

# THE INFLUENCE MECHANISMS OF ILLEGITIMATE TASKS ON EMPLOYEES' SILENCE BEHAVIORS AGAINST THE BACKDROP OF ARTIFICIAL INTELLIGENCE AND FUZZY ALGORITHMS

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Employee silence can degrade the working environment and decrease employees' motivation and commitment to an organization. As a result, it not only affects employees but also reduces the productivity of the organization. However, few studies have investigated the influencing mechanisms of employee silence empirically. This paper studies how illegitimate tasks affect employee silence based on artificial intelligence and fuzzy algorithms. We surveyed 325 employees in several medium-sized enterprises in Jiangsu and Anhui, China. According to the findings, emotional exhaustion partially mediates the relationship between illegitimate tasks and employees' silence behaviors, and leadership humor can moderate the positive effect of illegitimate tasks on emotional exhaustion. Therefore, situating the mechanisms underlying employees' silence behaviors in the context of artificial intelligence and fuzzy algorithm research helps researchers understand the relationship between illegitimate tasks and employees' silence behaviors, thus improving related research on silence behaviors.

**Keywords:** Artificial Intelligence; Fuzzy Algorithms; Illegitimate Tasks; Employee Silence Behavior; Emotional Exhaustion.

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## 1. INTRODUCTION

Due to the rapid development of the knowledge economy, the traditional organizational structure of enterprises has undergone great changes in the process of modernization. Diversified work teams play an important role in the organizational structure of enterprises. Employees are the driving force of enterprise development. Employees should not only be problem solvers but should also be free to discuss enterprise problems as speakers to help decision-makers find and solve these problems. In the context of market competition, knowledge-based employees are the cornerstone of enterprises' long-term and stable development. Employees who cannot make the best use of their talents at work may find it difficult to succeed when facing increasingly fierce competition. Therefore, knowledge-based employees' feedback and opinions regarding such problems are critical to assist managers in making decisions and fostering enterprise growth.

Fuzzy algorithms are an important branch of intelligent algorithms and are mainly used when various factors cannot be determined. This approach is mainly used when in-depth analysis is not feasible with regard to the system's control model. Due to subjective or objective factors, intelligent algorithms often play a small role. On these occasions, fuzzy algorithms are of great use. Common fuzzy algorithms include mean fuzzy, Gaussian fuzzy and others. Fuzzy algorithms involve a process of successive refinement. Some experts use the conditional fuzzy algorithm of GAN to solve the problem of a low recognition rate in the context of face recognition (Ni *et al.*, 2022; Zeng *et al.*, 2021). Some researchers use the fuzzy algorithm to estimate the risk of relay protection, which effectively improves the accuracy of risk assessment (Cao *et al.*, 2021a; Dang *et al.*, 2022; Xia, 2021). Employees' silence behaviors represent dysfunctional behaviors that include the hiding of their real evaluations,

cognitions, and emotions regarding an organization and their failure to report to leaders who have the ability to change the situation at hand (Penney and Spector, 2005; Morrison, 2014). Employees' silence toward organizations has many benefits. First, the "silence effect" within the organization can reduce the spread of negative news and improve organizational performance. Second, choosing silence in the forms of avoidance, cooperation and compromise can reduce conflicts within an organization. Finally, employees' silence increases organizational commitment and reduces the risk of interpersonal relationships. The silence of employees is conducive to maintaining their good moods. Contradictions caused by disagreements between employees and leadership can thus be avoided. Unlike behaviors such as actively offering advice, however, employees' silence may hinder the reform and development of the organization (Morrison, 2011; Morrison, 2014). As a result, management may make decisions based on incomplete information, and it can be difficult for them to make the right decisions. In addition, Morrison and Milliken (2000) emphasized the fact that silence in the organization arises from improper management; hence, enterprises must explore the mechanisms underlying employees' silence.

Previous researchers have investigated employees' silence behaviors at the organizational, leadership, and individual levels (He, 2010). For example, Chou and Chang (2020) found that organizational citizenship behaviors play a mediating role in the relationship between employees' silence and self-concept. However, given that current studies on silence behaviors remain unclear, this paper uses the stress-as-offense-to-self (SOS) theory (He, 2010) to investigate the source, effect, and regulating mechanism of silence behaviors. SOS theory includes three aspects: Step back, Orient and Self-check. The SOS rule is a scientifically validated method of decompression that combines prevention and treatment. It is used to foresee whether the reactions caused by stress are on the verge of exceeding the controllable range, thereby preventing the "alarm clock" in the brain from losing control as a result of the stress response; this approach can also interfere with the generation of the alarm response and thus mitigate the alarm.

SOS theory holds that having a positive view of oneself is a basic need for everyone. On the one hand, when an employee's self-esteem is threatened, he or she may suffer from stress; on the other hand, when an employee feels respected and trusted, his or her productivity and performance can be improved (Gkorezis and Bellou, 2016). The concept of illegitimate tasks was developed based on the framework of SOS theory (Semmer *et al.*, 2015). Illegitimate tasks can be classified into two categories: unreasonable tasks and unnecessary tasks. Tasks that go beyond an employee's occupational role or are at odds with the employee's duties can be defined as unreasonable. Unnecessary tasks should not exist because they affect the employee's judgment on the job. These two types of tasks may have a negative influence on the employee's professionalism (Schmitt *et al.*, 2015; Semmer *et al.*, 2015; Eatough *et al.*, 2016). Bakker *et al.* (2017) claimed that being forced to accept and complete unreasonable or unnecessary tasks can cause emotional exhaustion. Even though employees understand the negative effects that these illegitimate tasks may have on the organization and know how to accomplish the underlying work efficiently, they tend to hide or conceal their real thoughts in this context.

