Does owners’ leadership matter to relational behavior in mega construction projects? A role orientation perspective

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Abstract
Purpose – Although researchers have long recognized the importance of participating organizations’ (POs) relational behavior for mega construction projects (MCPs) performance, relational behavior may not be executed by POs without effective leadership from project owners. However, little is known about the mechanisms linking owners’ leadership styles to POs’ relational behavior. This study draws on full range leadership theory and role theory to examine the relationships between owners’ leadership styles (i.e. transformational and transactional) and relational behavior. POs’ role orientations (i.e. normative and economic) are considered as potential mediators.

Design/methodology/approach – Data were collected from 175 managers deeply involved in MCPs. Hierarchical regression model and bootstrapping methods were performed on the data to examine the direct effects of owners’ leadership on POs’ relational behavior and the mediating effects of POs’ role orientations.

Findings – The results revealed that both owners’ transformational and transactional leadership positively affect POs’ relational behavior, despite the former being higher than the latter, and indirectly influence relational behavior via POs’ normative and economic role orientation, respectively.

Practical implications – This study provides a clear picture of how owners’ leadership can motivate POs’ relational behavior to achieve high-quality inter-organizational relationships in MCPs. The findings can guide owners’ top manager selection by prioritizing those with transformational leadership, which is beneficial to achieving high-level relational behavior of POs. The results also imply that owners should pay greater attention to cultivating POs’ normative role orientation by encouraging teamwork and open communication to enhance their implementation of relational behavior.

Originality/value – Unlike previous research focusing more on intra-organizational leader–follower relationship within one PO, this study is one of the first to empirically confirm owners’ leadership as a critical antecedent of POs’ relational behavior, thus enhancing the theoretical understanding of inter-organizational relationship management in MCPs. Based on role theory, this study considers a novel organizational psychology mechanism, i.e. POs’ role orientations, as the mediator to unravel how owners’ leadership affects POs’ relational behavior, which was rarely invoked in MCP leadership literature.

Keywords Transformational leadership, Transactional leadership, Project owner, Role theory, Relational behavior, Mega construction projects

Paper type Technical paper

1. Introduction
Mega construction projects (MCPs) are massive investments of infrastructure, often initiated by the government, which involve substantial financial investments, long schedules,
complicated inter-organizational relationships, and profound social impacts (Mok et al., 2015). Due to the high degree of uncertainty and task interdependency, project goal largely needs numerous POs (such as contractors, designers, third-party supervisors, and consultants) to realize jointly during the design and construction phases in MCPs. Thus, high-quality inter-organizational relationship among POs is essential to ensure joint task fulfillment and MCPs’ success (Li et al., 2019). From the perspective of POs’ behavior, relational behavior has been confirmed to enhance inter-organizational relationships (Denicol et al., 2020). Relational behavior refers to desired action in the exchange to promote the development of a collaborative relationship, typically characterized by autonomy, reciprocity, and long-term orientation consisting of information sharing, flexibility, and solidarity (Li et al., 2019). POs’ high levels of engagement in relational behavior effectively reduce inter-organizational conflicts and improve relationship quality, team performance, and innovation adoption in the construction phase (Daniel and Daniel, 2019; Zheng et al., 2018). For instance, in the Hong Kong-Zhuhai-Macao Bridge project, the implementation of relational behavior by POs contributes to addressing numerous design and construction technique issues, formulating 450 patents (Zhu et al., 2020).

However, despite the benefits of relational behavior to promote MCPs’ goal realization with tremendous challenges, POs may still be reluctant to adopt relational behavior since it is non-mandatory. As the top of the “pyramid” of MCP organization, project owners play a vital role in motivating such positive behavior. Owners (e.g. Hong Kong-Zhuhai-Macao Bridge authority) are responsible for project strategic decisions, resource arrangement, and overall control of POs’ behavior, which all require adequate leadership fulfillment (Sainati et al., 2017). In MCPs, owners’ leadership can be defined as the ability of senior managers to encourage project members to achieve a common goal (Tyssen et al., 2014). Currently, primary research on leadership in architecture, engineering, and construction field paid attention to project manager’s (i.e. middle manager) leadership styles of a single PO such as a contractor (e.g. Ding et al., 2017; Yang et al., 2011), neglecting that the owners’ appropriate leadership styles can dramatically impact POs’ behavior under the complex inter-organizational relationships in MCPs. This hinders owners from adopting effective leadership to drive POs’ relational behavior, in turn undermining project performance. Given the theoretical and practical needs, it is imperative to explore whether and how owners’ leadership styles matter to POs’ relational behavior in MCPs.

