessary skills but also affective factors such as emotions and beliefs (Jiang & Yang, 2014).

The most representative definition appears in the 1990 *Expert Consensus Statement Report* by 46 critical thinking scholars from the American Philosophical Association, which defines critical thinking as "a purposeful, self-regulatory judgment process that results in interpretation, analysis, evaluation, inference,

and explanation of evidence, concepts, methods, standards, or contexts."

2.2.2 Research on Critical Thinking and Voice Quality

Only one study has directly examined critical thinking' s effect on voice behavior. Jiang et al. (2018) analyzed 273 supervisor-subordinate dyads from energy companies, finding that critical thinking effectively predicted employee voice behavior, with voice efficacy mediating this relationship and transformational leaders' intellectual stimulation strengthening the indirect effect.

Although literature linking critical thinking to voice quality remains sparse, research demonstrates that critical thinking effectively predicts employee creativity and innovative behavior—generating novel and useful ideas that lay the foundation for voice quality. Jiang and Yang (2014) found that critical thinking predicted employee creativity in insurance companies, with creative efficacy mediating this relationship and leader-member exchange weakening the positive effect. Jiang and Yang (2015) similarly found that critical thinking positively influenced employee creativity through creative process engagement. Tu and colleagues' empirical research also confirmed that employee critical thinking predicts innovative behavior (Tu, He, & Guo, 2015; Tu, 2015; Tu & Guo, 2016). Additionally, Tu and colleagues explored mediating effects, finding that critical thinking mediated relationships between proactive personality and employee innovation, and between coaching leadership and employee innovation (Tu, 2016; Tu, Wang, & Zhang, 2016).

Scholars have also examined critical thinking' s impact on information processing and professional judgment through empirical and theoretical work. Jiang and Yang (2016) confirmed that leader critical thinking enhances team information processing by strengthening the positive relationship between team member perspective-taking and task reflection. Facione et al. (1997) noted that critical thinking helps individuals distinguish reasons and evidence, explore implicit assumptions and value standards, uncover deeper meanings and roots, and seek different perspectives to make professional judgments. Other scholars have emphasized that leaders and employees particularly need critical thinking to process complex information and make professional judgments in business environments (Feihuan, Feihuan, Tiwaer, & Youen, 2009).

2.3 Literature Review Summary

Despite extensive research on employee voice, several critical issues require resolution. First, insufficient attention has been paid to voice quality. Existing literature has focused on encouraging employees to "dare to speak and speak more" (e.g., Detert & Burris, 2007; Duan, Kwan, & Ling, 2014; LePine & Van Dyne, 2001; Morrison, 2014; Duan et al., 2017), while neglecting the value of voice content itself. As organizations shift from traditional control to empowerment and collaboration, and as new-generation employees' values evolve, voice participation and quantity are no longer the primary management concerns. In-

stead, obtaining valuable voice information has become key to organizational development. Therefore, voice quality must be thoroughly examined to fill this literature gap.

Second, the connotation and measurement of voice quality require deepening. Current voice content indicators suffer from partiality and sample limitations (Burris et al., 2017; Whiting et al., 2012; Xu et al., 2019) and cannot fully capture employee voice quality. Since voice quality fundamentally reflects the merit of suggestion content, qualitative research is needed to systematically explore its connotation and establish a clear definition. Moreover, existing voice measurements focus on motivation and target (Liu et al., 2010; Van Dyne et al., 2003; Van Dyne & Lepine, 1998; Duan & Ling, 2011). Liang et al.' s (2012) tool reflects content favorability rather than quality merit. Therefore, developing a valid and reliable voice quality scale following rigorous procedures would significantly benefit future research.

Third, antecedent mechanisms of voice quality require systematic investigation. Current voice antecedent research has focused on leadership styles (e.g., Chen & Hou, 2016; Detert & Burris, 2007; Hsiung, 2012; Frazier & Bowler, 2015; Liu et al., 2010), yet voice quality is closely related to information processing (Burris et al., 2017), demanding cognitive capabilities. Critical thinking, as a "data-centered" thinking mode, provides cognitive assurance for high-quality suggestions (Facione et al., 1997; Yanchar, Slife, & Warne, 2008). Examining the predictive effects of leader and employee critical thinking on voice quality from a cognitive perspective would enrich research perspectives.