Due to the silence behaviors of knowledge-based talent, innovation within an organization may be seriously hindered, and employees may become more dissatisfied with their job and reluctant to share their ideas. When an employee is assigned illegitimate tasks, he or she tends to feel as if his or her mental and physical resources are drained. This condition is also known as emotional exhaustion.

Li and Xing (2021) also found that organizational characteristics, such as the working environment and cultural identity, affect employees' organizational identity and their plans. If leaders are benevolent, the organization can develop an amiable working atmosphere. As a superior working resource in the organization, leadership benevolence can help employees attain a sense of mental safety and alleviate the emotional exhaustion caused by illegitimate tasks. Thus, benevolence can prevent subsequent silence behavior. Therefore, this paper offers genuine insights into employee silence under the framework of SOS theory.

This paper explores the mechanism underlying the relationship between illegitimate tasks and employees' silence behaviors and discusses the effect of humor in leadership on this mechanism. First, this paper studies the specific effects of illegitimate tasks on employees' silence behaviors based on SOS theory. Second, it studies the mechanism underlying the impact of illegitimate tasks on employees' silence behavior using artificial intelligence and fuzzy algorithms. This paper also explores the reasons underlying emotional exhaustion and its impacts on illegitimate tasks and employees' silence behaviors. Finally, it investigates the regulating effect of humor in leadership on emotional exhaustion and the ways in which humor in leadership affects employees' silence behaviors. From a practical perspective, this paper can help organizations focus on employees' silence behaviors and establish sound relationships with their employees.

Based on previous studies, this article systematically discusses how illegitimate tasks influence employees' silence behaviors. The fact that this paper verifies the mediating effects of emotional exhaustion on illegitimate tasks and employees' silence behaviors should be borne in mind. This article combines theory with experience to prove that humor in leadership helps alleviate employees' emotional exhaustion. This article thoroughly examines this subject based on previous works and has practical significance.

## 2. THEORIES AND HYPOTHESES

### 2.1 The effects of illegitimate tasks on employees' silence behaviors

Silence behavior is ubiquitous in the workplace, given that each individual in an organization has a distinct sense of self, goals, and ambitions. Silence behavior occurs when inconsistencies arise between individuals and the organization, including conflicts among colleagues, disagreements between individuals and the organization, worries regarding illegitimate tasks in the organization, and employee dissatisfaction (Morrison and Milliken, 2000). Employees' silence behaviors harm the organization. Brinsfield (2013) showed that employees' motivations for remaining silent are based on six dimensions, including relational, defensive, diffident, disengaged, deviant, and ineffectual motives. Accordingly, employee silence is a behavior associated with nonfeasance, which means that the employee could have done something but did not.

Illegitimate tasks, which are defined based on SOS theory, are viewed as a new source of job pressure that threatens employees' self-identification (Semmer *et al.*, 2010; Semmer *et al.*, 2019). Specifically, illegitimate tasks can be divided into two categories: unreasonable tasks and unnecessary tasks.

An unreasonable task demands that a particular employee do something that lies beyond his or her duties. This term refers to tasks that do not suit the employees' occupational status and job description. Often, there are rational reasons for illegitimate tasks, and those tasks are often the employee's specific duties, which are not distributed by the leaders. Therefore, this type of task is unfair because it infringes on the employee's self-identification (Semmer *et al.*, 2015). An unreasonable task is illegitimate, as it violates the employee's contracted job duties (Semmer *et al.*, 2015).

Compared to an unreasonable task, an unnecessary task is unsuitable for anyone, given that the task can be avoided completely or completed efficiently with less effort. For an unnecessary task, the lack of legitimacy does not depend on who is responsible for the task but rather on its existence.

In summary, the existence of illegitimate tasks in the organization poses a great threat to employees' self-identification. However, from the perspective of self-protection, Kang (2018) showed that each individual adopts a specific protection strategy when faced with heavy pressure. In this case, the employee tends to remain silent and compromise to progress in his or her career; thus, this behavior is aimed at protecting the employee from the assignment of illegitimate tasks.

Knoll *et al.* (2021) defined collectivism in terms of the relationship between employees' silence motives and institutional collectivism. Under the influence of traditional Chinese culture, Chinese employees prefer to settle conflicts and differences in a harmonious way in the face of adversity. Therefore, they have a strong tendency to remain silent and maintain harmony. In summary, the self-identification of employees is often threatened by illegitimate tasks in the organization. However, employees have a strong tendency to remain silent for several reasons. Therefore, after excluding the individual factors of personality and individual ability as well as the organizational factors of management style, management mode, organizational structure, and corporate culture, this paper proposes the following hypothesis:

Hypothesis 1: Illegitimate tasks are positively related to employees' silence behavior.