Nowadays, various effective leadership styles have been identified in the construction management field (Khan et al., 2020; Zhang et al., 2018). Among them, transformational and transactional leadership, embedded in full range leadership theory, are the most frequently discussed (Tyssen et al., 2014). These two leadership styles of owners seem to be closely linked to POs’ relational behavior in MCPs. First, MCP possesses multiple complex goals, appealing to POs to complete traditional iron triangle performance (i.e. cost, quality, and schedule) and achieve social values (e.g. environmental protection) (Li et al., 2019). Owners with transactional leadership will stimulate POs to promptly achieve goals by highlighting rewards and punishments. POs might consider owners rigid, inflexible, and less empowering, decreasing their willingness to provide critical information and cooperate. Second, MCPs usually confront extreme uncertainty and ambiguity. POs must innovate their practices with novel design and construction techniques to deal with them. Owners with transformational leadership emphasize encouragement, motivation, vision, and adapting to change (Raziq et al., 2018). In this way, transformational owners’ proactive attitude and open mindset may significantly stimulate POs to reinforce inter-organizational learning, thereby addressing MCPs’ challenges with collective wisdom (Liu et al., 2022b). Therefore, we focus on owners’ transformational and transactional leadership to unveil their effects on POs’ relational behavior.

Although owners’ leadership may directly influence POs’ relational behavior, there seems to be a “missing link” between the two leadership styles and relational behavior. Leadership is widely acknowledged as a critical source for shaping organizational members’
psychological mechanisms and further influencing their behavior (Duan et al., 2017; Paterson and Huang, 2019). The potentially vital role played by POs’ role perceptions may be the key to unlocking the “black box” between owners’ leadership and POs’ relaional behavior. The concept of “role” is rooted in role theory, a theory widely used in the field of organizational psychology to explain how perceived role impacts the behaviors of actors within distinct contexts (Heide and Wathne, 2006), providing the theoretical foundation for the decision logic of organizational behavior across parties from an organizational-level psychological perspective (Heide and Wathne, 2006). Drawing on role theory, we theorize and examine two role orientations, i.e. normative and economic role orientation, to reveal the psychological mechanisms from owners’ leadership to POs’ relational behavior. Overall, the following research questions were developed to guide this research:

**RQ1.** What are the relationships between owners’ leadership styles and POs’ relational behavior in MCPs?

**RQ2.** Do POs’ role orientations mediate the above relationships in MCPs?

This study contributes to construction management literature in two ways. First, our findings expand the theoretical understanding of inter-organizational relationship management in MCPs by validating the crucial driving force for POs’ relational behavior from the perspective of owners’ leadership. Second, from the role theory perspective, our study extends the literature on MCPs’ leadership by articulating a novel organizational psychology mechanism rarely invoked in the existing research to open the lid of the “black box” between owners’ leadership and POs’ relational behavior.

2. **Theoretical background and hypotheses development**

The concept of relational behavior is drawn from the relational exchange norms framework proposed by Macneil (1980). Further, Heide and John (1992) argued that relational behavior refers to the actions of establishing, developing, and maintaining cooperative relationships, consisting of flexibility, information exchange and solidarity. Specifically, flexibility is the shared expectations between the partners regarding the way they will behave when unanticipated changes in the contractual environment occur; information exchange represents that information will be continually and freely exchanged; solidarity refers to each partner will behave in ways that benefit the collaboration as a whole (Heide and John, 1992). Due to the increasingly complex inter-organizational relationships in MCPs, adopting such positive behaviors to shape desirable cooperation relationships is required. As previous studies have shown, POs’ high level of relational behavior generally contributes to reducing inter-organizational conflicts, creating value for the project, improving resource efficiency, resolving strategic difficulties, and encouraging innovation adoption (Daniel and Daniel, 2019; Lehtinen et al., 2019; Zheng et al., 2018). Therefore, relational behavior attracted widespread attention in the context of MCPs.

