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UNDERSTANDING HOW HUMBLE LEADERS FOSTER MEMBERS' ADAPTIVITY IN CONSTRUCTION PROJECT MANAGEMENT

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Abstract. In the current volatile, uncertain, complex, and ambiguous (VUCA) era, construction project leaders play an increasingly pivotal role in driving project success. However, humble leadership, which offers a promising approach for construction project management, remains insufficiently examined through empirical research. Taking social identity theory as the overarching theoretical framework, this study examines how humble project leaders foster members' adaptive behavior, that is, job crafting. Using hierarchical regression and bootstrapping on 239 time-lagged samples from construction projects, the results show that humble leadership directly promotes job crafting, with project identification mediating this effect. Moreover, power distance orientation weakens the indirect influence of humble leadership through project identification, while showing a U-shaped moderation on the direct relationship. Therefore, this study highlights that humble leadership promotes job crafting by fostering project identification, but its effectiveness depends on individual power distance orientation. These findings contribute to construction management theoretically and practically by highlighting humble leadership as an effective approach for construction managers to enhance members' adaptivity and improve project outcomes in VUCA environments.

Keywords: construction project leadership, project management, construction project teams, job crafting, social identity theory.

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1. Introduction

In recent years, construction projects, ranging from large-scale infrastructure to complex urban redevelopment, have increasingly operated under volatile, uncertain, complex, and ambiguous (VUCA) conditions. The temporary and multi-organizational nature of construction teams, coupled with intense time, cost, safety, and quality pressures, renders leadership a critical determinant of project success (Ahmed et al., 2024; Majeed et al., 2023). In construction practice, traditional command-and-control approaches are often inadequate for addressing the emergent risks, interdependence, and complexity of construction tasks. For project leaders, it is difficult to resolve technical, organizational, and relational challenges on their own. Instead, effective leadership increasingly requires mobilizing the collective expertise of project teams and adopting more adaptive and participative leadership styles that support members' growth needs (Turner & Müller, 2003). As an employee-oriented leadership style, humble leadership represents a "leading from the ground" leadership, distinct from traditional self-centered leadership styles that dominate construction practice. It is characterized by a willingness to acknowledge personal limitations, appreciate others' strengths, and remain open to new ideas (Owens & Hekman, 2012). Despite growing managerial interest in humility, limited research in project management contexts has confused managers about how to design targeted intervention strategies to effectively harness the potential of humble leadership.

In the construction and project management field, empirical evidence on humble leadership remains limited and has primarily focused on project success (Ali et al., 2020, 2021a, 2021b; Waseem et al., 2025), while largely overlooking how humble leadership fosters individual-level adaptive behaviors. Adaptivity and flexibility have been widely recognized as critical capabilities for coping with uncertainty and complexity in construction projects (Are-

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fazar et al., 2022; Badran & Abdallah, 2025; Olsson, 2006; Owen et al., 2006). However, little is known about how individual project members enact adaptive behaviors in response to evolving construction task demands and resource constraints. Job crafting is a self-initiated behavior, which is defined as the proactive changes employees make to balance their job demands and resources with their abilities and needs (Tims et al., 2012; Wrzesniewski & Dutton, 2001). It has been shown to empower project members with proactivity and flexibility toward better person-job fit and task completion, thereby promoting project success (McKevitt et al., 2022; Walker & Lloyd-Walker, 2019). Although a few studies in general organizational contexts suggest that humble leadership encourages employees' job crafting (Ding et al., 2020; Luu, 2021a; Tuan et al., 2021), this relationship has yet to be empirically supported in the temporary context of construction projects. More importantly, two major limitations exist in previous studies. First, they have focused predominantly on direct effects, without unpacking the underlying psychological mechanisms that serve as critical internal driving forces for individuals operating in resource-constrained project environments from an appropriate theoretical perspective. Second, they have largely neglected individual difference-based boundary conditions, thus hampering the comprehensive understanding of humble leadership effectiveness in cross-functional construction project teams. Motivated by the above practical needs and research gaps, this study aims to examine how and when humble project leaders foster members' job crafting in construction project management.

Social identity theory of leadership offers a rational theoretical basis for understanding when and how project members are motivated by humble leaders to conduct job crafting in temporary project contexts. The key premise of this theory is that leadership effectiveness depends on the extent to which the leader acts as a prototype of the group and engages in group-oriented behaviors (Tajfel, 1974; Van Knippenberg & Hogg, 2003). Through egalitarian and participative interactions, humble leaders may be perceived as relinquishing part of their formal leadership identity and thus being regarded as project insiders rather than distant managers (Chandler et al., 2023). Moreover, leader humility behaviors demonstrate attentiveness to the needs of project members, which are beneficial to project teams. Such perceptions enable project members to bond their selves with the project and view the responsibilities and objectives of the project as their own, fostering a sense of project identification – defined as project members' perceived sense of oneness and belongingness to the project they are involved in Ding et al. (2017) and Tabassum et al. (2025). Project identification shapes individuals' self-definition and guides their behavior in line with project norms, shared values, and collective standards (Ashforth & Mael, 1989; Fang & Zhang, 2021). Driven by such internalized forces, project members actively engage in change-oriented job crafting to facilitate task completion. Accordingly, project identification has the potential to mediate the relationship between humble leadership and job crafting among construction project members.

Humility often implies being "down-to-earth" (Owens & Hekman, 2012), which may appear contradictory with the authority and control traditionally associated with project leadership roles. This tension underscores the necessity to clarify the boundary conditions under which humble leadership exerts its influence in construction projects. Underpinned by the social identity theory, leadership effectiveness depends on the alignment of leaders' behaviors with followers' expectations (Hogg et al., 2012). At the individual level, such expectation differences can be measured by power distance orientation, which reflects the extent to which individuals accept unequal distributions of power within organizations (Lian et al., 2012). Prior findings regarding its moderating role in the relationship between humble leadership and individual-level outcomes remain mixed. For example, Jeung and Yoon (2016) found that power distance orientation strengthens the effects of humble leadership, whereas Lin et al. (2019) reported a weakening effect. These inconsistencies call for a re-examination of the role of power distance orientation based on distinct contexts and theoretical perspectives, thereby deepening the understanding of humble leadership effectiveness. Based on the above analysis, it is essential to examine the moderating role of power distance orientation in the direct and indirect relationships between humble leadership and project members' job crafting.