### 2.2 The mediating role of emotional exhaustion

Emotional exhaustion refers to a drained, worn-out state resulting from an employee's depleted mental and emotional resources, and it is the result of pressure sources in the workplace (Chen *et al.*, 2019; Xiong *et al.*, 2022; Zheng *et al.*, 2021). Emotional exhaustion causes low self-esteem, depression, nervousness, and a bad temper (Pacheco *et al.*, 2021), which forces employees to spend less time on their jobs and decreases their performance levels (Bakker and Demerouti, 2017; Rice and Reed, 2021).

Illegitimate tasks in an organization entail extra burdens, which threaten the employee's self-esteem and trigger negative feelings. Illegitimate tasks rapidly consume employees' emotional and physical resources, thus leading to severe emotional exhaustion. However, employees may choose to complete the task in question under pressure (e.g., the pressure of self-protection or maintaining relations with the organization), despite the fact that they realize that illegitimate tasks are unreasonable or unnecessary. Contradictions among what the employee does not want to do, cannot do and must do gradually lead to silence behaviors.

Traditional Chinese culture emphasizes the value of harmony. In workplaces in China, employees are also affected by culture. Under the influence of traditional Confucian culture and collective values, employees exhibit greater demand for a harmonious environment and a sense of belonging. Therefore, when Chinese employees have no tasks in the workplace, they tend to fall into a state of panic and job insecurity. They doubt their own value, exhibit a reduced sense of belonging to the organization, consume their physical, mental, and emotional resources, and remain silent to with the aim of preserving their existing resources. Therefore, after excluding personal and organizational factors, this paper proposes the following hypothesis:

Hypothesis 2: Emotional exhaustion mediates the relationship between illegitimate tasks and employees' silence behavior.

### 2.3 The moderating effect of humor in leadership

Morrison and Milliken (2000) developed an important research proposition. These authors believed that managers could significantly impact employees' silence behaviors. A sense of humor is a personal trait that is generally associated with leadership (Goswami *et al.*, 2016), and humor in leadership is defined as a verbal or nonverbal behavior that leaders deliberately adopt to entertain one employee or a group of staff (Cooper, 2008). Specifically, humor in leadership positively affects employees' working attitudes, sense of happiness, and innovative behaviors (Salas-Vallina *et al.*, 2018; Pundt, 2015). Given that humor in an organization creates an amicable working atmosphere, it reduces employees' dissatisfaction and the pressure caused by dysfunction (Cheng *et al.*, 2021; Qin *et al.*, 2022).

Some scholars have noted that an illegitimate task continuously depletes employees' physical and mental resources and that a lack of resources further complicates the task at hand. The combination of those two factors results in emotional exhaustion, causing the employee to slack at work (Bakker *et al.*, 2004) instead of mitigating the negative impact of this factor in the workplace.

Due to limited work experience and power, employees at the bottom of the hierarchy are in a disadvantageous position in the workplace. Whenever they encounter illegitimate tasks in the workplace, they often tolerate them and remain silent. Older employees who have a certain amount of working experience have the right to speak in the enterprise. However, when they encounter illegitimate tasks, they often refuse to speak because they have mastered the interpersonal resources of the enterprise, the power of their positions, the corresponding qualifications, etc. Therefore, for low-level leaders, the effect of illegitimate tasks on emotional exhaustion is weaker. However, for high-level leaders, the effect of illegitimate tasks on emotional exhaustion is even weaker.

Job resources include job control, social support, feedback, reward, job safety, and other resources related to material, mentality, and social organization (Demerouti and Bakker, 2011). When illegitimate tasks exist within an organization, the emotional exhaustion of employees often results in higher demand for tasks. However, a sense of humor in leadership is a psychological job resource that reduces employees' pressure and mitigates the emotional exhaustion caused by illegitimate tasks. A sense of humor accomplishes this goal by creating a sound and amiable working atmosphere (Cooper *et al.*, 2018).

Therefore, after excluding personal factors, this paper proposes the following hypothesis:

Hypothesis 3: Humor in leadership regulates the relationship between illegitimate tasks and emotional exhaustion. In cases of high humor in leadership, the positive effect of illegitimate tasks on emotional exhaustion is weaker.

Thus far, based on artificial intelligence and fuzzy algorithms, this paper has explained the mediating effects on the relationship between improper tasks and employees' silent behavior and the moderating effect of humor in leadership on the relationship between improper tasks and emotional exhaustion. In light of these factors, this paper further proposes regulation and mediation models to demonstrate their relationships. Illegitimate tasks associated with high demands continuously affect the mental and physical states of employees, resulting in emotional exhaustion and, subsequently, silence behaviors. However, employees could avoid becoming mentally and physically drained if they can take advantage of the benefits of high levels of humor in leadership. In such a situation, the mediating effect of emotional exhaustion becomes weaker, which strongly regulates employees' silence behaviors.

Generally, low-level employees often face problems such as young age, low qualifications, and limited working years and experience. From the employee's perspective, these factors are associated with the impetuous personalities of young employees, and it is easy for them to make mistakes. In terms of organizational behavior, organizations tend to cultivate low-level employees and assign them difficult tasks. Due to individual and organizational factors, low-level employees are often more vulnerable to the mediating effects of emotional exhaustion. Therefore, this paper proposes the following hypothesis:

Hypothesis 4: Humor in leadership regulates the mediating effect of emotional exhaustion on the relationship between illegitimate tasks and employees' silence behaviors. In cases of low humor in leadership, the mediating effect of emotional exhaustion is stronger.