In view of the positive role of relational behavior in MCPs, scholars have devoted extensive efforts to determining the driving force for the relational behavior implementation of POs. For example, Ning and Ling (2015) found that the adoption of relational behavior was largely influenced by project complexity and owner type. In addition, from the organizational psychology perspective, Zheng et al. (2018) investigated the psychological motivators of POs’ relational behavior, including benefit perception attitude, subjective norm, and perceived behavioral control. Relational behavior was also found to be affected by governance mechanisms, such as contractual governance, trust, and institutional support (Galvin et al., 2021; Zheng et al., 2019). However, the effect of owners’ leadership was largely neglected, which has been emphasized as the central role of influencing project success and POs’ behavior in MCPs (Hu et al., 2015; Liu et al., 2022b). Various effective leadership types have
been identified in the construction management setting, such as ambidextrous leadership (Zheng et al., 2023), shared leadership (Imam, 2021), ethical leadership (Khan et al., 2020), and transformational and transactional leadership (Zhang et al., 2018). Among those mentioned leadership styles, transformational and transactional leadership have received the most extensive attention in construction project management area (Tyssen et al., 2014). According to full range leadership theory, transformational leadership is characterized by the power to influence the attitudes and behaviors of subordinates through idealized influence, inspirational motivation, intellectual stimulation, and individual consideration, while transactional leadership monitors subordinates through contingent rewards and management by exception (Bass, 1985). This study focuses on the effect of owners’ transformational and transactional leadership on POs’ relational behavior in MCPs.

In addition, there still exists a gap in organizational psychology mechanisms between owners’ leadership and POs’ relational behavior. Leadership is a means of external management, and whether or not it can effectively affect POs’ behavior also depends on their psychological states (Ding et al., 2017). Therefore, it is necessary to study how owners’ leadership influences POs’ behavior from an organizational psychology perspective (Li et al., 2019), which helps project owners develop shared values, attitudes, and approaches to affect POs’ psychological states and further adjust their behavior (Currie and Teague, 2015; Mok et al., 2015). However, existing research has merely revealed several psychological mechanisms at the individual level that mediate the effects of leaders’ leadership and project members’ behavior. For example, Wang et al. (2021) confirmed that project managers’ transformational and transactional leadership could motivate MCPs members’ environmentally friendly behaviors by enhancing their environmental commitment, i.e. a sense of attachment and responsibility regarding environmental concerns. Besides, trust in leaders has also been demonstrated as an important psychological mechanism to link managers’ leadership and the information-sharing and collaborative behavior of team members in MCPs (Wan et al., 2020). The psychological mechanisms at the organizational level to explain how owners’ leadership affects POs’ relational behavior in MCPs are still largely unexamined. Therefore, this study attempted to fill in this research gap by exploring the association between owners’ leadership and POs’ relational behavior from the perspective of organizational psychology.

2.1 Role theory

Role theory has its roots in sociology and psychology literature. Beginning as a theatrical metaphor, role theory has mainly focused on the behaviors characteristic of actors within contexts (Biddle, 1986), serving as a theoretical foundation for analyzing behavior. Role theory postulates that in social exchanges, one’s party perception of its role defines what it expects, how much it invests, and evaluates the relationship (Biddle, 1986). Roles are evoked by the situation in which actors find themselves. Based on these roles, actors form expectations about appropriate behaviors in a specific situation.

Role theory is commonly applied in various fields at individual and organizational levels. At the individual level, marketing scholars have widely utilized role theory to study the role problems faced by boundary spanners (Dong et al., 2016); various studies in permanent organizations have also employed role theory to explain individuals’ behavior (e.g. Paterson and Huang, 2019). Role theory at the organizational level was developed by a series of notable studies (e.g. Dong et al., 2016; Heide and Wathne, 2006). Heide and Wathne (2006) defined an organizational role as a “collective mind” that “provides the foundation for shared perceptions and coordinated decision making.” They proposed that the organizational role in an exchange relationship can be divided into two types: friend and business people. These two roles coexist and are interchangeable, but only one role dominates a specific exchange.
relationship. When an organization attributes its primary role as being a businesspeople, its actions will follow the “logic of consequences” to maximize its interests even at the expense of its partner; while an organization assuming a friend role instead follows the “logic of appropriateness”, according with cooperation norms when making behavior decisions. Dong et al. (2010) developed this further, labeling the businesspeople and friend roles as “economic role orientation” and “normative role orientation”, respectively. In MCPs, POs must balance the requirements of their parent company to maximize profits with the need to adopt cooperative norms to support the success of the whole project (Xue et al., 2017). As these two role orientations co-exist for POs in MCPs, we employ them to explain how owners’ leadership affects POs’ relational behavior.

