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How does uncertainty avoidance affect employee voice behavior through the dual-path ways of work engagement and psychological security?

Benhua Xu^{1*} and Yuhang Gao¹

Abstract

Individual traits may have an important impact on employee voice behavior. Considering the different purposes and potential risk exposure of promotive/prohibitive voice, this study constructs a two-path model of the effect of uncertainty avoidance on employee promotive/prohibitive voice based on the Uncertainty Management Theory, examining the mediating roles of work engagement and psychological security, as well as the moderating role of empowering leadership. Through a survey of 417 Chinese employees, the results show that (1) Uncertainty avoidance positively affects promotive voice through work engagement; (2) Uncertainty avoidance negatively affects prohibitive voice through psychological security; (3) Empowering leadership moderates the mediating role of work engagement in the relationship between uncertainty avoidance and promotive voice, and high-level empowering leadership significantly enhances the indirect effect of work engagement and strengthens the relationship between uncertainty avoidance and promotive voice; (4) Empowering leadership fails to moderate the relationship between uncertainty avoidance and psychological security. The findings have practical implications for clarifying the mechanisms of uncertainty avoidance on employee voice behavior and promoting employee voice behavior in multiple ways.

Keywords Uncertainty avoidance, Promotive/prohibitive voice behavior, Work engagement, Psychological security, Empowering leadership

Introduction

In recent years, drastic changes in the world economic situation have intensified the downward trend of China's domestic economy, which has exposed enterprises to greater competition and uncertainty. Also, this rapidly changing market environment has increased the

uncertainty in the organizational environment, and uncertainty management has become an important topic of academic interest in recent years. Uncertainty avoidance, an important trait variable affecting employee behavior, plays a crucial role in employees' assessment and handling of organizational problems and will ultimately influence their decisions and behaviors [1]. Modern organizations are affected by accelerated economic change and the rapid development of science and technology, and the quality of decision-making for decision-makers puts higher requirements than before. While employees are not the primary decision-makers

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in organizations, their behaviors, particularly their voice, play a vital role in informing and supporting managerial decision-making [2]. Thus, how to promote the employee voice in an uncertain environment to obtain more recommendations for developing the organization is particularly important.

Voice behavior is an out-of-role interpersonal communication behavior in which employees spontaneously offer constructive ideas to improve the current situation of the organization [3]. It is one of the most important forms of employee participation in managing the organization. Voice behavior is a high-risk behavior with great uncertainty for employees. Joiner defines an individual's tolerance of uncertainty and ambiguity and the tendency to psychologically and operationally generate avoidance of change as an individual's uncertainty avoidance [4]. While uncertainty avoidance is likely a critical individual trait influencing employee voice behavior, its specific role remains underexplored in the literature, presenting a significant theoretical gap. Based on employee motives, Van Dyne et al. differentiate three parallel types of voice: acquiescent voice, defensive voice, and prosocial voice [5]. Liang et al. classify voice behavior as promotive and prohibitive voices based on the Chinese context [6]. Considering the principles, mechanisms, and effects of voice in management practices in China, we adopt Liang et al.'s classification in this study. Promotive voice is expressing innovative ideas to improve team or organizational performance; its purpose is to improve the organization's current status. Prohibitive voice points out potential risks in the organization's work and employee behavior; its purpose is to curb the problem's worsening or prevent it from happening in the first place [4]. Considering the different purposes and risks faced by promotive/prohibitive voice behavior, we believe that the mechanism of uncertainty avoidance in influencing employees to make promotive and prohibitive voices may also be different.

Understanding these mechanisms has important theoretical and practical implications. Theoretically, it could bridge gaps in the literature by elucidating how individual differences in uncertainty avoidance shape employee participation in organizational improvement. Practically, it could provide organizational managers with insights into how to foster a culture that encourages both types of voice behavior, particularly by addressing employees' tolerance for uncertainty and their willingness to engage in high-risk communication. This exploration could also contribute to the broader discourse on employee behavior by highlighting the nuanced interplay between individual traits and organizational dynamics.

Uncertainty Management Theory (UMT) proposes that when individuals experience uncertainty, they will positively support people and behaviors consistent with their values and be hostile or resistant to people or behaviors

threatening their values [7, 8]. On the one hand, high uncertainty avoiders have a strong need and motivation to reduce uncertainty and are eager to enhance the sense of control and predictability of their environments. Thus, employees are likely to increase their work inputs and express their ideas for improving work systems and business processes to enhance the sense of control and predictability of their environments [9, 10]. On the other hand, high uncertainty avoiders are risk averse, advocate stability, are more sensitive and anxious about potential losses, and have a lower sense of psychological security [11]. This low psychological security makes them shy away from making prohibitive voices when faced with high-risk behavioral decisions. Most of the existing studies have focused on the one-way effect of uncertainty avoidance on individual behavior [12–14], and no scholars have yet paid attention to the two behavioral tendencies of uncertainty avoidance at the same time, making it an important part of the field of uncertainty avoidance research that has been left out. Based on this, this study proposes that uncertainty avoidance will have a dual-way effect on employee promotive/prohibitive voice behavior through work engagement and psychological security.