The experimental model consists of four elements: illegitimate tasks, emotional exhaustion, employee silence and humor in leadership. Emotional exhaustion plays an intermediary role in the relationship between illegitimate tasks and employees' silence behaviors. Illegitimate tasks promote employees' silence behaviors via emotional exhaustion. However, humor in leadership moderates the mediating effect of emotional exhaustion on the relationship between illegitimate tasks and employees' silence behaviors.

To summarize, the theoretical is illustrated in Figure 1.

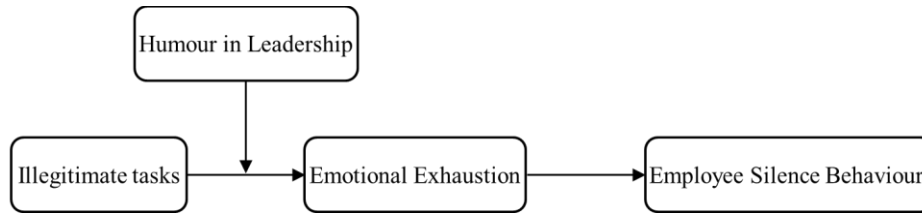


Figure 1. Theoretical Model

## 2.4 Algorithm selection

When making algorithm selections, we maintain that employees' silent behaviors are caused by many factors, and it is difficult to determine the weights of various factors. Therefore, the study chooses the fuzzy algorithm approach to carry out the calculation. The advantage of this algorithm is not its ability to obtain accurate results but rather its ability to predict the comprehensive impact of unknown events on the developmental trend of the target from an overall perspective.

$$F = 2\xi \cdot \frac{[\delta - (\alpha - \beta) / 2]}{\beta - \alpha}, \quad (1)$$

where  $\xi$  represents the index of employees' silence behaviors, an integer ranging from 0 to 10.  $\alpha$  represents the weight of the employee's personal factors, and  $\beta$  represents the weight of the employee's organizational factors. This formula is used to optimize the developmental trend of corporate employees' silence behaviors.

In this formula, the value range of employees' silence behaviors is 0-10, and the value range of  $\xi$  is 0-10. We note that employees' own personalities have a certain impact on their silence behaviors. Therefore, to minimize the impact of this aspect and conduct research on universal factors, the study investigates a total of 50 employees working in different enterprises and obtains the optimization trend of  $F$  according to Formula (1).

## 3. RESEARCH METHODS

### 3.1 Data collection

To reduce the costs of this study, this experiment took medium-sized enterprises located in Zhejiang and Jiangsu provinces in China as its research objects since these two provinces are adjacent to each other and feature similar customs, habits, and economic situations. In addition, due to the large number of enterprises in these two provinces, 8 representative enterprises were selected from each province for random inspection. Subsequently, stratified sampling was conducted according to the size of the enterprise, and 350 employees were selected from a total of 16 enterprises according to the scale of the survey. This study investigated representative medium-sized enterprises located in Jiangsu and Anhui provinces in China, and we obtained research data using questionnaires. Both provinces are located in economically developed regions of the Yangtze River Delta.

The pre-investigation questionnaire for this study is divided into two parts. The first part pertains to the basic information of the respondents, including gender, age, education, working years, job level and nature of the enterprise. The second part contains the scale of measurement. The pre-investigation questionnaires were distributed online mainly in the form of questionnaires, and 350 employees were given links to complete the questionnaires via mainstream social media, including WeChat, Weibo, and QQ. After receiving feedback from the questionnaires, it was necessary to eliminate short-time answers, missing answers, answers featuring too many identical choices and answers based on malicious interference.

To avoid common method bias in the research results, we collected data in two stages. First, we trained 20 college students drawn from a local university. In August 2018, these college students administered the first questionnaire survey to 350 employees in selected medium-sized enterprises. On the first page of the questionnaire, we explained the voluntary nature of this survey and assured participants of the anonymity and confidentiality of the study. We also provided contact information that could be used by employees who had questions. We asked the employees to evaluate the illegitimate tasks, emotional exhaustion, and humor in leadership they had encountered. To reduce the influence of social desirability, this paper collected data on humor in leadership from the perspective of employees. After an interval of two months, the second questionnaire survey, which collected data on silence behaviors, was administered.

During the first stage, a total of 350 questionnaires were handed out online, and 325 of these questionnaires were recovered for a response rate of 92.85%. Questionnaires featuring short or irrelevant answers, unanswered questions or too many identical responses were excluded. Descriptive statistics and reliability and validity analysis of these data were collected using SPSS 24.0 software. As long as the reliability analysis indicated a Cronbach's alpha coefficient above 0.7, the results of the questionnaire were considered to have high reliability. Since Cronbach's alpha coefficient obtained from the initial data was 0.693, the questionnaire was revised, and its results were recollected. At this point, the coefficient was 0.798, thus indicating good reliability. The validity of the results was analyzed and was also found to be sound. Therefore, the results of the questionnaire proved to be both reliable and valid.