Taken together, this study aims to achieve two specific research objectives. First, it aims to examine the effect of humble leadership on job crafting among construction project members by investigating the mediating role of project identification. Second, it aims to explore the moderating role of power distance orientation in shaping both the direct and indirect relationships between humble leadership and job crafting.

This study developed and empirically tested a theoretical model using time-lagged data from construction projects. The contributions are threefold. First, this study extends construction leadership research by empirically confirming the effectiveness of humble leadership in motivating project members' adaptive behavior, thereby enriching relational leadership theory in temporary and high-pressure construction project contexts. Second, this study advances job crafting research in construction management by identifying leadership as a key driver, thereby responding to the calls to identify antecedents of job crafting within project environments (McKevitt et al., 2022). Finally, drawing on social identity theory as an overarching theoretical framework, this study offers novel theoretical understandings into the intrinsic mechanism between humble leadership and job crafting by confirming the mediating role of project identification, as well as the moderating role of power distance orientation.

2. Theoretical background

2.1. An overview of humble leadership and job crafting in construction projects

Construction projects are temporary, multi-organizational, and highly complex, requiring project managers to coordinate diverse professionals, subcontractors, and frontline workers under intense time, cost, and safety pressures. In such environments, traditional command-and-control leadership, such as directive leadership and transactional leadership, has increasingly proven inadequate (Zheng et al., 2023). Among emerging leadership styles, humble leadership offers distinct advantages for construction projects. By acknowledging personal limitations, appreciating others' contributions, and remaining open to feedback, humble leaders foster psychological safety, mutual respect, and learning-oriented interactions (Owens & Hekman, 2012). This facilitates knowledge sharing across organizational boundaries and encourages project members to proactively address challenges and risks. Compared to transformational leadership, which emphasizes vision articulation and leader-driven inspiration, humble leadership prioritizes acknowledging leaders' limitations and leveraging followers' expertise. This distinction is particularly relevant in construction projects, where high task uncertainty and technical interdependence often require continuous, bottom-up problem solving rather than adherence to predefined visions (Ali et al., 2021b; Kelemen et al., 2023). Unlike participative leadership centering on formal involvement in decision-making, humble leadership emphasizes creating a psychologically safe relational climate that encourages members to speak up, admit mistakes, and take initiative, which is especially valuable in temporary project teams (Chandler et al., 2023; Lin et al., 2019). Although studies in permanent organizational contexts show that humble leadership improves employee behaviors, attitudes, and performance (Chen et al., 2024; Wu et al., 2025), its effectiveness in project contexts, particularly in the construction project environment, remains underexplored. Only a few recent studies have examined its role in project success (Ali et al., 2020, 2021a, 2021b; Waseem et al., 2025).

As construction management research shifts from a technical and tool-driven orientation toward broader social and behavioral aspects (Pollack & Adler, 2015), human factors are increasingly highlighted for project success. Job crafting refers to self-initiated behavior exhibited by individuals to adjust and balance the job demands and resources to align with their capabilities and preferences (Tims et al., 2012). Construction project members face frequent design changes, schedule pressures, and complex subcontractor coordination. Job crafting enhances their flexibility by providing structured strategies to cope with uncertainty and dynamic site conditions (Haffer et al., 2021). There are four approaches of job crafting in project practice, including increasing structural job resources (e.g., learning new knowledge and skills), increasing social job resources (e.g., seeking feedback and support), increasing challenging job demands (e.g., engaging in new arrangements and tasks) and decreasing hindering job demands (e.g., reducing negative emotions and stress) (Tims et al., 2012). As Walker and Lloyd-Walker (2019) suggest, the value of job crafting in project work is expected to grow substantially in the coming decade. Recent project studies have highlighted its benefits for both individuals and projects, such as improving work engagement (Haffer et al., 2021), mitigating job burnout (Yang et al., 2025) and enhancing project success (McKevitt et al., 2022). However, how construction project leaders motivate and enable project members' job crafting is largely underexplored, thus leaving space for this study.

Moreover, only a limited number of studies have investigated the link between humble leadership and job crafting, mostly in non-project contexts such as public administration and tourism (Chen et al., 2021; Ding et al., 2020; Luu, 2021a; Tuan et al., 2021). These works primarily focus on the direct relationship between the two variables while overlooking the intrinsic mechanisms that link leadership and members' job crafting. Such gaps restrict a nuanced understanding of how humble leadership fosters job crafting in construction project environments, where project teams are temporary, cross-disciplinary, and exposed to high uncertainty, making adaptive behaviors (e.g., job crafting) essential for project success. To address this void, this study aims to investigate how humble leadership motivates job crafting among construction project members.

2.2. Social identity theory of leadership

Social identity theory was put forth by Tajfel (1974), which centers on individual awareness of belonging to certain social groups and the emotional and value significance of this group membership. Social groups, whether large demographic categories or small task-oriented teams, provide their members with a shared identity that prescribes and evaluates who they are, what they should believe, and how they should behave (Ashforth & Mael, 1989; Hogg, 2016). This means that social identity prompts members within the group to think and behave in ways that align with the defined attributes of the group members, leading to normative behaviors among group members. Particularly, the social identity theory of leadership posits that leaders' effectiveness hinges on the degree to which they are consistent with the group's prototype (i.e., represent the collective identity) and their involvement in group-oriented behaviors that are advantageous to the group (Steffens et al., 2021; Van Knippenberg & Hogg, 2003).

Different from general work organizations, construction project teams are typically composed of members from multiple organizations, such as owners, contractors, designers, and consultants. Under this multi-organizational collaboration context, construction projects provide project members with two nested foci of social identification, namely project identification and organizational identification (Fang & Zhang, 2021). Project identification is di-

rectly related to the work group that project members are involved. It shapes and guides project members' cognitions, emotions, and behaviors toward achieving expected project outcomes (Tabassum et al., 2025). However, due to the temporary and interdisciplinary nature of construction project teams, project identification in such contexts is often fragile and unstable, which warrants further attention. As the core managers responsible for overseeing project progress and representing the project as a whole, project leaders play a pivotal role in eliciting and cultivating project members' identification with the project (Ding et al., 2017; Porck et al., 2019), thereby subsequently shaping their behaviors in project work.