In addition, UMT suggests that the surrounding environment directly affects an individual's sense of uncertainty. Leaders, as the main object of employee voice and the main factor influencing it, will affect employees' perception and judgment of the safety and value of voice behavior by influencing their perception of uncertainty [8, 9]. In uncertain environments, empowering leadership significantly influences employee voice behavior through key attributes such as trust, support, and shared authority. Trust provides employees with psychological safety, enabling them to express unconventional ideas; support offers resources and encouragement, enhancing employees' confidence in dealing with uncertainty; and shared authority grants employees a sense of participation in decision-making, fostering their sense of responsibility and initiative. These attributes work together to reduce employees' anxiety about uncertainty, encourage proactive voice behavior, and thereby enhance organizational adaptability and innovation capabilities. Based on this, the present study introduces empowering leadership as a moderator variable to investigate the moderating role of uncertainty avoidance on employee promotive / prohibitive voice behaviors.

To sum up, based on UMT, this study explores the mechanism of uncertainty avoidance on employee promotive/prohibitive voice, examines the mediating mechanism of work engagement in the process of uncertainty avoidance affecting employee promotive voice, and the mediating mechanism of psychological security in the process of uncertainty avoidance affecting prohibitive voice. It also examines the moderating mechanism of

empowering leadership in uncertainty avoidance affect employee promotive/prohibitive voice behavior.

Theory and hypotheses

Uncertainty management theory

Van den Bos and Lind proposed the Uncertainty Management Theory (UMT) [7, 8]. According to UMT, an individual's sense of uncertainty is a feeling of doubt or instability about himself or herself, his or her worldview, and the environment in which he or she lives. The experience of uncertainty prompts individuals to develop the need and motivation to reduce uncertainty. Consequently, when individuals experience uncertainty, they exhibit confirmatory and controlling tendencies to reduce the threat posed by uncertainty [7, 8]. In the organizational environment, employees implement active control by increasing work input, obtaining more resources or information, and cognitively endowing the external environment with a stable order to reduce the sense of uncertainty [15]. Among them, employee voice behavior is an important way for employees to increase their control over the organizational environment.

Psychological security reflects a positive state where "individuals present and use themselves optimistically without fear." Uncertainty Management Theory (UMT) posits that uncertainty, a feeling of doubt or instability about oneself, one's worldview, or the environment, triggers a need to reduce this discomfort. Individuals respond by seeking psychological security through confirmatory and controlling behaviors, which help mitigate the threat posed by uncertainty. These behaviors aim to restore stability and predictability, fostering a sense of control. Psychological security, therefore, emerges as a core aspect of UMT, emphasizing how individuals manage uncertainty to maintain emotional and cognitive equilibrium. This low psychological security inhibits them from freely expressing and presenting their views, i.e., inhibits employee voice behavior.

Uncertainty avoidance and promotive/prohibitive voice

The word "uncertainty avoidance" was proposed initially by Hofstede from the perspective of cultural comparison as a dimension to measure cultural differences in different countries [16]. It refers to the degree to which members of society feel threatened when faced with uncertain or unknown situations, and this feeling is often expressed through nervousness and the need for predictability [7]. Organizations in high uncertainty avoidance societies rely on establishing strict and detailed rules and regulations to mitigate the unpredictability of future events. Although uncertainty avoidance initially reflects the cultural phenomenon at the social level, scholars have gradually realized that individuals also have great differences in uncertainty avoidance. Joiner (2001) defines

uncertainty avoidance at the individual level as the individual's tolerance for uncertainty and ambiguity and the psychological and behavioral avoidance of change [4]. Individuals with high uncertainty avoidance prefer organizations with clear structures and are more tolerant, which can affect individual decisions and behaviors [17]. Most existing studies focus on the negative effects of uncertainty avoidance, believing that uncertainty avoidance will lead to increased individual pressure and negatively affect extra-role citizenship behaviors such as innovation behavior, constructive deviance behavior, and knowledge-sharing behavior [18–20]. However, in recent years, some scholars have found that uncertainty avoidance does not always negatively impact individuals, and the pursuit of environmental controllability by individuals with high uncertainty avoidance will encourage them to take various measures to reduce environmental uncertainty. For example, people with high uncertainty avoidance usually increase their work input, make a comprehensive assessment, and fully prepare for possible situations, and these efforts positively impact work performance [21, 22].

Liang, Farh, and Farh (2012) divided voice behavior into promotive and prohibitive voice based on the Chinese context. Promotive voice is the presentation of novel suggestions and proposals to improve the organization's status, which requires employees to have higher work engagement and cognitive effort [6, 23]. Meanwhile, prohibitive voice aims to propose problems or drawbacks, existing or potential in the organization, and voicing subjects face higher potential risk [5]. Promotive voice is usually an innovative idea to optimize organizational norms or development strategies put forward by employees focusing on the future development of the organization, and it is also a behavioral effort by employees to control the organizational environment or development direction [24]. Based on values similar to those of the organization and focusing on the better development of the organization, this kind of voice usually does not cause resentment from leaders. On the contrary, it is easy to get recognition from the leader [25]. Prohibitive voice refers to the potential risks existing in the organization's work and employees' behaviors, with the purpose of preventing problems from happening or preventing the deterioration of problems, and plays an important role in correcting the healthy development of the organization [26]. Since prohibitive voice corrects existing or potential organizational problems, it is criticism or disagreement with current organizational rules or leaders' decisions; such behavior may arouse leaders' aversion and strike employees, so it has a higher risk.