Fourth, research methods and levels require diversification. Current voice quality research relies primarily on experimental methods. Given unclear conceptualization and measurement systems, combining qualitative and quantitative approaches—using qualitative research to define connotation, developing measurement tools through empirical research, and then examining antecedent mechanisms through systematic empirical studies—would better demonstrate rigor. Additionally, existing research examines voice content at single levels (Burris et al., 2017; Whiting et al., 2012), while cross-level research would provide deeper insight into voice quality mechanisms.

3.1 Connotation of Voice Quality

According to the *Chinese Dictionary*, "voice" (建言) refers to individuals stating proposals or opinions, while "quality" refers to the merit of things, products, or work. Broadly defined, "voice quality" means the merit of proposals or opinions —the quality of suggestion content. Therefore, suggestion content is key to evaluating voice quality.

Two important studies inform our understanding of voice content (Burris et al., 2017; Whiting et al., 2012). Whiting et al. (2012) found that suggestions involving solutions are more favorably received, attributed to prosocial motivation, and earn higher performance ratings. Burris et al. (2017) identified that

problem importance, resources required for implementation, and interdependencies required for implementation affect leaders' evaluation of voice value. Both studies validated their indicators, showing they reflect voice content quality to some extent. Analyzing these indicators reveals that "problem importance" reflects the significance of the issue to the organization—voice importance—while "resources required," "interdependencies required," and "solution involvement" reflect the possibility or operability of problem resolution—voice feasibility. Xu et al. (2019) showed that problem importance is a prerequisite for using official channels. Therefore, we categorize existing voice content indicators into "importance" and "feasibility" dimensions (see Table 2).

Based on cognitive load theory (Sweller, 1988), limited attentional resources cause individuals to invest more cognitive effort in information with salient features. Therefore, only when suggestion information possesses salient features can it capture leaders' attention. Both the importance of problems to the organization and the feasibility of resolution represent salient information relevant to leaders' work (Burris et al., 2017), prompting greater attentional investment. Thus, based on cognitive load theory, we divide voice quality indicators into "importance" and "feasibility" dimensions.

In organizational contexts, we define "employee voice quality" as the merit of suggestion content employees propose at work, characterized by two features: (1) whether it benefits organizational development is a prerequisite for judging voice quality, and (2) the importance and feasibility of voice content are key evaluation dimensions.

Voice content' s "importance" and "feasibility" reflect voice merit. As shown in Figure 1 [Figure 1: see original paper], we use these two dimensions to create four quadrants: High importance and high feasibility represents high quality, indicating high-value suggestions that should be supported; low importance and low feasibility represents low quality, indicating no value and can be disregarded; high importance but low feasibility represents moderate quality, indicating reserved value to be implemented when conditions mature; low importance but high feasibility represents moderate quality, indicating minor value such as routine improvements that can be supported.

This study will use literature analysis and face-to-face interviews to further explore dimensions reflecting voice quality: what aspects constitute "problem importance" (relevance to leader' s work, team goal completion, performance improvement) and "feasibility" (risk assumption, resource support, leader' s controllability). We will also examine whether the four quadrants hold true and identify specific contexts for each voice quality type, further clarifying voice quality' s connotation through dimensional exploration.

3.2 Voice Quality Scale Development

This section follows scale development procedures advocated in management literature (Flynn & Pearcy, 2001; Hinkin, 1995, 1998) to develop a voice quality

measurement instrument.

The first step involves item generation through standardized qualitative research. We will collect evaluation items through open-ended questionnaires, in-depth face-to-face interviews, and literature analysis to form an initial item pool. For the open-ended questionnaire, we will survey 50 supervisors from diverse industries, providing a preliminary definition of "voice quality"and asking them to list 3-5 specific criteria for evaluating subordinates' voice quality. Responses will be compiled and analyzed. For interviews, we will select representative teams for semi-structured interviews focusing on how supervisors evaluate subordinates' voice, what suggestions attract their attention or adoption, their evaluation criteria, and behavioral manifestations of high-quality voice. Subordinate interviews will examine what problems they target, what information their voice involves, and what suggestions are more likely to be adopted. Interview content will be transcribed and analyzed. Literature analysis will review relevant scales such as voice behavior (Van Dyne & Lepine, 1998), promotive and prohibitive voice (Liang et al., 2012), and constructive voice (Whiting et al., 2012), extracting potential items through comparative analysis.