In the leadership research, existing empirical studies have primarily applied social identity theory to explain subordinates' identification with their leaders (Gu et al., 2015) or their identification with the overall organization (Moriano et al., 2014). More recently, scholars have recognized the importance of contextualizing social identity theory within multi-organizational collaboration settings (Porck et al., 2019). While several project leadership studies have adopted social identity theory to examine the relationship between leadership styles and project identification, such as transformational leadership (Ding et al., 2017) and inclusive leadership (Jiang et al., 2023), it remains understudied how humble leadership impacts members' project identification, thus empirical investigation in this direction is timely. Moreover, although social identity theory suggests that leadership effectiveness in fostering identification is contingent upon the alignment between leaders' behaviors and followers' expectations (Hogg et al., 2012; Van Knippenberg & Hogg, 2003), the above project studies have largely overlooked exploring this boundary condition. These research gaps limit the explanatory potential of social identity theory in project leadership research, hindering a holistic understanding of project leadership dynamics. Taken together, this study utilizes social identity theory as an overarching theoretical framework to elaborate mediating and moderating mechanisms between humble leadership and project members' job crafting, thereby deepening the theoretical understanding of humble leadership effectiveness in construction project management. The specific reasoning process will be demonstrated in the subsequent hypothesis development section.

3. Hypotheses development

3.1. Humble leadership and project members' job crafting

Traditional construction management practices and methods emphasize standardized control and predictability, which are increasingly inadequate in today's VUCA environment. For project members, it is nearly impossible to accomplish their tasks through a one-size-fits-all approach or to passively accept top-down work arrangements (Haffer et al., 2021). Instead, flexible, adaptive, and innovative work methods are required to cope with the dynamic risks, frequent scope changes, and growing ambiguities of construction delivery (Badran & Abdallah, 2025). As an individual-level adaptive behavior, job crafting provides project members with proactivity and flexibility to tackle the above project work challenges and ensure the task completion (McKevitt et al., 2022; Zhang et al., 2026). Previous research has indicated that humble leaders play a significant role in catalyzing proactivity among project members (Ali et al., 2020; Chen et al., 2018; El-Gazar et al., 2022). In line with this point, this study argues that humble project leaders, who are employee-oriented, may be particularly effective in three aspects in encouraging project members to implement job crafting.

First, by remaining open to new ideas and alternative approaches (Owens & Hekman, 2016), humble leaders encourage project members to engage in job crafting by flexibly adjusting task execution methods and reconfiguring collaboration patterns in response to evolving project demands (Wang et al., 2018), particularly when standardized procedures fail to address unforeseen technical or coordination issues. Second, by acknowledging their own limitations in knowledge, skills, and abilities, humble leaders signal that expertise is dispersed across the project network rather than concentrated in formal authority (Owens & Hekman, 2012), thereby legitimizing learning, help-seeking, and self-development as core forms of job crafting in project practice (Rego et al., 2019). Third, by recognizing and appreciating members' professional strengths and contributions, humble leaders cultivate trust and psychological safety (Ali et al., 2020), which is especially critical in construction projects where adaptively adjusting work roles and methods through job crafting may be constrained by tight project schedules and limited resources. Such a supportive leadership environment provides essential psychological resources, reduces members' excessive psychological burden, and empowers them to engage in job crafting and take on more challenging work (Luu, 2021a). Based on the above arguments, the following hypothesis is proposed:

H1: Humble leadership is positively related to project members' job crafting.

3.2. Mediating role of project identification

The social identity theory of leadership emphasizes that leaders are effective to the extent that they are perceived as representing the group prototype and acting in ways that advance collective interests, thereby fostering followers' identification with the group (Hogg et al., 2012). However, due to the temporary nature, fragmented authority structures, and disciplinary diversity of construction projects, project identification is often fragile and requires project leadership efforts to be cultivated and sustained (Ding et al., 2017; Tabassum et al., 2025). Humble project leaders contribute to the development of project identification by enacting leadership behaviors that align with the core propositions of social identity theory. First, hum-

ble leaders value project members' contributions and personal development, thereby affirming members' self-worth in project work (Ali et al., 2021b). This recognition makes project members classify themselves and the project as the same interest group, thus gradually forming their sense of project identification as they work for the project's benefit. Second, humble leaders acknowledge their own shortcomings and weaknesses, which foster more egalitarian relationships with project members and delegate certain decision-making authority (Zheng & Ahmed, 2024). Such behaviors enhance members' sense of empowerment at work (Ali et al., 2020; Chen et al., 2018; El-Gazar et al., 2022), encouraging them to proactively address problems and thus strengthening their sense of responsibility and identification with the project as a collective. Finally, driven by self-transcendence, humble leaders emphasize learning, openness, and shared problem-solving, thereby encouraging inclusive participation across organizational and professional boundaries – an approach that is particularly critical in construction projects characterized by specialized knowledge and interdependent tasks. Through such interactions, project members gain greater clarity about project goals (Ali et al., 2021a), are more likely to cognitively categorize themselves as part of a unified project collective, and emotionally invest in the project.

Once project identification is established, it becomes a powerful internal driver of proactive and change-oriented behaviors. According to social identity theory, individuals who strongly identify with a group tend to internalize group goals as self-relevant and are motivated to act in ways that benefit the collective (Ashforth & Mael, 1989; Frese & Fay, 2001). In construction projects, project identification encourages members to view project success, reputation, and long-term outcomes as extensions of their own interests and responsibilities (Jiang et al., 2023; Tabassum et al., 2025). This internalization shifts members' behavioral orientation from mere role compliance to proactive engagement, making them more willing to invest additional effort, seek resources, and redesign aspects of their work to better support project objectives. Job crafting represents a salient behavioral manifestation of such identity-driven motivation in project work. Identifying with the project motivates members to actively adjust task boundaries, enhance structural and social job resources, increase challenging job demands, and mitigate hindering demands in order to cope with complex project requirements and improve project performance (Ding et al., 2017). Rather than being externally imposed, job crafting behaviors are self-initiated and sustained by a sense of ownership and responsibility toward the project collective. Therefore, project identification functions as a critical psychological bridge that translates humble leadership into project members' proactive job crafting. Based on the above arguments, the mediating hypothesis is formulated:

H2: Project identification mediates the relationship between humble leadership and job crafting of project members.