According to the UMT, employees with high uncertainty avoidance feel anxious and averse to uncertainty, which enhances their motivation to control the uncertain

environment and prompts them to take more active measures to strengthen their control over the environment [7, 8]. On the one hand, employees with high uncertainty avoidance may increase their control over the organizational environment by implementing promotive voice behavior. Employees minimize uncertainty in the organizational environment by working hard, increasing their work commitment, and obtaining more information about the organization to make constructive suggestions for organizational development [27]. On the other hand, UMT suggests that individuals develop a dispositional tendency when faced with uncertainty. They worry about their ability to control future circumstances and adopt a negative or resistant attitude toward people or behaviors inconsistent with their values. Prohibitive voice behavior is essentially a criticism of the existing organizational environment. It is a “challenge” or a “nitpick” to existing or future leader decisions or management rules. The likelihood of acceptance of the proposal is low, the likelihood of retaliation by powerful leaders is high, and the risk of negative outcomes is high [6, 28]. Considering the high uncertainty and risk of prohibitive voice, employees with high uncertainty avoidance have a negative attitude towards prohibitive voice behavior. Therefore, this study proposes the following hypothesis:

H1a *Uncertainty avoidance positively affects employee promotive voice behavior.*

H1b *Uncertainty avoidance negatively affects employee prohibitive voice behavior.*

The mediating role of work engagement on the relationship between uncertainty avoidance and promotive voice behavior

Work engagement refers to a sustained positive work-related state of mind [29]. Employees with high uncertainty avoidance feel anxious and uneasy about the uncertainty in the environment [30]. In order to reduce this psychological unease, they will try to control the environment, increase their work input, actively and deeply think about the problems faced by the organization's development, consider various possible solutions [31], and actively put forward promotive voices to make the organization develop in the direction of its conception. Studies have confirmed that employees with high uncertainty avoidance feel stressed and anxious when they are in ambiguous and unpredictable situations and try to take measures to avoid uncertain outcomes [32]. The higher the degree of uncertainty avoidance of employees, the stronger their work enthusiasm and initiative, and the better their work performance. At the same time, employees with high work engagement, while earnestly completing their own work, will increase extra

efforts, voluntarily “do more than required”, and are willing to make extra-role behaviors such as making promotive voices for the development of the organization, so as to seek stronger control and certainty over the environment [33].

To summarize, first, employees with high uncertainty avoidance develop strong work motivation in order to increase their control over future uncertainty. As a result, they tend to increase their work engagement to increase their resource reserves. Second, employees with high work engagement will treat work as a way to enhance their identity and consciously invest more energy into their work. Thus, they are more likely to construct measures and programs to promote organizational development and implement promotive voice behavior. Based on the foregoing discussion, this study proposes the following hypothesis:

H2 *Uncertainty avoidance positively affects promotive voice behavior through work engagement.*

The mediating role of psychological security on the relationship between uncertainty avoidance and prohibitive voice behavior

Psychological security means that individuals will not worry about their image, status, and career being damaged when they truthfully express themselves, ask questions, seek feedback, report mistakes, and speak out their new ideas; that is, individuals can feel the shared perception of security in interpersonal communication [34]. Based on UMT, employees with high uncertainty avoidance prefer stability, are risk averse, and experience stress and anxiety when in ambiguous and unpredictable situations [35]. Cultures with high uncertainty avoidance have been found to be more concerned with uncertainty, tolerance, threat, and challenging the status quo than those with low uncertainty avoidance, which usually negatively affects employees' psychological security and work-related outcomes [36]. Consequently, this study concludes that an individual's level of uncertainty avoidance is significantly and negatively related to his or her psychological security.

It has been confirmed that psychological security has a positive predictive effect on voice behavior, and compared with other individual factors, psychological security has more influence on prohibitive voice behavior [6]. In other words, even if employees with low psychological security have strong motivation to voice, they are afraid to issue prohibitive voice behavior.

Prohibitive voice behavior is to point out to the leader that there may be problems in the organization and the work. This type of voice involves criticism or blame for the leader's work, and the proponent faces the risk of being cold-shouldered by the leader and punished by the

organization. Employees with high uncertainty avoidance have a relatively weak sense of psychological security. They are overly concerned about the harm that uncertain behaviors may cause to themselves, as evidenced by high estimates of the probability of occurrence and cost of future adverse expectations. Thus, they hold pessimistic expectations about prohibitive voice behaviors and ultimately choose negative coping strategies. Hence, this study proposes the following hypothesis:

H3 *Uncertainty avoidance negatively affects prohibitive voice behavior through psychological security.*

The moderating role of empowering leadership

According to UMT, when employees face high levels of uncertainty but are unable to obtain valid information from the nearest source, they will attempt to reduce uncertainty by obtaining information from the nearest resource, such as supervisors [37]. Leaders are not only the main target of voices but also have the formal power to directly influence employees (such as job allocation, salary increase, and performance evaluation) [38]. Leaders often symbolize a recent source of information, and employees usually receive more support and information from their superiors, which, to some extent, can reduce their insecurity and uncertainty. Empowering leadership refers to a leadership style that shares power with employees by clarifying the meaning of work, giving employees greater autonomy, expressing confidence in employees, and eliminating performance barriers [39]. Empowering leadership can create a good voice environment for employees, build a two-way trust relationship between leaders and members, enhance employees' work motivation and psychological security, and make them dare and willing to implement voice [6].