2.2 Owners’ transformational-transactional leadership and POs’ relational behavior

First, we speculate that owners’ transformational leadership might motivate POs’ relational behavior. Specifically, considering MCPs’ extraordinarily complicated and non-routine characteristics, transformational owners are keen on stimulating POs’ intelligence to explore potential solutions and develop breakthroughs by brainstorming and open discussion. POs thus are encouraged to give their subjective initiatives into full play by solving problems innovatively and responding to contingencies flexibly and adaptively in MCPs (Zhang et al., 2018). Furthermore, the complex MCPs involve numerous organizations with different professional backgrounds, leading to information asymmetry within the implementation process. To overcome misunderstandings and information island phenomena, transformational owners foster proactive attitudes and open mindsets to encourage cross-boundary information exchange among POs (Liu et al., 2022b). POs will thus fully engage in prompt information sharing. Ultimately, transformational owners focus on higher achievements, such as maintaining a high-quality relationship in MCPs; they are more likely to recognize potential conflicts among POs and carry out corresponding coordination by balancing their interests. Catering to the owners’ expectations, POs will proactively engage in cooperative actions.

In contrast, transactional owners may weaken relational behavior. Specifically, transactional owners severely punish POs that deliver poor performance. To avoid such punishment, POs may focus on improving their performance rather than helping others through prompt information sharing and cooperative endeavors since this behavior may be resource-consuming (Zheng et al., 2018). Additionally, the overemphasis on mistakes and deviations typically found in transactional owners indicates their low error tolerance of POs’ practices. Therefore, any initiatives implemented by POs to deal with unforeseen contingencies flexibly will be restrained since their trial may bring about errors. Therefore, the following hypotheses are proposed:

\[ H1a. \] Owners’ transformational leadership positively influences POs’ relational behavior.

\[ H1b. \] Owners’ transactional leadership negatively influences POs’ relational behavior.

2.3 Mediating effects of POs’ normative role orientation

Heide and Wathne (2006) noted that roles in exchange relationships could be created in different contexts. We argue that owners’ leadership provides contextual cues to determine the POs’ role orientations. Specifically, transformational leadership establishes a trustworthy and intimate climate by highlighting affective ties and individualized consideration (Melita Prati et al., 2003), which is beneficial for cultivating a high-quality partnership among POs. Under such circumstances, POs will be highly motivated to act as friends. Moreover, transformational owners convey goodwill signals to POs by providing enough support and guidance to enable them to play to their strengths when coping with
project uncertainty. In receipt of such strong goodwill, POs are willing to develop friendships with owners (Schonsheck, 2000).

Guided by the “logic of appropriateness”, POs with normative role orientation will establish and follow specific social norms, such as negotiation, trust, and interdependence (Grayson, 2007). In this case, POs will solve difficulties, such as inter-organizational conflicts, in an understanding and coordinated manner (Xue et al., 2017). When confronted with the unexpected events inevitably emerging in MCPs, POs with normative role orientation will be very willing to address these issues with partners flexibly via mutual support and deep information exchange. Therefore, abiding by these norms benefit POs that implement relational behavior initiatively. The following hypotheses are therefore proposed:

**H2.** Owners’ transformational leadership positively affects POs’ normative role orientation.

**H3.** POs’ normative role orientation positively impacts their relational behavior.

**H4.** POs’ normative role orientation mediates the positive impact of owners’ transformational leadership and POs’ relational behavior.

### 2.4 Mediating effects of POs’ economic role orientation

Transactional owners, highlighting rewards, punishments, and monitoring when it comes to the execution of MCPs, will signal POs that the owners have no plans to pursue long-term strategic cooperation since they avoid developing social ties with POs. POs thus perceive this cooperation to represent a “one-off” business opportunity and focus on developing a single project to maximize their interest rather than seeking to build and maintain a long-term cooperative relationship by abiding by social norms. It therefore seems likely that owners’ transactional leadership will intensify the economic role orientation of the POs.