3.3. Moderating role of power distance orientation

Social identity theory emphasizes that leadership effectiveness in shaping identification is contingent on the congruence between leaders' behaviors and followers' expectations (Hogg et al., 2012; Steffens et al., 2021). Construction project teams are typically composed of cross-functional and cross-disciplinary members. Hence, project members may develop diverse values regarding power and hierarchical disparities due to their backgrounds and work characteristics of respective fields (Woehr et al., 2013). Humble project leaders are more likely to be understood and embraced when project members possess a lower inclination towards power distance. This is because they lean towards a work environment that prioritizes equality and shared decision-making, thus positively responding to humble leaders' advocacy (Kirkman et al., 2009). Through the fit with humble leaders, project members are more inclined to find their value and belonging within the project, strengthening their sense of project identification. On the contrary, those project members with a high power distance orientation are more accustomed to operating within environments where authority and hierarchical structures are pronounced (Liang et al., 2021). In this case, humble leadership may be interpreted as lacking assertiveness typically associated with effective leadership, thereby failing to meet project members' expectations regarding power allocation in the workplace. This perceived difference not only diminishes project members' emotional attachment to the project leaders but also weakens their belongingness and identification with the direct work unit (i.e., project). Accordingly, the following hypothesis is proposed:

H3a: Power distance orientation of project members moderates the positive effect of humble leadership on project identification, as power distance orientation increases, this effect becomes weaker.

Combining H2 and H3a, the following moderated mediation hypothesis is deduced:

H3b: Power distance orientation of project members moderates the positive indirect impact of humble leadership on job crafting through project identification, with a weaker effect observed when power distance orientation is higher.

Moreover, this study exploratively contends that power distance orientation may moderate the two pathways from project humble leadership to job crafting through distinct motivational mechanisms. Along the indirect path (H3b), following an "proactive motive – behavior" logic, increases in project members' power distance orientation weaken the positive effect of humble project leadership on project identification and, consequently, on job crafting. In contrast, the direct pathway (H1) does not rely on proactive motive-based identification but reflects the motivational switching process shaped by project members' leadership expectations and their power distance orientation.

When project members have a low power distance orientation, humble leadership is more likely to be perceived as empowering, thereby encouraging them to develop job crafting behaviors such as increasing job resources and proactively taking on challenging tasks (Lin et al., 2019). As power distance orientation increases, the incongruence between project members' expectations for authoritative and directive leaders and the egalitarian nature of humble leaders reduces their willingness to initiate proactive changes, weakening the positive effect of humble leadership on job crafting (Zhao et al., 2024). However, when power distance orientation becomes relatively high, the equality, humility and less authority from project leaders may be perceived as insufficient for ensuring clear directive and task efficiency under a tight project duration. Confronted with complex and interdependent construction tasks, these project members may become concerned about excessive consumption of their own limited resources and time when they engage in resource-expanding and challenge-seeking forms of job crafting. From the expectation violation and conservation of resources perspective, members' job crafting motivation may shift from proactive opportunity seeking to reactive self-protection (Lazazzara et al., 2020; Wang et al., 2024), thereby giving rise to avoidance forms of job crafting, such as reducing hindering job demands, narrowing task boundaries, or concentrating on familiar technical strengths to minimize potential negative outcomes and ensure the completion of core project work (Bindl et al., 2019; Wang et al., 2023). This reasoning can also be supported by the view of Zapata and Hayes-Jones (2019) that expressions of leader humility do not always yield positive outcomes and may, in some cases, undermine perceived leader effectiveness. Therefore, the following exploratory hypothesis is proposed, and the integrated theoretical model is illustrated in Figure 1.

H4: Power distance orientation of project members has a nonlinear moderating effect on the direct relationship between humble leadership and job crafting. Specifically, as power distance orientation increases, the positive effect of humble leadership on job crafting declines first and eventually rises.

4. Research methods

This study adopts a positivist epistemological stance, utilizing a deductive approach to develop theory and then test hypotheses. The overall research method process is illustrated in Figure 2.

4.1. Measurements

This study used multi-item measurement scales from prior literature to ensure the content validity of the scales. All the measurements were translated using the back-translation procedure recommended by Brislin (1970).

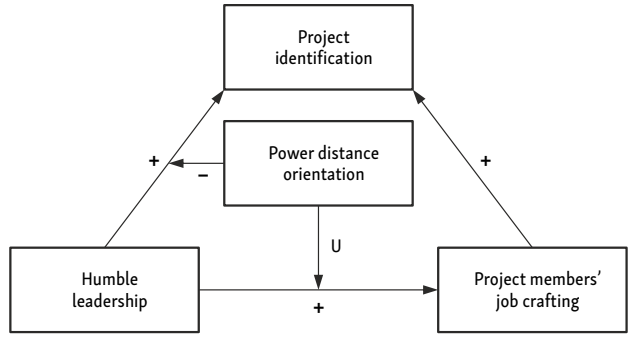

Figure 1. Theoretical model

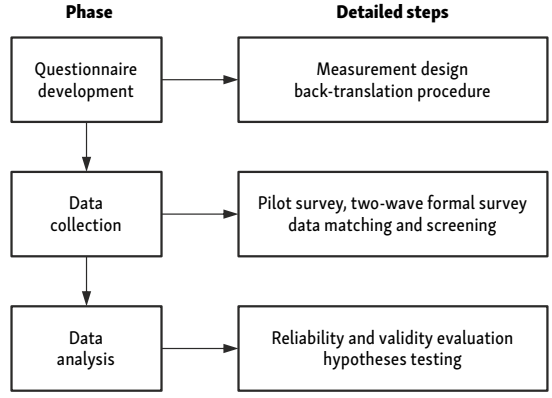

Figure 2. Research method flow process

Humble leadership (T1) was measured using the nine-item scale developed by Owens et al. (2013), and some expressions were adapted slightly to fit the project context. An example item is "My project manager shows appreciation for the unique contributions of others".

Project identification (T2) was evaluated through the five-item instrument based on the study of Ding et al. (2017). An example item is "It feels like a personal insult when someone criticizes this project".

Power distance orientation (T1) was assessed by the six-item scale from Farh et al. (2007), which was adapted slightly to align with the project context. An example item is "Project managers should make most decisions without consulting project team members".

Job crafting (T2) was appraised through the dimensions of increasing structural and social job resources, increasing challenging job demands, and decreasing hindering job demands. The scale developed by Tims et al. (2012) was adaptively modified to fit the project setting. Two sample items are "I try to develop my project work related-capabilities or skills" and "If there are new developments in project work, I am one of the first to learn about them and try them out".