Empowering leadership is a fertile ground for those with high uncertainty avoidance to increase work involvement and implement promotive voice [40] because high uncertainty avoidance is risk-averse and increases their work input to enhance their control over the environment. When high uncertainty avoiders perceive a highly empowered leader, work trust, cordial leader-member relationships, and greater work autonomy are gained from the high-level empowering leadership style; this will further diminish their uncertainty perception and stimulate their enthusiasm for work, resulting in a more profound and more comprehensive perception of the organization [41]. At this time, their promotive voices will further increase. Furthermore, when people with high uncertainty avoidance experience low empowerment leadership [42], they will feel less work trust and autonomy, which will be a blow to their work enthusiasm, make them more cautious and hesitant in their work

involvement, and the promotive voice, an extra-duty work behavior, will be reduced [39].

Similarly, when a person with high uncertainty avoidance meets empowering leadership, the leader's empowerment behaviors, such as trust and encouragement to participate in decision-making, would attenuate employees' perceptions of uncertainty about the future and increase their psychological security [43]. Power sharing conveys a signal to employees that their superiors encourage voice, which enables them to have the courage to propose voice. All types of employee voices will increase under the dual support of leadership empowerment and psychological security [44]; that is, prohibitive voices will also increase. However, when high uncertainty avoidance encounters low-level empowering leadership, employees' fragile psychological security will be further reduced, and their behavioral decisions will be more cautious, further limiting their prohibitive voice [45]. When people with low uncertainty avoidance encounter leaders with high empowerment, their psychological security will increase, but considering their risk aversion tendency, their prohibitive voice will not increase significantly [6]. When those with low uncertainty avoidance encounter leaders with low-level empowering leadership, their behaviors are more strictly managed and regulated by such leadership, their behavioral autonomy is lower, their trust level in leaders is lower, and their psychological security is also reduced, which further reduces their motivation to implement prohibitive voice. Therefore, this study proposes the following hypothesis.

H4a *The indirect effect of uncertainty avoidance on promotive voice behavior via work engagement is moderated by empowering leadership, such that the indirect effect will be stronger when empowering leadership is higher compared to lower.*

H4b *The indirect effect of uncertainty avoidance on prohibitive voice behavior via psychological security is moderated by empowering leadership, such that the indirect effect will be stronger when empowering leadership is higher compared to lower.*

See Fig. 1 Conceptual framework:

Method and material

Sampling and data collection

This study employs a questionnaire survey to gather data from a sample of more than 20 enterprises in various industries across China, including IT, finance, high-end equipment manufacturing, and real estate. The Human Resources departments of these enterprises cooperated by assisting in distributing and collecting questionnaires after thorough communication with them. Before the distribution, we comprehensively explained the study's

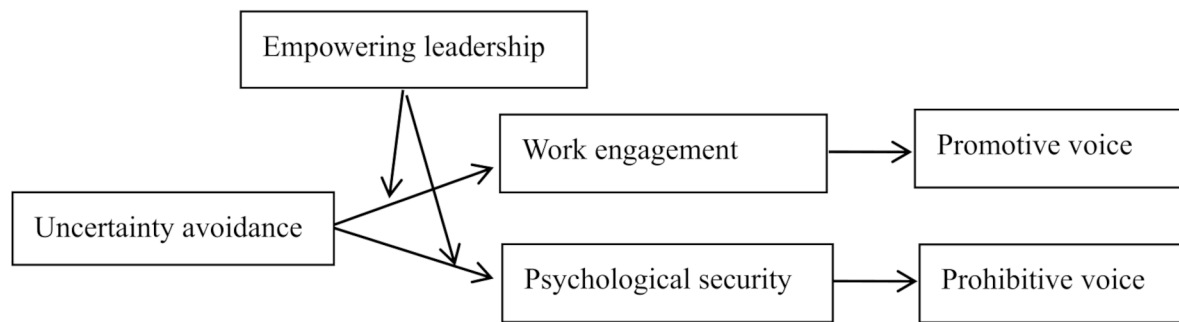


Fig. 1 Conceptual framework

purpose and procedures to all participating employees. We assured them of their participation's voluntary nature and emphasized the data's confidentiality. In appreciation of their involvement, each participant received USD 1.5 upon completing each round of the survey. This study adopts a two-stage data collection approach to mitigate issues like common variance. In Stage I, participating employees self-assessed their levels of uncertainty avoidance and rated their leaders' levels of empowerment. In Stage II, conducted four weeks later, these employees reported their work engagement, psychological security, and promotive/prohibitive voice. A total of 500 questionnaires were distributed, and 453 were collected. Following the elimination of unreasonable questionnaires, such as those filled incompletely or with discrepancies between the two stages, we retained 417 valid questionnaires, resulting in a valid response rate of 83.4%.