As POs with economic role orientation tend to maximize their business interests, the additional cost of developing and maintaining high-quality relationships may impede the willingness of POs to implement relational behavior. In addition, economic role-orientated POs tend to engage in opportunistic behavior rather than relational behavior to enhance their interest. Opportunistic behavior refers to self-interest seeking with guile (Williamson, 1975). For example, POs may withhold vital information or negotiate insincerely with others. Such POs tend to concentrate on short-term profit as they do not anticipate enjoying a continuous relationship with the long-term business. Due to the high complexity and uncertainty of MCPs, it is impossible to develop complete contracts *ex ante* (Galvin et al., 2021), hence POs with economic role orientation may exploit loopholes with impunity. Such POs will be less committed to frequent information exchange and joint problem-solving. The following hypotheses were developed:

**H5.** Owners’ transactional leadership positively influences POs’ economic role orientation.

**H6.** POs’ economic role orientation negatively affects their relational behavior.

**H7.** POs’ economic role orientation mediates the positive impact of owners’ transformational leadership on POs’ relational behavior.

The proposed conceptual framework of the study is presented in Figure 1.

### 3. Research method

#### 3.1 Measurement

All the measurement scales were adopted from the existing literature and modified to suit the specific context of MCPs. Specifically, transformational and transactional leadership were
measured with 13 and 4 items, respectively, adapted from the Multifactor Leadership Questionnaire (MLQ) proposed by Bass and Avolio (1990). Normative and economic role orientations were each measured with 3 items adopted from Dong et al. (2010), who initially developed this scale for measuring role orientations. This was widely used in various studies (e.g. Gao et al., 2016). As the original scale did not consider the features of MCPs, we adjusted the scale in Dong et al. (2010) appropriately to align them with the MCPs context. As for relational behavior, the scale proposed by Lusch and Brown (1996) and then widely adopted in various studies (e.g. Hoppner and Griffith, 2011; Lu et al., 2020). Afterward, Zheng et al. (2018) introduced the concept of relational behavior into the field of MCPs and contextualized the abovementioned scale. Due to the similarity with our research context, we used the 8-item scale developed by Zheng et al. (2018) to measure relational behavior. After identifying suitable measures for each construct, we developed a preliminary questionnaire and confirmed the content validity of the items by interviewing experts in the field. The eligible experts should meet the following three criteria: (1) They should hold senior positions and have a great understanding of owners’ leadership and POs’ relational behavior; (2) They should have at least 5-year experience in MCPs and have been involved in at least three MCPs with an investment of more than 1 billion RMB; (3) To obtain comprehensive feedback from various POs on our questionnaire, distinct types of experts from third-party supervisors, designers, contractors, as well as owners should be included. Given that previous studies have generally invited 15 to 20 experts to revise the preliminary questionnaire before the formal data collection (Wang et al., 2021; Zhang et al., 2018), we finally invited 16 experts in distinct POs (i.e. 6 owners, 2 third-party supervisors, 3 designers, and 5 general contractors) to evaluate the suitability of our questionnaire. These experts provided sufficient feedback until the last two experts proposed no additional suggestions. All experts have been confirmed to possess rich knowledge of owners’ leadership and POs’ relational behavior in MCPs. In terms of their work years and project experience, each expert has worked in at least three MCPs with more than 7-year experience. Based on their feedback, one inappropriate item was removed, two overlapping items were combined, and several confusing items were rephrased. After these modifications, we again invited these experts to assess our questionnaire and they unanimously agreed that the final questionnaire could effectively measure the variables involved in our study. The final questionnaire consisted of the measurement items presented in Table 2. All the measurement items used a 5-point Likert scale ranging from “1 = strongly disagree” to “5 = strongly agree”.