Each respondent was required to generate an identifier to enable the researchers to know who answered which question. In this paper, such an identifier was designed to capitalize on the first letter of the respondent's name in Pinyin as well as the name of his or her direct supervisor. For example, if the direct supervisor is Li Qiang and the employee is Wang Ling, then the identifier is LQ+WL.

Demographically, valid respondents exhibited the following characteristics. (1) Respondents included 214 males and 111 females, accounting for 65.8% and 34.2% of the total, respectively. (2) Respondents were 33.66 years old on average, with the youngest respondent being 20 years old and the oldest respondent being 63 years old. (3) Respondents' number of years of service in the organization was 7.06 years on average, with a minimum of 0.42 years and a maximum of 39.67 years. (4) Twenty-six respondents had graduated from junior school or below, accounting for 8% of the total; 60 employees had graduated from senior high school, accounting for 18.5% of the total; 227 employees had graduated from junior colleges, accounting for 69.8% of the total; and 12 respondents had a college degree or above, accounting for 3.7% of the total.

## 3.2 Measures

### 3.2.1 Illegitimate task (independent variable)

This paper mainly employed the scale developed by Tangirala and Ramanujam (2008). This scale included eight items for measurement, of which four pertained to unreasonable tasks. These items concerning unreasonable tasks included "These tasks should have been assigned to other people" and "These tasks should have been handled by other people." An additional four items measured unnecessary tasks, such as "It is unnecessary to accomplish these tasks" and "With a different organizational method, I would not need to deal with this task or could accomplish it with little effort." The Cronbach's alpha for these eight items was 0.876.

### 3.2.2. Employee silence behavior (dependent variable)

This paper employed the scale developed by Tangirala and Ramanujam (2008), which contained five items. Two typical items were "I choose to be silent when I am worried about my task" and "Even though I have some ideas about improving the task, I choose to remain silent." The Cronbach's alpha for these two items was 0.799. According to the criterion of split-half reliability analysis, the questionnaire has good reliability only if Cronbach's  $\alpha$  coefficient  $> 0.7$ . Therefore, this scale was considered to be reliable.

### 3.2.3. Emotional exhaustion (mediating variable)

This paper used the three-item scale developed by Watkins *et al.* (2015). These items included "The job makes me exhausted," "I feel tired after finishing the job," and "I feel weary when I think of my job each new day." The Cronbach's alpha of these items was 0.838. The scale also exhibited good reliability.

Emotional exhaustion is inseparable from job burnout and is considered to be one of the main manifestations of job burnout. Such exhaustion manifests in physical exhaustion, a lack of energy, simultaneous physical and mental exhaustion, etc. It is a negative state in which an individual feels exhausted physically, mentally or both. Maslach defined emotional exhaustion as a negative psychological state produced by an individual after he or she exhausts his or her physical and mental resources at work, including depression, exhaustion, and tension. Jackson and Maslach (1982) deepened this research by identifying emotional exhaustion as an independent variable based on the job burnout model. As the importance of this factor has become increasingly prominent, many scholars have investigated it. Scholars have expressed different views on emotional exhaustion. For example, Wright and Cropanzano (2004) maintained that emotional exhaustion is a chain of negative reactions and mental fatigue caused by excessive workload and the high complexity of work tasks. From the perspective of stress, emotional exhaustion has been defined as high work pressure caused by high work requirements that lie beyond one's ability, which rapidly consume the employee's physical and mental resources, thus resulting in dual physical and mental

exhaustion. These research results have shown that emotional exhaustion is the result of interactions between individual resources and environmental needs, as well as the dual effects of work pressure and interpersonal pressure.

### 3.2.4 Humor in leadership (moderating variable)

This paper used the scale developed by Cooper *et al.* (2018), which included three items: "The frequency of humor in leadership in your job," "Humor characterizes the interaction between my leader and me," and "My leader often makes fun of me." The Cronbach's alpha for these items was 0.903.

### 3.2.5 Control variables

The experiment was measured on the Likert scale, with 1 indicating "strongly disagree" and 7 indicating "strongly agree." Based on previous studies on employee silence behavior (Brinsfield, 2013; Khalid and Ahmed, 2016), the experimental results were inevitably affected by factors such as age, seniority, and level of education. Only by controlling for demographic variables, personal personality and other factors could we reach a reasonable conclusion. The initial data were processed using SPSS software, and demographic variables such as gender, age, years of education, and years of service were controlled, after which the revised data were analyzed.

## 4. RESULTS

### 4.1 Measurement model assessment

Using SPSS 21.0 and AMOS 21.0 software, confirmatory factor analysis was conducted to study illegitimate tasks, emotional exhaustion, employee silence behavior, and humor in leadership. As shown in Table 1, the fit index of the quartet model is more appropriate than those of the other models ( $\chi^2/df=2.573$ , RMSEA=0.070, GFI=0.892, IFI=0.932, CFI=0.931, NFI=0.893). This finding demonstrates that the discriminant validity of the research variables is satisfactory.

To eliminate common method bias, the order of the items was rearranged, and reverse items were added. We assured respondents that the study was confidential and that its sole purpose was to further academic research. To test the seriousness of the aforementioned problems in further detail, an unrotated factor analysis was conducted on all items following the guidelines of the Harman univariate test. This test showed that the variation in the first principal component was 27.994%, accounting for less than half of 70.669%. Therefore, common method bias was not a significant issue in this research, and work could begin by analyzing the questionnaire data.