The second step involves item coding and refinement. Two research teams will independently code the item pool with criteria requiring clear description, unambiguous meaning, separation of multi-meaning statements, and merging of similar items. After open coding, teams will discuss each coded item, modifying or deleting ambiguous, repetitive, or inaccurate descriptions to create a streamlined item pool. Axial and selective coding will then identify core attributes. Both teams will extract keywords, conceptual attributes, and dimensions of voice quality, reconciling discrepancies through discussion to form unified dimensions with definitions. Finally, authoritative voice research experts will review each item with project members, revising items based on content validity and expression to form a pre-test version.

The third step comprises pre-test analysis. In the first round, we will distribute pre-test questionnaires to at least 300 team leaders. Using SPSS 20, we will conduct principal axis factor analysis with oblique rotation, allowing factor correlation, using eigenvalues and scree plots as extraction criteria, selecting items with high factor loadings and no cross-loadings to revise the scale. The second round will distribute revised questionnaires to another 300+ team leaders, repeating the same analytical procedure and applying item selection criteria proposed by Van Dierendonck and Nuijte (2011) to further refine the scale.

The fourth step involves reliability and validity testing. Reliability will be assessed in both large samples by testing whether alpha values exceed 0.7 for each factor and decrease when items are deleted. Structural validity will be examined using LISREL 8.0, evaluating model fit through ^{2}/df, IFI, NNFI, CFI, AIC, and RMSEA, where IFI, NNFI, and CFI > 0.90, lower AIC is better, RMSEA < 0.08, and ^{2}/df < 5 are acceptable (Joreskog & Sorbom, 1989). Convergent and discriminant validity will be tested by examining correlations with related constructs such as manager-perceived voice value (Burris et al., 2017) and voice

behavior (Van Dyne & Lepine, 1998). Discriminant validity will be assessed through confirmatory factor analysis in AMOS, comparing three-factor, two-factor, and one-factor models of voice quality, perceived voice value, and voice behavior. When the three-factor model shows superior fit and average variance extracted exceeds squared correlations with other variables, discriminant validity is supported (Fornell & Larcker, 1981).

Finally, predictive validity will be tested by examining whether the developed voice quality scale, alongside Van Dyne and Lepine' s (1998) voice behavior and Liang et al.' s (2012) promotive and prohibitive voice, predicts employee performance evaluations and leader-perceived voice value, analyzing the incremental explanatory power of voice quality (e.g., Frazier & Bowler, 2015; Whiting et al., 2012; Whiting, Podsakoff, & Pierce, 2008; Li & Qi, 2017).

3.3 Research on Voice Quality Influence Mechanisms: Based on Implicit Voice Theory of Reliability Demand

This section examines the influence mechanisms of critical thinking on employee voice quality at individual and team levels based on implicit voice theory of reliability demand. At the individual level, employees with critical thinking, who maintain rational thinking habits, unconsciously develop psychological schemas that voice must be well-founded (Facione, 1990; Facione et al., 1997)—the implicit belief in reliability demand—and thoroughly demonstrate the importance and feasibility of voice content to propose high-quality suggestions. Voice efficacy reflects employees' confidence in expressing opinions to leaders (Kish-Gephart, Detert, Treviño, & Edmondson, 2009; Morrison, 2014), addressing the "dare to speak" issue. Only when employees dare to speak can voice quality be considered. Therefore, voice efficacy serves as a boundary condition for critical thinking' s effect on voice quality at the individual level.

At the team level, leaders with strong critical thinking, through long-term interaction, encourage employees to form latent assumptions that voice must have reliable bases or solutions, prompting employees to demonstrate importance and feasibility through reasonable logical demonstration and formulate rational, valuable suggestions. When all employees' implicit voice schemas converge at the team level, they form collective understanding and beliefs about voice rules —the implicit voice climate of reliability demand—which further promotes voice quality. Additionally, voice reward systems reflect organizational attitudes toward voice behavior (supportive or opposed) and emphasis on voice quality, serving as an important boundary condition for whether critical thinking leaders can stimulate high-quality voice. Therefore, this study examines whether leader critical thinking' s effect on team voice quality is moderated by voice reward mechanisms. The theoretical framework is shown in Figure 2 [Figure 2: see original paper].

Individual-Level Mechanism: Employee Critical Thinking and Voice Quality

At the individual level, we examine how employee critical thinking influences voice quality. As shown in Figure 3 [Figure 3: see original paper], critical thinking is not about "attacking" or "nitpicking" (Jiang & Yang, 2014, 2016) but rather a higher-order thinking mode that forms rational judgments through data-centered thinking and scientific demonstration (Facione et al., 1997; Yanchar et al., 2008). Therefore, employees with critical thinking seek evidence or data to support their viewpoints before making suggestions, striving to form scientific voice information through reasonable logical demonstration and evaluation (Facione et al., 1997; Jiang et al., 2018), thereby improving voice quality. Moreover, such employees use analysis, inference, evaluation, and interpretation to process and judge information (Facione, 1990; Facione et al., 1997), helping them identify root causes amidst complex information and propose targeted suggestions for critical, important, or potential organizational risks, fully demonstrating suggestion value. Based on this analysis, we propose:

Hypothesis 1: Employee critical thinking enhances employee voice quality.