Five control variables were selected to eliminate their potential influence on relational behavior. The first variable is the prior cooperation experience between owners and other POs. Buvik and Rolfsen (2015) suggested that prior cooperation experience promotes mutual familiarity and trust to facilitate relational behavior. This was measured as a binary variable (0 = with no prior collaborative experience; 1 = with prior collaborative experience). The second, the ownership type of the parent company may affect organizational behavior in

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**Figure 1.**

- **Research framework**

**Source(s):** Author’s own work
MCPs (Yang et al., 2020), which was assigned to one of four scale points (1 = state-owned enterprise; 2 = private enterprise; 3 = foreign-owned enterprise; 4 = other). The third, the expectation of future interaction, indicates whether POs anticipated cooperating with their current partner on future projects, making them more inclined to engage in relational behavior. This was measured with binary scale (0 = no expectation of future cooperation; 1 = expectation of future cooperation). Project duration and investment were also controlled since both a long project duration and a large project scale tend to foster close interactions among POs, which may affect relational behavior (Lui et al., 2006).

3.2 Sampling and data collection
Chinese MCPs were selected for this study due to the increasing number of MCPs being undertaken. As designers, third-party supervisors, consultants, and contractors are key POs to conduct relational behaviors in MCPs, we selected them as key informants to investigate their perceived owner’s leadership style, as well as their role orientations and relational behavior. The use of key informants of one contracting party as data sources to understand the inter-organizational relationships has been widely adopted in past studies (Shiu et al., 2014). Key informants are mainly project managers in these POs who have abundant knowledge of inter-organizational relationships in MCPs. Moreover, given that multiple POs (i.e. plenty of designers and contractors) are involved in MCPs, we invited key informants from different organizations to reply to the questionnaire. It’s worth noting that we merely asked one eligible project manager from a specific PO (e.g. one designer or contractor) to avoid inconsistent evaluation of owners’ leadership styles by project managers in the same organization. All the respondents have participated in MCPs costing over 1 billion RMB (approximately US$157 million) had at least three years of experience working on MCPs.

The survey was completed between July and December 2022. Of the 232 surveys returned, 175 useable responses were retained after excluding invalid responses missing key information or incorrectly completed. Among all MCPs indicated by respondents, 77.9% cost between 1 and 6 billion RMB and 22.1% cost over 6 billion RMB. Regarding project duration, 12.4% is within two years, 72.1% took between 2 and 4 years, and 15.5% took longer than 4 years. The rest of the characteristics of the 175 survey respondents and the involved 122 MCPs are shown in Table 1. The number of respondents exceeds that of the project since, for a specific project, we invited more than one PO to respond to our questionnaire. Subsequently, to further validate the data quality, a series of tests were performed to address two common issues plaguing survey methodology: nonresponse bias and common method variance. Nonresponse bias is a potential concern that may reduce the quality representativeness of our data (Clottey and Benton, 2013). Due to the unavailability of answers from non-respondents, Armstrong and Overton (1977) assumed that late respondents are equivalent to non-respondents and proposed an approach to evaluate the nonresponse bias by testing for significant differences between the responses of the first 30 and the last 30 surveys, which was widely adopted by studies using questionnaires (e.g. Lai et al., 2018; Narayanamurthy and Tortorella, 2021). We thus used this method in this study. Both t-test and ANOVA are able to determine whether statistically significant differences existed in the mean scores of responses across various respondent groups (Zhang et al., 2023a). Previous studies have widely adopted these two methods to examine the differences between groups to test nonresponse bias (e.g. Mu et al., 2021; Singh et al., 2023; Zheng et al., 2018). Therefore, the t-test and ANOVA were also adopted in this study. The results revealed no significant differences between the two groups of the first 30 and last 30 respondents, indicating that nonresponse bias is not an issue in our study, in turn confirming the representativeness of our collected samples for further utilization. The possibility of common method variance for all variables was examined using Harman’s one-factor test. The result
satisfied the threshold (44.84% < 50%) regarding the ratio of the first factor accounting for the overall variance.

3.3 Analytical strategies
To address our proposed research questions, we conducted the following two steps. First, we examined the validity and reliability of the measurement model via various indexes, including internal consistency, indicator reliability, convergent validity, and discriminant validity, utilizing SmartPLS 3.0 software. Subsequently, the direct and mediating effects were validated using a hierarchical regression model, and a bootstrapping method was employed (SPSS 25 software) to further confirm the mediating effects.