Measure

This study adopts existing mature scales from home and abroad and uses the 5-point Likert scale to measure the recognition level of participants, in which "1" represents "not complied at all" and "5" "fully complied".

- (1) Uncertainty avoidance. For this variable, we adopt the scale developed by Jung and Kellaris (2004) with seven items, including "I prefer detailed and explicit instructions to simple and vague guidelines on work" [46], in which Cronbach's alpha was 0.941.
- (2) Work engagement. For this variable, we adopt the scale developed by Schaufeli, Bakker, and Salanova (2006) with nine items, including "I feel energized at work" [47], in which Cronbach's alpha was 0.918.
- (3) Psychological security. For this variable, we adopt the scale prepared by N. Li and Yan (2007) in their study on China's localization with five items including, "I do not worry about doing myself a disservice when I express my true thoughts" [48], in which Cronbach's alpha was 0.932.

- (4) Promotive voice. For this variable, we adopt the scale to measure voice proposed by Liang et al. (2012) with five items, including "I would be proactive to put forward new ideas to better complete tasks" [5], in which Cronbach's alpha was 0.838.
- (5) Prohibitive voice. For this variable, we adopt the scale to measure voice proposed by Liang et al. (2012) with five items, including "I dare to speak out on matters that may affect organizational productivity even if it may embarrass some of my colleagues" [6], in which the Cronbach's alpha was 0.939.
- (6) Empowering leadership. For this variable, we adopt the scale to measure empowering leadership developed by Ahearne, Mathieu, and Rapp (2005) with five items, including "My superior consulted me on decisions that may affect me" [49], in which Cronbach's alpha was 0.970.
- (7) Control variables. This study selects employees' gender, age, education, and length of employment as control variables based on previous studies.

Results

Common method bias test

This study tested common method bias using Harman's single-factor test. The results showed that there was no single factor explaining most variances, and the percentage of variances explained by the factor with the largest eigenvalue was 26.61%, which aligned with the criterion of less than 40%. This indicates that this study's common variance is not significant, and we can go ahead with the next step, data analysis.

Model fit

This study adopted AMOS 26.0 for confirmatory factor analysis. Among these models, the six-factor model has the most ideal fit ($\chi^2/df = 1.319$, RMSEA = 0.028, IFI = 0.981, TLI = 0.978, CFI = 0.981). This indicates that it is the fittest, and these six variables have good discriminant validity and represent six different constructs. The results are shown in Table 1.

Table 1 Confirmatory factor analysis (CFA) results (N=417)

Model	χ^2	df	χ^2/df	IFI	TLI	CFI	RMSEA
Six-factor model (A, B, C, D, E, F)	1114.171	845	1.319	0.981	0.978	0.981	0.028
Five-factor model (A, B, C, D, E+F)	18881.979	850	2.214	0.926	0.918	0.926	0.054
Four-factor model (A, B, C+D, E+F)	3562.925	854	4.172	0.807	0.784	0.805	0.087
Three-factor model (A, B+C+D, E+F)	5533.699	857	6.457	0.666	0.629	0.664	0.114
Two-factor model (A+B+C+D, E+F)	8600.499	859	10.012	0.447	0.388	0.444	0.147
Single-factor model (A+B+C+D+E+F)	9323.221	860	10.841	0.396	0.331	0.392	0.154

Note(s): A - Uncertainty avoidance; B - Empowering leadership; C - Work engagement; D - psychological security; E - Promotive voice; F - Prohibitive voice

Descriptive statistics and correlation analysis

The means, standard deviations, and correlation matrix of the variables are shown in Table 2.

Direct and indirect effects

First, this study tested the main effects using stratified regression analysis, and the results are shown in Table 3. Model 2 indicates that uncertainty avoidance positively affects employee promotive voice ($\beta=0.135$, $p<0.01$); Model 4 indicates that uncertainty avoidance negatively affects employee prohibitive voice ($\beta=-0.156$, $p<0.01$). This validated H1a and H1b.

This study tested the mediating effects using the Bootstrap method. The results showed that the indirect effect of work engagement in the path of uncertainty avoidance influencing promotive voice is 0.025, and its 95% confidence interval [0.002, 0.060] excludes 0, indicating a significant mediating effect. However, the indirect effect of psychological security in the path of uncertainty avoidance influencing promotive voice is -0.004, and its 95% confidence interval [-0.010, 0.020] contains 0, indicating a nonsignificant mediating effect. In contrast, the indirect effect of work engagement in the path of uncertainty avoidance influencing prohibitive voice is -0.003, and its 95% confidence interval [-0.023, 0.011] contains 0, indicating a nonsignificant mediating effect. The indirect effect of psychological security in the path of uncertainty avoidance influencing prohibitive voice is -0.027, and its 95% confidence interval [-0.054, -0.007] excludes 0, indicating a significant mediating effect. To sum up, both H₂ and H₃ are validated.