Table 1. Results of Confirmatory Factor Analysis

Models	$\chi^2$	DF	$\chi^2/DF$	RMSEA	GFI	IFI	CFI	NFI
Four factors IT, EE, ES, LH	360.173	140	2.573	0.070	0.892	0.932	0.931	0.893
Three factors IT+EE, ES, LH	731.808	143	5.118	0.113	0.791	0.818	0.816	0.783
Three factors IT, EE+ES, LH	730.189	143	5.106	0.113	0.792	0.819	0.817	0.784
Two factors IT+EE+ES, LH	1133.837	145	7.82	0.132	0.694	0.694	0.692	0.664
Single factor IT+EE+ES+LH	1717.69	146	11.765	0.182	0.611	0.514	0.51	0.492

Note: IT=Illegitimate Task; EE=Emotional Exhaustion; ES=Employee Silence Behavior; LH=Humor in Leadership; + indicates the combination of factors into one factor.

### 4.2 Descriptive statistics and correlation analysis

Table 2 shows the average values, standard deviations, and correlation coefficients of the variables. According to the results, significant positive correlations exist between illegitimate tasks and employee silence behavior ( $r = 0.221$ ,  $P < 0.01$ ) and between illegitimate tasks and emotional exhaustion ( $r = 0.298$ ,  $P < 0.01$ ). Therefore, Hypotheses 1 and 2 are partially supported.

Table 2. Average Values, Standard Deviations, and Correlation Coefficients

	Mean	SD	1	2	3	4	5	6	7	8
1. Gender	1.34	0.48	-							
2. Age	33.66	8.63	-0.061	-						
3. Tenure	7.06	8.54	0.01	0.754**	-					
4. Education	2.69	0.67	0.089	-0.37**	-0.212**	-				
5. IT	3.38	1.38	-0.068	0.129*	0.069	-0.151**	-			
6. LH	3.86	1.43	-0.104	0.010	0.015	0.090	-0.161**	-		
7. EE	3.33	1.62	-0.078	0.051	0.001	-0.285**	0.298**	-0.342**	-	
8. ES	2.90	1.08	-0.001	-0.015	0.072	0.013	0.221**	-0.067	0.203**	-

Note: N=325. IT=Illegitimate Task; LH=Humor in Leadership; EE=Emotional Exhaustion; ES=Employee Silence Behavior; +  $P<0.1$ ; \* $P<0.05$ ; \*\* $P<0.01$ ; \*\*\* $P<0.001$ .

### 4.3 Hypothesis testing

The final result is shown in Table 3. Model 6 reveals that there is a significant positive correlation between illegitimate tasks and employee silence behavior, once again supporting H1. Furthermore, the illegitimate task variable is significantly and positively correlated with employee silence behavior in Model 7 ( $\beta=0.254, P<0.001$ ). Finally, the illegitimate task continues to exhibit a significant positive correlation with employee silence behavior after emotional exhaustion is added in Model 8 ( $\beta=0.203, P<0.01$ ), but the regression coefficient of illegitimate task on employee silence behavior decreases from 0.254 to 0.203. Table 3 also shows that emotional exhaustion is positively and significantly related to employee silence behavior ( $\beta=0.190, P<0.01$ ). Therefore, based on the three steps of mediating effect testing proposed by Baron and Kenny (1986), H2 is supported, i.e., emotional exhaustion plays a mediating role in the relationship between illegitimate tasks and employee silence behavior.

Furthermore, this paper uses the PROCESS plug-in of Bootstrap to test the stability of this mediating effect. The results show that the indirect effect is [0.115, 0.739] at a 95% confidence level, excluding 0. The direct effect is [0.605, 0.2338] at a 95% confidence level, excluding 0, with controlled mediating variables. The comparison between the direct and indirect effects once again partially supports the mediating role of emotional exhaustion in the correlation between illegitimate tasks and employee silence behavior.

Table 3. Results of Hierarchical Regression Analyses

	EE				ES			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Gender	-0.087	-0.065	-0.122	-0.112	-0.014	-0.001	-0.001	0.007
Age	-0.062	-0.112	-0.086	-0.085	-0.178+	-0.208*	-0.169+	-0.194*
Tenure	-0.056	-0.038	-0.034	-0.023	0.211*	0.221*	0.219*	0.226*
Education	-0.490***	-0.441***	-0.395***	-0.404***	0.006	0.023	0.069	0.074
IT		0.430***	0.354***	0.322***		0.254***		0.203**
EE							0.248***	0.190**
LH			-0.475***	-0.435***				
IT×LH				-0.191*				
R <sup>2</sup>	0.088	0.156	0.237	0.251	0.016	0.070	0.064	0.096
ΔR <sup>2</sup>	0.088***	0.068***	0.081***	0.014*	0.016	0.053***	0.048***	0.026**
ΔF	7.733***	25.668***	33.868***	5.726*	1.338	18.315***	16.338***	0.232**

Note: N=325. IT=Illegitimate Task; LH=Humor in Leadership; EE=Emotional Exhaustion; ES=Employee Silence Behavior; +  $P<0.1$ ; \* $P<0.05$ ; \*\* $P<0.01$ ; \*\*\* $P<0.001$ ;  $\beta$  is the unstandardized coefficient.