All items were measured using a 7-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. Moreover, *gender*, *age*, *education level*, *working years*, *project team tenure*, and *project team size* were set as control variables (T1), as suggested by previous studies (Luu, 2021a; Qin et al., 2020).

4.2. Samples and procedures

To empirically examine the proposed relationships, this study employed a structured survey to collect data from construction project team members in China, and team members of these projects were the targeted samples. The progress of construction projects is characterized by large pressure and uncertainty, and project members thus tend to engage in job crafting to address various challenges and accomplish their tasks smoothly (Zhang et al., 2026). Additionally, project teams are typically assembled temporarily and consist of members from diverse professional and functional backgrounds, leading to diverse power distance orientation among project members. Therefore, team members of construction projects are suitable as the investigation subjects of this study.

The selection of project members followed two criteria. First, they must currently be involved in an ongoing construction project. Second, they must be direct subordinates of the project manager. Target respondents include ordinary management staff and department heads, mainly from the technical, engineering, and cost departments. Since they work closely with the project manager and can directly perceive the leader's style and behavior, they are well-suited to complete the survey. A pilot study was conducted before the formal investigation to ensure the readability and reliability of the survey. We invited 35 university alumni working on construction projects to participate in the pilot investigation. According to their suggestions, several linguistic revisions of the initial survey were added to improve the accuracy of the questionnaire expression. For instance, one item of job crafting, "I try to develop my capabilities", was modified to "I try to develop my project work related-capabilities or skills" to reduce ambiguity and adapt to the project scenario.

To reduce the potential common method bias (CMB), the formal survey was conducted in two stages (T1 and T2) with a four-week interval based on the suggestion of Podsakoff et al. (2003). We first contacted two project managers employed at large Chinese construction companies, all of whom have previously collaborated or communicated with the authors. The snowball sampling technique was adopted to contact and interview another four project managers, which has been utilized in previous research to recruit this hard-to-reach group (Zheng et al., 2023). With the assistance of these project managers, the two-wave online questionnaires were distributed to different construction project teams (approximately 400 members) located in various provinces of China. These construction projects include residential projects, highway projects, municipal projects, commercial projects, etc. Participants were informed in advance that their anonymity and privacy are guaranteed, and that their responses will only be used for academic research purposes, thus encouraging honest feedback. At T1, participants were invited to answer questions related to humble leadership (independent variable), power distance orientation (moderating variable), and demographic information (control variables), resulting in 328 responses. After four weeks, the same participants were invited to respond to questions about project identification (mediating variable) and job crafting (dependent variable). In the second round, respondents were reminded that only those who had participated in the first round needed to complete the second-round survey, which ultimately led to 247 responses. After matching the two rounds of questionnaires exported by the online survey platform (www.wjx.cn) and screening out invalid responses, 239 responses constituted the initial sample for this study.

Demographic information showed that approximately 76% of the sample were male, and 24% were female. 12% of the respondents were aged 18–25, 21% were aged 26–30, 29% were aged 31–40, and the remaining 38% were over 40 years. The majority (63%) held a bachelor's degree or higher. Additionally, 28% reported a working experience of less than 5 years, 31% reported 5 years to 15 years, and 41% reported more than 15 years. For project team tenure, 61% had served over two years. Regarding team size, 17% worked in teams with fewer than 10 members, 56% in teams of 10–30, and 27% in teams exceeding 30 members.

5. Data analysis and results

5.1. Reliability and validity

Table 1 presents the means, standard deviations, the square roots of average variance extracted (AVE), and intercorrelations of the variables. As reported in Table 2, all factor loadings of variables are above 0.70, Cronbach's alpha and composite reliability (CR) values exceed 0.70, and the AVE values for all constructs are greater than 0.50, indicating satisfactory convergent validity (Bagozzi & Yi, 1988). Besides, the results in Table 1 indicate that the discriminant validity is satisfactory since the square roots of the AVE are greater than the correlation between the focal variable and other variables (Fornell & Larcker, 1981). Variance inflation factors (VIFs) were assessed to test the potential multicollinearity. The analysis indicates that multicollinearity is not a major concern, as the highest VIF value (4.15) is below the threshold of 5 (Hair et al., 2019).

Confirmatory factor analysis (CFA) was conducted to test the reliability and validity of the measurement model, and the results are tabulated in Table 3. Compared to the other alternative models, the hypothesized four-factor model fits better with the data (χ^2/df = 1.240, comparative fit index (CFI) = 0.987, Tucker-Lewis index (TLI) = 0.986, root mean square error of approximation (RMSEA) = 0.032, standardized root mean square residual (SRMR) = 0.033).

In addition, CMB was evaluated using two methods, and the results are in Table 3. First, by loading all items on one latent factor, the single-factor model poorly fits the data (χ^2/df = 11.594, CFI = 0.413, TLI = 0.368, RMSEA = 0.211, SRMR = 0.220). Second, after incorporating an unmeasured common method factor into the baseline four-factor model, the improvement of model fit is not obvious. Therefore, CMB is not assumed to threaten the current study.

Table 1. Descriptive statistics, correlations, and reliability of the main variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
Gender	1.469	0.500	–									
Age	3.000	1.254	–.013	–								
Education	1.653	0.662	.075	–.172**	–							
Working years	3.615	1.361	.019	.852**	–.149*	–						
Project team size	3.000	1.417	–.061	.102	–.070	.130*	–					
Project team tenure	2.770	1.277	–.136*	.277**	–.058	.316**	.065	–				
Humble leadership	5.044	1.522	–.062	.026	–.128*	.028	–.008	–.066	(.871)			
Project identification	5.126	1.463	.003	–.124	.021	–.051	–.023	–.122	.322**	(.856)		
Power distance orientation	4.861	1.626	.018	.067	–.103	.085	.063	–.007	.168**	.201**	(.875)	
Job crafting	5.281	1.396	.007	–.012	.012	.026	–.003	–.074	.411**	.446**	.200**	(.856)

Note: N = 239, SD = standard deviation, the square roots of AVE are shown in parentheses, * $p < 0.05$, ** $p < 0.01$.