Moderation analysis

For validating H4a and H4b, this study first tested the influential effect of the product of uncertainty avoidance and empowering leadership on work engagement and psychological security. The results are shown in Models 7 & 10, Table 4, according to which the regression coefficient of the product on work engagement is 0.160 ($p<0.01$), and that on psychological security is -0.036 ($p>0.05$). This indicates that empowering leadership moderates the relationship of uncertainty avoidance with work engagement positively but does not with psychological security.

Figure 2 visualizes the moderating role of empowering leadership on the relationship between uncertainty avoidance and work engagement. The positive correlation between uncertainty avoidance and work engagement is significant under a high level of empowering leadership ($\beta=0.190$, 95% CI = [0.086, 0.295], SE=0.06, $p<0.001$), but it is no longer significant when the level of empowering leadership is low ($\beta=-0.026$, 95% CI = [-0.038, 0.087], SE=0.05, $p<0.05$).

Since empowering leadership failed to moderate the relationship between uncertainty avoidance and psychological security, this study did not test the moderating role of empowering leadership on the indirect relationship of “uncertainty avoidance → psychological security → prohibitive voice”. The results show that the indirect effect of “uncertainty avoidance → work engagement → promotive voice” is significant at 0.068 ($p<0.01$, Boot 95% CI = [0.011, 0.151]) under high level of empowering leadership, while it is no longer significant under low level of empowering leadership, which is 0.004 ($p<0.05$, Boot 95% CI = [-0.010, 0.197]). Moreover, the former coefficient is distinctly greater than the latter one. The above analysis concludes that empowering leadership moderates the indirect relationship of “uncertainty avoidance → work engagement → promotive voice” positively. Hence, H4a is validated, while H4b is not.

Discussion

This study elucidates the dual-path mechanisms through which uncertainty avoidance (UA) influences promotive and prohibitive voice, advancing Uncertainty Management Theory (UMT) by integrating empowering leadership as a boundary condition. Our findings reveal UA’s paradoxical effects: It enhances promotive voice via heightened work engagement while suppressing prohibitive voice through reduced psychological security. These results underscore UA’s dual role as both a motivational driver and a risk-averse inhibitor, addressing gaps in prior research that predominantly emphasized its restrictive effects on proactive behaviors. By differentiating voice types, we demonstrate that UA’s impact is contextually contingent on the perceived alignment of voice content with personal and organizational goals—a critical nuance enriching voice literature. Our study also confirmed the

Table 2 Means, standard deviations, and correlation matrix of the variables (N=417)

Variable	M	SD	1	2	3	4	5	6	7	8	9
1 Gender	1.47	0.51									
2 Education	39.18	7.55	0.033								
3 Age	2.69	0.99	-0.067	-0.099*							
4 Length of employment	2.84	1.22	0.068	0.595**	-0.028						
5 Uncertainty avoidance	3.96	0.99	0.001	0.017	-0.027	0.010					
6 Work engagement	4.14	0.74	-0.013	0.034	0.040	0.001	0.145**				
7 psychological security	3.60	1.19	0.066	0.026	-0.002	0.115*	-0.140**	-0.020			
8 Promotive voice	4.16	0.72	-0.026	-0.027	-0.012	-0.092	0.135**	0.188**	0.012		
9 Prohibitive voice	3.66	1.19	0.014	0.025	-0.006	0.057	-0.155**	-0.051	0.213**	0.030	
10 Empowering leadership	3.83	1.07	-0.095	0.077	0.080	-0.012	0.358**	0.114*	-0.012	0.155**	0.050

Note(s): N=417, * $p < 0.05$, ** $p < 0.01$ (two-tailed test)

Table 3 Results from the regression analysis on main effects

Variable	Model 1	Model 2	Model 3	Model 4
	Promotive voice	Prohibitive voice		
Gender	-0.02	-0.02	0.01	0.01
Age	0.041	0.039	-0.014	-0.012
Education	-0.013	-0.01	-0.005	-0.009
Length of employment	-0.115	-0.115	0.064	0.065
Uncertainty avoidance		0.135**		-0.156**
F	1.058	2.396*	0.361	2.338*
R ²	0.01	0.028	0.003	0.028
AR ²	0.001	0.017	-0.006	0.016

Note(s): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test), N=417

moderating effect of empowering leadership between uncertainty avoidance and promotive voice. However, we did not find evidence to support the moderating effect of empowering leadership on the relationship between uncertainty avoidance and psychological security. The lack of a significant moderating effect in this context may be due to the tendency of individuals with high uncertainty avoidance to predict a greater likelihood of future undesirable events and the associated costs [45]. While empowering leadership’s decentralization, support, and trust, can partially alleviate the risk prediction of uncertain behaviors among employees with high uncertainty avoidance and enhance their psychological security, these employees may still experience anxiety and apprehension regarding prohibitive voice. This resulted in a nonsignificant moderating effect of empowering leadership on the relationship between uncertainty avoidance and psychological security.