Regarding the mediating role of implicit belief in reliability demand, we argue that employee critical thinking strengthens this belief because implicit beliefs are psychological schemas formed through long-term life or socialization experiences (Detert & Edmondson, 2011; Li & Huang, 1991). Employees with critical thinking, who habitually think rationally (Facione, 1990; Facione et al., 1997), unconsciously form psychological schemas that voice must be well-founded with sufficient reasons and evidence (Detert & Edmondson, 2011; Facione, 1990; Facione et al., 1997), strengthening the implicit belief in reliability demand. This belief subsequently enhances voice quality because when employees hold such schemas, they seek evidence and materials to support their ideas, demonstrating importance to gain leader attention and support while finding solutions to improve implementability. Thus, the implicit belief in reliability demand helps employees propose more important and feasible suggestions (Detert & Edmondson, 2011; Jiang et al., 2018). In summary, critical thinking employees enhance voice quality by strengthening their implicit belief in reliability demand. We therefore propose:

Hypothesis 2a: Employee critical thinking strengthens the implicit belief in reliability demand.
Hypothesis 2b: Employee implicit belief in reliability demand promotes voice quality improvement.
Hypothesis 2c: Employee implicit belief in reliability demand mediates the relationship between employee critical thinking and voice quality.

Voice efficacy serves as a moderator. Voice efficacy reflects employees' confidence in expressing opinions to leaders (Kish-Gephart et al., 2009; Morrison, 2014). Since voice behavior is challenging and risky (Detert & Edmonson, 2011; Liu et al., 2010), voice efficacy addresses the "dare to speak" issue. When employees are

confident in their voice ability, those with implicit beliefs in reliability demand are more likely to propose high-quality suggestions after data analysis, logical demonstration, and solution comparison (Kish-Gephart et al., 2009; Morrison, 2014). Conversely, low voice efficacy undermines confidence, weakening voice quality even when employees hold reliability demand beliefs. Therefore, we propose:

Hypothesis 3a: Employee voice efficacy strengthens the relationship between implicit belief in reliability demand and voice quality.

Similarly, when employees are confident, they reinforce critical thinking employees' data- and solution-based voice beliefs, improving voice quality. When lacking confidence, even critical thinking employees with reliability demand beliefs may be unable to effectively express valuable suggestions, weakening voice quality. Thus, we propose:

Hypothesis 3b: Employee voice efficacy strengthens the indirect effect of employee critical thinking on voice quality through implicit belief in reliability demand.

Team-Level Mechanism: Leader Critical Thinking and Voice Quality

This section examines the cross-level influence of leader critical thinking on employee voice quality, as shown in Figure 4 [Figure 4: see original paper]. We propose that leader critical thinking promotes employee voice quality. First, questioning forms the foundation of critical thinking (Jiang & Yang, 2014), expressing doubt, thorough investigation, and complete examination of all beliefs and knowledge (Feihuan et al., 2009; Facione, 2011). This questioning spirit drives employees to continuously examine their voice bases, forming scientific voice information through reasonable logical demonstration and evaluation (Facione et al., 1997), thereby improving voice quality. Second, voice is a planned behavior (Liang et al., 2012). When critical thinking leaders instill schemas that voice must be well-reasoned and data-supported, employees seek sufficient evidence or complete solutions to support their opinions, gaining confidence and security (Facione, 1997; Detert & Edmondson, 2011). Therefore, critical thinking leaders promote employee voice quality. We propose:

Hypothesis 4: Leader critical thinking promotes employee voice quality.