Table 2. Reliability and validity of measurements

Variable	Items	loadings	Cronbach's alpha	CR	AVE
Humble leadership (HL)	HL1	0.859	0.966	0.967	0.758
	HL2	0.865			
	HL3	0.880			
	HL4	0.880			
	HL5	0.883			
	HL6	0.865			
	HL7	0.871			
	HL8	0.862			
	HL9	0.871			
Project identification (PI)	PI1	0.871	0.932	0.932	0.732
	PI2	0.829			
	PI3	0.844			
	PI4	0.867			
	PI5	0.867			
Power distance orientation (PDO)	PDO1	0.880	0.952	0.977	0.766
	PDO2	0.885			
	PDO3	0.896			
	PDO4	0.840			
	PDO5	0.880			
	PDO6	0.870			
Job crafting (JC)	JC1	0.848	0.961	0.962	0.734
	JC2	0.821			
	JC3	0.837			
	JC4	0.882			
	JC5	0.846			
	JC6	0.874			
	JC7	0.864			
	JC8	0.877			
	JC9	0.857			

Table 3. Confirmatory factor analysis and CMB test

Model	χ^2/df	CFI	TLI	RMSEA	SRMR
Four factors model: HL, PDO, PI, JC	1.240	0.987	0.986	0.032	0.033
Three factors model: HL+PDO, PI, JC	4.821	0.79	0.772	0.126	0.142
Two factors model: HL+PDO+PI, JC	7.122	0.662	0.635	0.16	0.181
Single factor model: HL+PDO+PI+JC	11.594	0.413	0.368	0.211	0.220
CMB model: CMB, HL, PDO, PI, JC	1.196	0.990	0.988	0.029	0.043

5.2. Hypothesis testing

The proposed hypotheses were tested by the ordinary least squares regression methods in SPSS, which has been widely adopted in construction project management research. The results of the regression analysis are set out in Table 4. Model 1 shows that the direct effect of humble leadership on project members' job crafting is significantly positive (β = 0.381, p < 0.001), thereby confirming H1. Moreover, as can be seen in Model 2 and Model 5, humble leadership is positively linked to project identification (β = 0.310, p < 0.001), and project identification has a positive impact on job crafting (β = 0.329, p < 0.001). To test the mediating role of project identification on the relation between humble leadership and job crafting, bootstrapping methods with 5000 subsamples at the 95% significance level were conducted in the PROCESS macro. The results indicate that the indirect effect of humble leadership on job crafting is statistically significant (β = 0.102, 95% CI [0.047, 0.176]), thus supporting H2.

The results in Model 6 imply that the interaction term between humble leadership and power distance orientation is statistically significant for project identification (β = –0.155, p < 0.001), providing support for H3a. To verify the robustness of this result, this study also examined the nonlinear moderating effect of power distance orientation on the relationship between humble leadership and project identification. The results in Model 7 reject this possibility, thus fully supporting H3a. Further, the simple slope was plotted in Figure 3 to clarify the moderating pattern. It suggests that compared with higher power distance orientation, the influence of humble leadership on project identification strengthens when power distance orientation is lower.

In addition, the moderated mediation analysis with 5000 bootstrapping samples was conducted to check H3b. As shown in Table 5, the index of moderated mediation is statistically significant (β = –0.051, 95% CI [–0.085, –0.023]). Concretely, power distance orientation significantly moderates the conditional indirect effect of humble leadership on job crafting via project identification, such that the indirect effect is significant when the level of power distance orientation is low or mean, but becomes non-significant when power distance orientation is high. Therefore, H3b is supported.

To test H4, this study first constructed the moderating regression function based on the coefficients reported in Model 4 of Table 4, then derived the conditional effect curve describing how power distance orientation shapes the effect of humble leadership on job crafting. Following previous suggestions on testing the U-shaped relationship (Haans et al., 2016; Lind & Mehlum, 2010), the nonlinear moderating effect of power distance orientation was evaluated. First, as shown in Model 4, the interaction term coefficient of the quadratic term of power distance orientation and humble leadership is positive and significant (β = 0.110, p < 0.05), indicating an upward-opening curvature of the conditional effect function. Second, the x-coordinate of the turning point was 0.20, located well within the power distance orientation range after mean centering ([–3.73,1.61]). Third, the slope of the conditional effect function changes sign across the lower and upper bounds of the observed range (−0.87 at the lower bound and 0.31 at the upper bound), which is consistent with a U-shaped pattern. Based on the above analysis, H4 was supported, and this nonlinear moderating pattern was visualized in Figure 4.

Table 4. Regression analysis results

Variables	Job crafting				Project identification		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	5.018*** (0.473)	4.880*** (0.444)	4.877*** (0.442)	5.005*** (0.485)	5.444 (0.508)	5.325*** (0.484)	5.110*** (0.528)
Gender	0.048 (0.170)	0.049 (0.159)	0.132 (0.159)	0.104 (0.158)	–0.003 (0.182)	0.066 (0.174)	0.035 (0.172)
Age	–0.127 (0.128)	–0.017 (0.121)	–0.08 (0.119)	–0.06 (0.119)	–0.334* (0.137)	–0.291* (0.130)	–0.249 (0.130)
Education	0.130 (0.129)	0.101 (0.121)	0.142 (0.121)	0.121 (0.121)	0.089 (0.139)	0.106 (0.132)	0.114 (0.132)
Working years	0.140 (0.119)	0.062 (0.113)	0.079 (0.112)	0.049 (0.112)	0.235 (0.128)	0.177 (0.122)	0.131 (0.122)
Project team tenure	–0.052 (0.063)	–0.022 (0.059)	–0.017 (0.059)	–0.008 (0.058)	–0.091 (0.067)	–0.06 (0.064)	–0.052 (0.064)
Project team size	0.003 (0.066)	0.007 (0.062)	0.016 (0.062)	0.012 (0.061)	–0.013 (0.071)	–0.004 (0.067)	–0.006 (0.067)
HL	0.381*** (0.055)	0.279*** (0.055)	0.384*** (0.052)	0.075 (0.139)	0.310*** (0.060)	0.306*** (0.057)	0.041 (0.151)
PI		0.329*** (0.057)					
PDO			0.097* (0.049)	0.076 (0.088)		0.124* (0.054)	0.228* (0.095)
HL×PDO			–0.177*** (0.032)	–0.045 (0.064)		–0.155*** (0.035)	–0.047 (0.070)
PDO^2				–0.02 (0.062)			0.086 (0.068)
$HL×PDO^2$				0.110* (0.047)			0.090 (0.051)
R^2	0.180	0.283	0.293	0.312	0.140	0.230	0.256

Notes: Unstandardized coefficient, SE are shown in parentheses, HL = humble leadership, PI = project identification, PDO = power distance orientation, JC = job crafting, *p < 0.05, **p < 0.01, ***p < 0.001.