Subsequently, the mediating effect of humor on leadership was measured. Model 4 shows that the regression coefficient of the correlation between the illegitimate task variable and emotional exhaustion is significant ( $\beta=0.191, P<0.05$ ), illustrating that humor in leadership plays a mediating role in this correlation. Therefore, H3 is verified. To explain this regulating effect in detail, this paper conducted a simple slope test, as shown in Figure 2. The average value of humor in leadership and the average value plus or minus one standard deviation were used to define the middle, high, and low levels of this factor. In the



case of low humor in leadership, the effect of illegitimate tasks on emotional exhaustion is significant ( $\beta=0.513, P<0.01$ ), but when that factor is at a high level, the effect is not significant; thus, H3 was further verified.

To ensure the reliability of these findings regarding the mediating effect, this study followed step 130I of the mediating variable test proposed by Baron and Kenny (1986). First, control variables were included in the regression model, after which emotional exhaustion was included in the regression model to determine whether employee silence behavior changed significantly. The results showed that emotional exhaustion significantly affected employee silence behavior in a positive way ( $\beta=0.637, P<0.001$ ). Second, emotional exhaustion was used as the dependent variable and illegitimate task as the independent variable to conduct regression analysis, and the results showed that the illegitimate task was significantly correlated with emotional exhaustion in a positive way ( $B=0.580, P<0.001$ ). Finally, employee silence behavior was used as the dependent variable and emotional exhaustion as the independent variable to conduct regression analysis, and the results showed that emotional exhaustion was significantly correlated with employee silence behavior in a positive way ( $\beta=0.602, P<0.001$ ). Thus, the findings regarding the mediating effect were reliable.

To verify the conditional indirect effect (H4) in further detail, the PROCESS plug-in of Bootstrap was applied again, and the analysis results can be found in Table 4. In the case of low humor in leadership, illegitimate tasks greatly affect an employee's emotion, which proves the existence of the indirect effect of illegitimate tasks (at a 95% confidence level, not including zero). Conversely, there is only a nonsignificant indirect effect with respect to high humor in leadership. Therefore, H4 is verified.

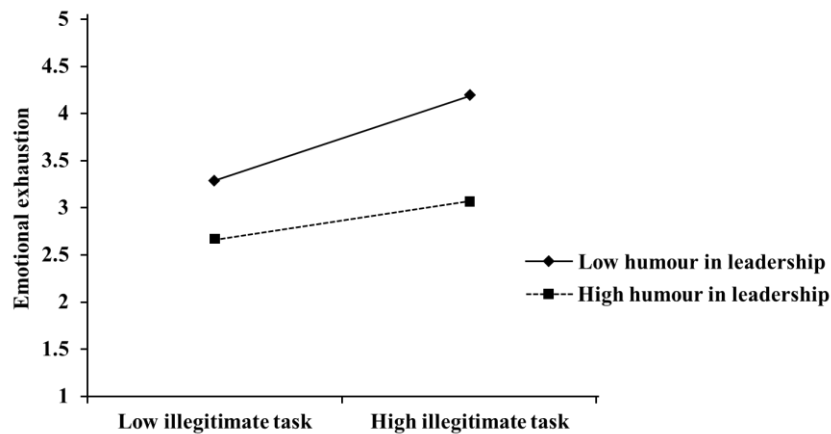


Figure 2. Moderating Effects of Humor in Leadership on the Correlation between Illegitimate Task and Emotional Exhaustion

Table 4. Indirect Effect Test

Adjustment Variable	Effect Value	Standard Deviation	95% Confidence Level	
Low Humor in Leadership	0.044	0.022	0.0086	0.0988
Medium Humor in Leadership	0.027	0.014	0.0058	0.0602
High Humor in Leadership	0.011	0.013	-0.0097	0.0442

Note: Adjustment variable = Adding and subtracting one standard deviation from the mean value of the adjustment variable.

## 5. DISCUSSION

Artificial intelligence and fuzzy algorithms show that an employee must consume a high level of emotional and psychological resources when he or she is faced with extra work. Despite this difficulty, employees choose to remain silent rather than offer advice proactively for the purpose of self-protection. Therefore, emotional exhaustion plays a partially mediating role in the correlation between illegitimate tasks and employee silence behavior. Meanwhile, the level of emotional exhaustion caused by extra work is lower when the task is supported by more resources from the organization. Humor in leadership is also discussed in this paper. Previous empirical studies have found that humor in leadership mitigates the positive effect of illegitimate tasks on emotional exhaustion and employee silence behavior. Additionally, research has shown that humor in

leadership can adjust the mediating effect of emotional exhaustion. Specifically, the mediating effect of emotional exhaustion is undermined when humor in leadership is at a higher level.

### 5.1 Theoretical contributions

This paper makes four main contributions:

First, this paper explored the specific effect of illegitimate tasks on employee silence behavior in detail. According to SOS theory, illegitimate tasks include unreasonable tasks and unnecessary tasks (Semmer *et al.*, 2010; Semmer *et al.*, 2015; Schmitt *et al.*, 2015), both of which undermine an employee's positive self-view and result in undesirable employee silence behavior. Previous studies have focused on how illegitimate tasks threaten employees' self-esteem (Semmer *et al.*, 2015). However, this paper demonstrated that employees have a strong tendency to remain silent because of factors such as self-protection, collectivist culture, the impressions of management, and traditional Chinese culture. Based on this paper, management can obtain deeper insights into employee silence behavior and consider how to regulate this unwanted workplace phenomenon.