Theoretical implications

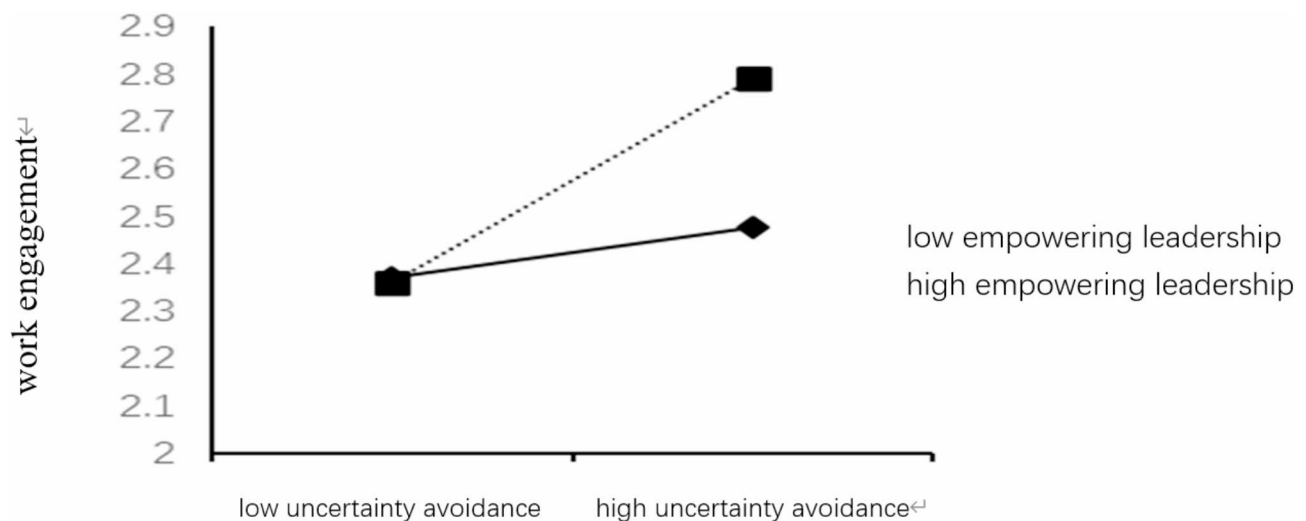
This paper focuses on the dual effect of uncertainty avoidance on voice, explores the dual path of uncertainty avoidance on voice, and verifies the moderating effect of empowering leadership on the relationship between uncertainty avoidance and voice. The findings are as follows:

First, uncertainty avoidance has a dual path influence mechanism on promotive/prohibitive voice behavior. Most previous studies on uncertainty avoidance have focused on its negative impact on high-risk behaviors, ignoring its positive role as a psychological internal drive [50, 51], while empirical studies exploring the mechanisms of different voicing behaviors based on the content of the voicing are still quite lacking [52, 53]. Therefore, this study separates promotive and prohibitive voice behaviors and reveals the dual-path influence mechanism of uncertainty avoidance on the two types of voice behaviors. The findings confirm that uncertainty avoidance has different effects on employee promotive/prohibitive voice behavior. The findings of this study confirm the existence of a dual-path influence mechanism of uncertainty

Table 4 Results from the regression analysis on moderating effects

Variable	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
	Work engagement			psychological security		
Gender	-0.010	-0.010	-0.006	0.058	0.058	0.059
Age	0.057	0.055	0.057	-0.065	-0.063	-0.068
Education	0.044	0.047	0.043	-0.001	-0.004	-0.006
Length of employment	-0.031	-0.031	-0.035	0.150*	0.150*	0.154*
Uncertainty avoidance		0.146**	0.186***		-0.140**	-0.176**
Empowering leadership			0.100*			0.052
Uncertainty avoidance × Empowering leadership			0.160**			-0.036
F	0.391	2.108	2.849**	2.034	3.340**	2.920**
R ²	0.004	0.025	0.046	0.019	0.039	0.041
AR ²	-0.006	0.013	0.030	0.010	0.027	0.027

Note(s): * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed test), $N = 417$

**Fig. 2** The moderating effect of empowering leadership on the relationship between uncertainty avoidance and work engagement

avoidance on employee voices. That is, work engagement mediates the relationship between uncertainty avoidance and promotive voice, and psychological security mediates the relationship between uncertainty avoidance and prohibitive voice. This result suggests that promotive voice focuses on goal achievement and performance improvement, which tends to be consistent with leaders' goals and interests. Uncertainty avoidance stimulates employees' controlling motivation and makes them consciously devote more energy to their work. With the deepening of employees' understanding of their own roles, job content, among others, they are more likely to construct measures and programs to promote the development of the organization and implement promotive voice. This study also reaffirms that work engagement is an important antecedent variable influencing employee voice behavior [9, 10].

Second, prohibitive voices are more obviously critical, which implies more risks. Employees with a high uncertainty avoidance tendency will pay more attention to the harm that prohibitive voice may cause to themselves. They tend to make higher estimates of the probability of

occurrence and cost of future losses, and their psychological security is further reduced, thus negatively affecting prohibitive voice. Previous studies confirmed the mediating role of psychological security between leadership styles and employee voice behavior. Our study further verifies the mediating role of psychological security between uncertainty avoidance and employee prohibitive voice behavior [34, 54]. Work engagement has been found to mediate the relationship between leadership style and employee voice behavior [9, 10]. This study further validates the role of work engagement as a mediator between individual traits and employee voice behavior.