Table 5. Conditional indirect effect of humble leadership on job crafting via project identification

Power distance orientation at different levels	Effect	SE	95% Confidence intervals
Index of moderated mediation	–0.051	0.016	[–0.085, –0.023]
–1 SD	0.177	0.047	[0.095, 0.279]
Mean	0.094	0.029	[0.045, 0.159]
+1 SD	0.019	0.028	[–0.036, 0.077]

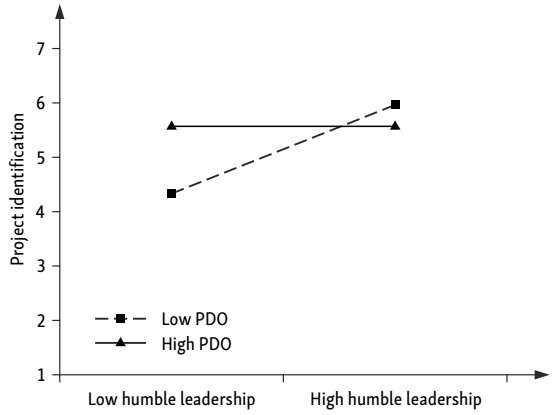

Figure 3. Moderating effect of power distance orientation on the relationship between humble leadership and project identification

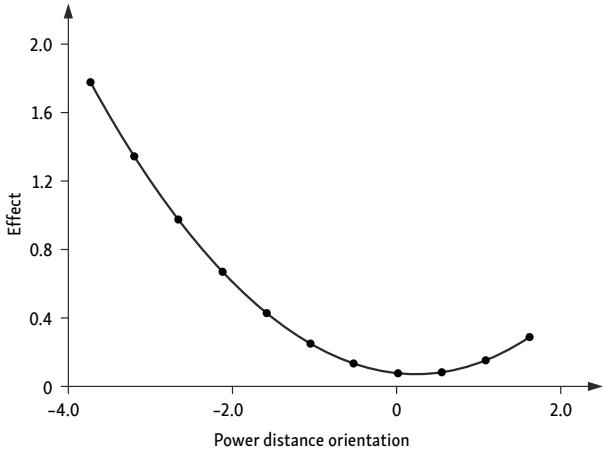

Figure 4. The U-shaped moderating effect of power distance orientation on the relationship between humble leadership and job crafting

6. Discussion

6.1. Main findings

The first finding of this study is that humble leadership significantly fosters job crafting among project members in construction projects. Compared with studies conducted in general organizational contexts, such as the public sector (Luu, 2021a) and the medical industry (Ding et al., 2020), our findings indicate that the effect of humble leadership on job crafting is particularly pronounced in project-based environments. This finding supports the leadership contingency perspective and suggests that in construction projects characterized by temporariness, high task interdependence, and distributed expertise, leaders' influence relies less on formal power and more on their ability to engage members in collaborative problem-solving. Under such conditions, leaders' humility encourages project members to adapt their tasks and interactions in response to dynamic project demands. Accordingly, humble leadership emerges as an effective leadership approach for stimulating job crafting as a micro-level adaptation mechanism in project settings.

This study also confirms that project identification serves as a mediator linking humble leadership and job crafting of project members. This finding goes beyond prior studies that have primarily focused on the direct relationship between humble leadership and job crafting (Ding et al., 2020; Luu, 2021a, 2021b; Tuan et al., 2021). It also differs from existing research that has largely explained the effects of humble leadership through resource-based, exchange-based, or affective mechanisms by conceptualizing humble leadership as a source of "can-do" motivation (Chandler et al., 2023). In contrast, our findings uncover an identity-based pathway through which humble leadership influences proactive behaviors. This extension suggests that, in project-based contexts characterized by interdisciplinary collaboration and team temporariness, project identification represents a distinctive psychological mechanism through which humble leadership can function effectively. Moreover, this study advances prior empirical research that has called for greater attention to the effectiveness of project leadership in cultivating project identification (Ding et al., 2017; Jiang et al., 2023).

This study also reveals the boundary condition of power distance orientation in project humble leadership effectiveness. As power distance orientation increases, the positive impact of humble leadership on project identification weakens, while the direct effect on job crafting follows a U-shaped pattern. This finding supports prior suggestions that the moderating role of power distance orientation is contingent upon the dependent variable (Chandler et al., 2023; Zhang & Wilson, 2025). Existing studies report conflicting findings regarding the moderating effect of power distance orientation on the relationship between humble leadership and individual-level outcomes (Jeung & Yoon, 2016; Lin et al., 2019). Drawing on project-based evidence and social identity theory, our results help reconcile these mixed findings by demonstrating a differentiated contingent role of power distance orientation across psychological and behavioral outcomes. Specifically, job crafting among project members may reflect distinct motivational processes. For project members with relatively low power distance orientation, humble leadership is more

likely to provide psychological energy and proactive motivation, thereby encouraging their job crafting. In contrast, for those with high power distance orientation, job crafting may represent a more cautious or conservative response to humble leadership rather than an identification-driven behavior.

The weakening effect of power distance orientation can be further explained by the expectancy violation theory (Burgoon, 2015; Liao et al., 2025). In efficiency-oriented project environments that prioritize rapid decision making and task execution, project members with high power distance orientation tend to hold strong expectations regarding leaders' authority and decisiveness. Project leaders displaying humility deviates from these expectations and is perceived as a violation of leadership prototypes, thereby mitigating their effectiveness on project members. Consistent with this explanation, the conditional mediation results indicate that the mediating role of project identification becomes insignificant at high levels of power distance orientation but remains significant at low to moderate levels. This suggests that identification-based mechanisms are more salient when project members' hierarchical expectations are weaker, whereas expectancy violations under high power distance orientation hinder the formation of project identification, thereby constraining the indirect effect of humble leadership on job crafting.