Furthermore, this paper proved the existence of the mediating effects of emotional exhaustion on illegitimate tasks and employee silence behavior. Extra work continuously affects an employee's mental and physical health, eliciting negative feelings of perceived unfairness or mistreatment (Bakker *et al.*, 2004; Semmer *et al.*, 2015; Eatough *et al.*, 2016). Within the technical framework of this research, it was demonstrated that an employee's mental and emotional resources were rapidly depleted when he or she was faced with demanding illegitimate tasks that led to extreme emotional exhaustion. As a result, the employee chose to remain silent and do nothing merely as a result of pressures such as self-protection and the need to maintain relationships. Therefore, emotional exhaustion serves as a vital mediator between illegitimate tasks and employee silence behavior. This finding sheds light on managers' attempts to regulate employee silence behavior.

Additionally, this paper combined experimental and theoretical research to demonstrate that humor in leadership helps alleviate employee emotional exhaustion. The results showed that humor in leadership, a mental resource, is key to creating an amiable and enjoyable working atmosphere that is able to reduce stress and alleviate emotional exhaustion (Cao *et al.*, 2021b; Goswami *et al.*, 2016; Liu *et al.*, 2020; Meng *et al.*, 2022). Furthermore, the mediating effect of humor in leadership on the relationship between illegitimate tasks and employee silence behavior was affirmed.

Finally, this paper studied silence behavior. Previous studies have discussed the effects of organization, leadership, and individual traits on employee silence behavior. However, no system illustrating the reasons and mechanisms underlying silence behavior and the ways in which it can be improved has yet been established. This paper thoroughly explained that employee silence behavior is caused by illegitimate tasks and noted that employees tend to remain silent to maintain good interpersonal relationships in the face of illegitimate tasks. On the basis of artificial intelligence and fuzzy algorithms, the mediating effect of emotional exhaustion on illegitimate tasks and employee silence behavior was affirmed, and evidence showed that humor in leadership weakens the mediating effect of emotional exhaustion, thus improving employee silence behavior. Overall, this paper contributes greatly to the development of such a system for studying silence behavior and sheds light on opportunities for future studies.

### 5.2 Practical implications

Rooted in traditional Chinese culture, employee silence behavior in Chinese organizations is an important topic. The findings of this paper have two important managerial implications. First, when assigning tasks, leaders should realize that employees may view some tasks as illegitimate. Thus, leaders should assign tasks reasonably and choose a proper way of communicating with employees. The research results showed that wise leadership affects the working atmosphere and an employee's emotions and behaviors. When leaders create a humorous and amiable working environment, the emotional exhaustion caused by illegitimate tasks can be alleviated to some degree. Therefore, when employees face troubling tasks, leaders should explain in detail why employees should complete them. Candid communication and valuable feedback can help ensure mutual understanding and guarantee that employees are able to meet role expectations.

Additionally, from the perspective of talent training and organizational culture construction, leaders should not only encourage employees to offer advice positively but also create convenient ways for them to do so, including but not limited to an anonymous suggestion box and a public box for leaders. Such measures give employees a sense of ownership and may encourage them to speak out more frequently.

### 5.3 Innovation

This paper employed an innovative sample selection procedure. Employees in specific regions and levels were selected to answer the questionnaire, which was revised to better fit the purpose of this research and to be more professional. Variable

selection was also innovative. The literature has rarely focused on the impact of illegitimate tasks on employees' silent behavior. This study selected emotional exhaustion and humorous leadership behavior as variables to explore their mediating effects with regard to employee psychology and emotion. The direction of the study was innovative as well. Previous studies have explored the impact of workplace exclusion on employee silent behavior from the perspectives of social identity theory and social exchange theory. This study, however, mainly introduced affective event theory and resource conservation theory to investigate individual emotion and psychology. Needless to say, this study made novel theoretical contributions.

#### 5.4 Limitations and directions for future research

This paper faces certain limitations that highlight opportunities for future research. First, employee silence is a form of behavior that is private in nature. The questionnaire measurement used in this paper depended on self-evaluation, inevitably leading to bias. Second, silence behavior can be divided into other dimensions, such as acquiescent silence and quiescent silence (Whiteside and Barclay, 2013), which this paper failed to discuss. Future studies can examine this topic. In this survey, 83.15% of respondents were frontline staff, whereas middle- and top-level employees accounted for only 16.85% of the sample. However, Whiteside and Barclay (2013) proposed that employee silence might be a multidimensional structural variable that varies across different topics and tasks. Therefore, a comparison of employees at different levels can be performed in the future. In addition, the article ignored the role of emotional intelligence, another important factor, in the research process. Emotional intelligence, also known as EI, refers to an individual's ability to monitor his or her own emotions and those of others and to use those emotions to guide their thoughts and behaviors. As this factor is important for employees' ability to obtain promotions within the organization, it deserves more research. Simultaneously time, emotional intelligence can affect the leader's assignment of illegitimate tasks and employee silence behavior, which is of great significance to both this study and future studies.

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