Regarding mediation, critical thinking leaders promote employees' implicit belief in reliability demand because such leaders use clarification, analysis, inference, evaluation, and interpretation to rationally analyze problems and make reasonable, accurate judgments (Facione, 1990; Facione et al., 1997). When employees voice to critical thinking leaders, leaders evaluate suggestions through logical analysis rather than accepting them uncritically. Since voice is risky and challenging (Detert & Edmondson, 2011) yet planned (Liang et al., 2012), employees who understand leaders' data-oriented style will strive to meet these expectations, carefully deliberating and demonstrating voice content and seek-

ing solutions to reduce risk and gain security (Detert & Edmondson, 2011). Thus, critical thinking leaders strengthen employees' beliefs that voice must be well-founded. This belief subsequently enhances voice quality because the implicit voice theory suggests that deeply held beliefs about needing sufficient reasons, data support, or complete solutions provide voice security (Detert & Edmondson, 2011). Critical thinking leaders, through scientific demonstration and data-centered thinking (Facione et al., 1997; Yanchar et al., 2008), subtly instill data-oriented voice schemas in employees, resulting in more thoroughly demonstrated and feasible suggestions with higher quality. We propose:

Hypothesis 5a: Leader critical thinking strengthens employees' implicit belief in reliability demand.
Hypothesis 5b: Employee implicit belief in reliability demand mediates the relationship between leader critical thinking and employee voice quality.

The team-level implicit voice climate of reliability demand also mediates this relationship. This climate refers to team members' shared psychological perception that the team must follow voice rules requiring data, evidence, or complete solutions (Detert & Edmondson, 2011; Morrison et al., 2011). We propose that this climate mediates the relationship between leader critical thinking and employee voice quality. First, leader critical thinking strengthens this climate because leaders, as team soul figures, determine team tone (Duan, Xiao, & Xia, 2017). In high power distance cultures like China, leaders hold pivotal positions (Farh et al., 2007), and leader preferences shape team culture (Chen, 2010). Critical thinking leaders' truth-seeking and systematic thinking traits (Facione, 1990, 2011; Ye, 1999) reinforce the implicit voice climate. Specifically, their insistence on doubting established facts and pursuing truth (Jiang et al., 2018; King & Kitchener, 2004; Jiang & Yang, 2014) requires team truth-seeking and evidence-based suggestions. Their emphasis on systematic and logical thinking (Facione, 1990, 2011; Ye, 1999) requires maximum demonstration, analysis, and judgment of suggestion importance and feasibility, ensuring scientific rationality and forming a reliability demand climate.

Second, this climate enhances employee voice quality because climate reflects collective consensus on rules (Morrison et al., 2011). When teams develop consensus that voice must be well-reasoned, data-supported, or solution-complete, members gather detailed information before expressing opinions, presenting clear viewpoints with reasonable demonstration and logical clarity, objectively showing importance and rationality (Burris et al., 2017; Morrison et al., 2011), ensuring voice quality. Furthermore, leader critical thinking influences employee voice quality through this climate because when all employees' implicit voice beliefs converge at the team level, they form collective understanding—the implicit voice climate. Stronger leader critical thinking reinforces this climate, promoting higher-quality voice. We propose:

Hypothesis 6a: Leader critical thinking promotes team implicit voice climate of reliability demand.
Hypothesis 6b: Team implicit voice climate of reliability demand promotes

employee voice quality.
Hypothesis 6c: Team implicit voice climate of reliability demand mediates the relationship between leader critical thinking and employee voice quality.

Voice reward mechanisms moderate these relationships. While implicit belief in reliability demand reflects internal motivation for high-quality voice, voice rewards reflect external motivation (Deci & Ryan, 2002). We propose that external incentives further motivate employees to propose high-quality voice within a reliability demand climate. Voice challenges the status quo (Liu et al., 2010), risking offense to leaders and colleagues and affecting one' s career (Detert & Edmondson, 2011). When organizations reward voice quality, they provide positive feedback for risky voice behavior and motivate employees to invest more effort in problem exploration, data collection, material organization, and solution design within the reliability demand climate, enhancing suggestion value. For example, A.O. Smith uses a point system awarding different points based on suggestion value, redeemable for company products, with particularly outstanding suggestions receiving substantial bonuses. Under such reward mechanisms, employees deeply analyze problems and find appropriate solutions, creating real benefits. We propose:

Hypothesis 7a: Voice reward positively moderates the relationship between team implicit voice climate of reliability demand and employee voice quality.

Similarly, when valuable suggestions receive organizational appreciation and rewards, critical thinking leaders further strengthen the team climate requiring data support, mature ideas, or complete solutions, further enhancing employee voice quality. We propose:

Hypothesis 7b: Voice reward positively moderates the indirect effect of leader critical thinking on employee voice quality through team implicit voice climate.