6.2. Theoretical contributions

First, this study contributes to the project leadership and construction management research by demonstrating how humble leadership fosters project members' adaptivity in construction projects. While prior studies have examined various project leadership styles, such as transformational leadership (Ding et al., 2017), ethical leadership (Li et al., 2022), charismatic leadership (Kenda et al., 2024), humble leadership has received little empirical scrutiny in construction project management, despite growing evidence of its effectiveness for project success (Ali et al., 2020, 2021a, 2021b). Meanwhile, job crafting in project management has primarily focused on its outcomes (Haffer et al., 2021; McKevitt et al., 2022; Ni et al., 2023; Yang et al., 2025), while remaining largely silent on its antecedents. By integrating humble leadership and job crafting within a unified project-based framework, this study responds to calls for greater attention to human-centered and behavioral mechanisms in construction project management and enriches the understanding of humble leadership effectiveness in temporary project settings.

Second, adopting the social identity theory, this study offers a novel view of how leaders cultivate project identification in construction projects. Although prior leadership research has applied social identity theory, it has primarily focused on subordinates' identification with their leaders or with the overall organization (Gu et al., 2015; Moriano et al., 2014; Tabassum et al., 2025), overlooking how leadership shapes members' identification with the projects in multi-organizational project contexts, where the project identification formation is more fragile due to the temporary and heterogeneous nature of construction project teams. Moreover, this study bridges the research streams of humble leadership and job crafting by utilizing social identity theory, thereby responding to calls on broadening theoretical perspectives on elaborating humble leadership effectiveness (Zheng & Ahmed, 2024). To the best of our knowledge, this study is among the first to reveal the link between humble leadership and job crafting from a social identity lens.

Finally, this study deepens the understanding of when and for whom humble leadership is effective by identifying power distance orientation as a critical boundary condition in construction project teams. By showing that power distance orientation weakens the identity-based pathway from humble leadership to job crafting while producing a U-shaped moderating effect on the direct relationship, this study offers a holistic and nuanced view of how individual hierarchical orientations shape leadership effectiveness in construction projects. In this way, this study complements the boundary conditions of social identity theory in temporary project settings, and, to some extent, echoes Owens and Hekman's (2012) viewpoint that humility is not always a virtue but can also be perceived as weakness.

6.3. Practical implications

This study offers several practical implications for construction management practitioners and policy-makers. First, leadership design in construction organizations should move beyond rigid top-down control and instead attend to project members' professional and developmental needs (Ali et al., 2020). Leader humility should be integrated into leadership development, training, and performance evaluation programs, with an emphasis on leaders' openness to feedback, recognition of project members' technical expertise, and encouragement of idea sharing during task execution. In addition, construction managers should be aware of the dual nature of humble leadership. While this leadership style is most effective for project members with low power distance orientation, it may be less encouraging for those with high power distance orientation. Therefore, human resource management practices can benefit from differentiated intervention strategies. To attenuate project members' power distance orientation, promoting interaction and communication among members at different hierarchical levels within project teams, as well as establishing more informal coordination mechanisms, is recommended.

Second, job crafting should be appropriately institutionalized and legitimized within construction project management. Particularly in today's ongoing digital transformation in the construction industry, adaptive tasks and relational adjustments should be explicitly recognized in project manuals, role descriptions, and standard operating procedures to enhance human-technology interaction and encourage work innovation. Construction managers can further incorporate job crafting into performance evalu-

ation criteria by recognizing outcomes such as proactive problem solving and coordination improvement, thereby signaling that such behaviors are not only permitted but valued. Moreover, in construction practice, project leaders can reinforce members' sense of value and project identification by involving them in decisions related to technical solutions, safety planning, or construction sequencing (Drouin et al., 2018), which both leverages their expertise and strengthens engagement within the project, thereby encouraging them to proactively engage in job crafting. Overall, construction managers should foster humble leadership and institutionalize job crafting practices to enhance members' adaptive behaviors, while tailoring leadership approaches to align with project members' power distance orientation in order to maximize effectiveness.

7. Conclusions, limitations, and future research directions

Drawing on social identity theory, this study develops and empirically tests a theoretical model to explain how humble leadership influences project members' job crafting in construction project management. The conclusions in line with the research objectives can be summarized as follows. First, humble leadership positively predicts project members' job crafting. Moreover, this relationship is mediated by project identification, suggesting that humble leaders foster members' identification with the project, which in turn promotes their proactive job crafting behaviors. Second, concerning the boundary condition, power distance orientation significantly moderates both the direct and indirect relationships between humble leadership and job crafting. Specifically, as power distance orientation increases, the positive effect of humble leadership on project identification weakens, thereby reducing its indirect influence on job crafting and becoming non-significant at higher levels. Additionally, the moderating effect on the direct relationship exhibits a U-shaped pattern, indicating a more complex role of individual differences in shaping leadership effectiveness. Overall, this study demonstrates that humble leadership serves as an effective approach for construction managers to enhance members' adaptivity and improve project outcomes in VUCA environments, thereby contributing to the body of knowledge in the construction management field.

Although this study presents profound insights for both theory and practice, there are some limitations that indicate directions for future research. First, the time-lagged design to mitigate the concern of CMB, and post-hoc multiple statistical methods also suggested that CMB did not threaten our study. However, given that the data were self-reported, which may be subject to social desirability bias, future research could put efforts into collecting leader-subordinate dyadic data. Moreover, longitudinal studies or experimental designs are encouraged to better infer the causal relationships between variables. Second, the survey data were collected exclusively from construction projects in China. Although humility is a virtue highly valued in traditional Chinese culture, making this context theoretically meaningful, future research is encouraged to test the proposed model using cross-cultural or multi-country samples to examine the cultural contingency and robustness of our findings. Moreover, although the findings of this study are derived from the construction industry, they may also offer useful insights for other project-based industries. Future research is therefore encouraged to contextually adapt and further test the proposed theoretical model in these settings. Finally, this study employed social identity theory to untangle the job crafting motivated by leader-follower interactions, future studies are suggested to explore the underlying mechanism from other theoretical perspectives (e.g., social exchange theory). Besides, other potential moderators can also be tested to obtain additional unique and in-depth theoretical understandings.

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Author contributions

Yuanyuan Zhang and Jianyao Jia conceived the study and were responsible for the design and development of the data analysis. Guofeng Ma supervised this work. Xinming Pan and Ding Wang were responsible for data collection and analysis. Yuanyuan Zhang and Jianyao Jia were responsible for data interpretation. Yuanyuan Zhang wrote the first draft of the article.

Disclosure statement

No potential conflict of interest was reported by the author.

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