Third, empowering leadership strengthens the relationship between work engagement, uncertainty avoidance, and promotive voice behavior. Previous studies have shown a positive correlation between empowering leadership and work engagement [55], and empowering leadership can positively predict employee voice behavior [56]. The conclusion of this study extends this viewpoint to a certain extent. This study found that empowering leadership can enhance the indirect effect

of employees' uncertainty avoidance on promoting voice behavior through work engagement. Empowering leaders' trust in and delegating to their subordinates can help increase employees' psychological resources and enhance their sense of control over their work [53], improve their work engagement and responsibility, and enable them to actively explore creative solutions to promote organizational development. That is, high-level empowering leadership can significantly enhance the indirect effect of work engagement and strengthen the relationship between uncertainty avoidance and employee promotive voice.

Practical implications

First, managers need to focus on employees' uncertainty avoidance traits and implement differentiated management strategies. Employees with high uncertainty avoidance are risk averse, prefer a strong sense of control over the environment, and prefer the certainty that everything is under control. They usually invest more in their work and prefer to implement personal promotive voices. Through their own efforts and voice, they help the organization develop healthily in a more certain situation. In the process of enterprise management, managers can strengthen the examination of employees' uncertainty avoidance tendencies. Considering the dual-path influence mechanism of uncertainty avoidance on promotive/prohibitive voice, employees with high uncertainty avoidance are more inclined to implement promotive voice. In order to obtain prohibitive voices, managers need to increase the psychological security of employees. For example, they can provide psychological security for employees from the management mechanism, strengthen the construction of organizational fairness, establish a safe voice atmosphere, and optimize the organizational reward and punishment system. In this way, the managers can get more information about the problems and bottlenecks in the organization and then propose scientific and effective solutions and optimization measures.

Second, managers need to take proactive management measures to increase employee work engagement. This study empirically demonstrates that work engagement is positively related to employee promotive voice and that work engagement partially mediates the relationship between uncertainty avoidance and employee promotive voice. In business management, managers may provide employees with organizational support, create a positive organizational climate, increase employee benefits, and pay attention to employees' positive emotions so as to encourage employees to increase their work commitment and make them more willing to voice for the healthy development of the organization positively.

Third, managers need to delegate authority to employees promptly and reasonably. Empowering leadership

can convey trust in their employees through the act of authorization, thus increasing the autonomy of their work. This can enhance their sense of responsibility and motivation, motivate their independent thinking and risk-taking qualities, and prompt them to make positive suggestions. Enterprises and managers should recognize the importance of empowerment, appropriately authorize their employees to enjoy the power to independently arrange their work plans and processes, and encourage them to assume corresponding work responsibilities. At the same time, managers should encourage employees to participate in decision-making, share information with employees, and master information about the organization's development. Doing this is conducive to enhancing employees' understanding and trust in the organization and providing an information basis for employees to voice.

Limitations and directions for future research

This paper still has some shortcomings. First, there are multiple types of voices, but this study only explores the effects of uncertainty avoidance on promotive and prohibitive voices. Thus, the effects of uncertainty avoidance on other voices remain to be seen. Future research may explore the mechanism of uncertainty avoidance affecting other types of voices in different contexts based on other theories. Second, this study only preliminarily discusses the intrinsic mechanism of uncertainty avoidance affecting employee voices at the individual level, while the relationship between uncertainty avoidance and employee voice at the team and organization levels needs to be further explored. The impact mechanism of uncertainty avoidance on employee voices may be investigated across levels to make the theoretical model more comprehensive and explanatory in the future. Third, the relationship between uncertainty avoidance and employee voice behavior may be influenced by cultural factors. Future research could conduct comparative, cross-cultural studies in different cultural contexts.

Conclusion

Based on UMT, the study divides voices into promotive and prohibitive ones, constructs a dual-path model of the relationship between work engagement mediating uncertainty avoidance and employee promotive voice, and psychological security mediating uncertainty avoidance and employee prohibitive voice, also examines the moderating role of empowering leadership in the process. A survey of 417 Chinese employees showed the following: (1) Uncertainty avoidance positively affects promotive voice through work engagement; (2) Uncertainty avoidance negatively affects prohibitive voice through psychological security; (3) Empowering leadership moderates the mediating role of work engagement in the relationship

between uncertainty avoidance and promotive voice, and high-level empowering leadership significantly enhances the indirect effect of work engagement and strengthens the relationship between uncertainty avoidance and promotive voice; (4) Empowering leadership fails to moderate the relationship between uncertainty avoidance and psychological security.

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

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Author contributions

Benhua Xu performed the formal analysis and wrote the manuscript. Yuhang Gao performed the data analysis and the validation. All authors reviewed the manuscript.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethics approval and consent to participate

The studies involving human participants were reviewed and approved by the Institutional Review Board of Henan Provincial Key Laboratory of Psychology and Behavior (reference: 20220102003). And with 1964, the Helsinki Declaration and its later amendments or comparable ethical standards. Written informed consent was obtained from individual or guardian participants.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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