4. Theoretical Framework

As internal organizational communication becomes increasingly flattened and diversified through internet channels, enabling employees to "dare to speak and speak more" is no longer a management challenge. The core focus should shift to enhancing voice quality. However, what constitutes employee voice quality, and how can we improve it? This study systematically constructs a theory of employee voice quality by exploring its connotation, structure, and formation mechanisms. Our theoretical framework includes four key contributions.

First, based on grounded theory, we excavate the connotation and dimensions of employee voice quality and develop a measurement instrument, laying the foundation for theoretical construction. Existing literature cannot fully reflect voice quality' s connotation due to incomplete indicators and limited samples (Burris et al., 2017; Whiting et al., 2012; Xu et al., 2019). Voice quality fundamentally reflects suggestion content merit. According to cognitive load theory (Sweller, 1988), leaders focus attention on salient information. Both the im-

portance of problems to the organization and resolution feasibility represent salient information relevant to leaders' work, making them key evaluation criteria. Leaders adopt four response strategies based on importance and feasibility: strongly supporting high-importance, high-feasibility suggestions; routinely supporting low-importance, high-feasibility suggestions; rejecting low-importance, low-feasibility suggestions; and reserving high-importance, low-feasibility suggestions for future implementation. Existing voice scales measure motivation and target rather than content quality (Liu et al., 2010; Van Dyne et al., 2003; Van Dyne & Lepine, 1998; Duan & Ling, 2011). Therefore, developing a valid and reliable voice quality scale is essential for subsequent empirical research.

Second, from a cognitive perspective, we construct a model of how leader and employee critical thinking influences voice quality. Critical thinking has long interested education, philosophy, and psychology. Although management scholars have examined its effects on creativity, innovation, and voice behavior (e.g., Jiang et al., 2018; Jiang & Yang, 2014, 2016; Tu et al., 2015; Tu et al., 2016), they have not connected its "data-centered" characteristic with voice quality. We propose that both leader and subordinate critical thinking promote voice quality by providing cognitive assurance for high-quality suggestions. Critical thinking employees process and judge information using analysis, inference, evaluation, and interpretation (Facione, 1990; Facione et al., 1997), striving to provide scientific voice information through reasonable logical demonstration (Facione et al., 1997; Jiang et al., 2018). Critical thinking leaders require employees to strictly examine their voice bases, ensuring well-reasoned, evidence-based suggestions that enhance voice quality. Thus, we construct a cognitive perspective model of critical thinking' s influence on voice quality.

Third, based on implicit voice theory, we build an individual-level mechanism linking employee critical thinking to voice quality. Existing literature has examined what individual characteristics enable employees to "dare to speak and speak more"(e.g., Detert & Burris, 2007; Detert & Edmondson, 2011; Duan et al., 2014; LePine & Van Dyne, 2001), while neglecting cognitive abilities' influence on voice quality and lacking discussion of theoretical mechanisms and boundary conditions. At the individual level, we construct mediation and moderation mechanisms. Critical thinking employees, habituated to rational thinking (Facione et al., 1997), unconsciously form psychological schemas that voice must be well-founded. Under this self-suggestion, they naturally follow the implicit voice schema of "needing reliable data or solutions," thoroughly preparing before voicing (considering problem importance, operability) to produce higher-quality suggestions. Additionally, only when employees "dare" to speak can voice quality be considered, making voice efficacy a crucial boundary condition.

Fourth, based on implicit voice theory, we construct a cross-level mechanism of leader critical thinking' s influence on voice quality. Existing literature has focused on leadership styles' effects on voice behavior (e.g., Chen & Hou, 2016; Detert & Burris, 2007; Hsiung, 2012; Frazier & Bowler, 2015; Liu et al., 2010), neglecting leader cognition. Voice content research has also been single-level

(Burris et al., 2017; Whiting et al., 2012), while cross-level research provides deeper insight. From a leader cognition perspective, we build a cross-level model. Critical thinking leaders subtly instill schemas in employees that voice must be well-reasoned and logically clear (Detert & Edmondson, 2011; Facione et al., 1997), urging high-quality suggestions. When all employees' reliability demand beliefs converge at the team level, they form collective understanding—the implicit voice climate. Stronger leader critical thinking reinforces this climate, promoting higher-quality voice. Furthermore, while reliability demand beliefs reflect internal motivation, voice rewards reflect external motivation (Deci & Ryan, 2002). When valuable suggestions receive appreciation and rewards, critical thinking leaders can better strengthen team climates requiring data support and complete solutions, further enhancing voice quality.

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Note: Figure translations are in progress. See original paper for figures.