4. Analysis and results
4.1 Reliability and validity of the measurement model
To ensure the stability of regression analysis, we began by calculating the variance inflation factors (VIF) to identify the potential collinearity. The results indicate that there was no

<table>
<thead>
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<th>Characteristicsa</th>
<th>Description</th>
<th>Number</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Respondents (N₁ = 175)</td>
<td>Contractor</td>
<td>101</td>
<td>57.7</td>
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<td></td>
<td>Designer, third-party supervisor and consultant</td>
<td>74</td>
<td>42.3</td>
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<td></td>
<td>Project director</td>
<td>58</td>
<td>33.1</td>
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<td></td>
<td>Department manager</td>
<td>61</td>
<td>34.9</td>
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<tr>
<td></td>
<td>Project manager</td>
<td>56</td>
<td>32.0</td>
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<tr>
<td>Working experience in MCPs</td>
<td>3–5 years</td>
<td>43</td>
<td>24.6</td>
</tr>
<tr>
<td></td>
<td>6–10 years</td>
<td>52</td>
<td>29.7</td>
</tr>
<tr>
<td></td>
<td>Over 11 years</td>
<td>80</td>
<td>45.7</td>
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<tr>
<td>Involved MCPs (N₂ = 122)</td>
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<tr>
<td></td>
<td>Railway</td>
<td>1</td>
<td>0.8</td>
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<tr>
<td></td>
<td>Tunnel</td>
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<td></td>
<td>Bridge</td>
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<td>4.1</td>
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<tr>
<td></td>
<td>Skyscraper</td>
<td>11</td>
<td>9.0</td>
</tr>
<tr>
<td></td>
<td>Airport</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td></td>
<td>Road</td>
<td>19</td>
<td>15.6</td>
</tr>
<tr>
<td></td>
<td>Rail Transit</td>
<td>9</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>Public building (such as event facilities)</td>
<td>71</td>
<td>58.2</td>
</tr>
<tr>
<td>Project locationb</td>
<td>North China</td>
<td>5</td>
<td>4.1</td>
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<tr>
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<td>18</td>
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<td></td>
<td>Northwest China</td>
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<tr>
<td>Project investment</td>
<td>1 to 6 billion RMB</td>
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<td>Over 6 billion RMB</td>
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<td></td>
<td>2–4 years</td>
<td>88</td>
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<tr>
<td></td>
<td>Over 4 years</td>
<td>19</td>
<td>15.5</td>
</tr>
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Note(s): a N₁ represents the number of respondents, while N₂ represents the number of involved MCPs. b Based on the division of the greater administrative areas in China

Source(s): Author’s own work

Table 1. Demographics of surveyed respondents and their involved MCPs
severe collinearity (VIF <3) (Hair et al., 2021). We then assessed the reliability and validity of all variables. The data presented in Table 2 demonstrate that both Cronbach’s α and composite reliability of each variable is above the threshold of 0.7 (Hair et al., 2021), showing...
a strong internal consistency. The indicator reliability was assessed by testing the loadings of multiple items on their corresponding variables, with the results showing that each item for all the constructs has a satisfactory loading of over 0.7 (Pesämaa et al., 2021). We also tested the convergent validity by estimating the values of the average variance extracted (AVE). The results confirm that the AVE values of all the variables are greater than the minimum requirement of 0.5 (Cao et al., 2014). The resulting correlation coefficients are presented in Table 3. The discriminant validity was confirmed to be satisfactory since the square root of the AVE of each variable along the diagonal is higher than its correlation with any other.

4.2 Hypotheses testing

The direct effect results are shown for Models 6 in Table 4, which reveals a positive and significant relationship between transformational leadership and relational behavior ($\gamma = 0.47, p < 0.001, M_6$), supporting H1a. Although H1b is not supported, transactional leadership does have a significant and positive association with relational behavior ($\gamma = 0.20, p < 0.05, M_6$).

To test the mediating effects, we adopted a popular approach developed by Baron and Kenny (1986). As for the mediating effect of normative role orientation, Model 2 showed that transformational leadership is positively related to normative role orientation ($\gamma = 0.55, p < 0.001, M_2$), thus supporting H2. Further, normative role orientation is significantly and positively related to relational behavior ($\gamma = 0.39, p < 0.001, M_7$) when the independent variables are considered, supporting H3. Therefore, normative role orientation mediates the influence of transformational leadership on relational behavior, supporting H4. As for the mediating effects of economic role orientation, the relationship between transactional leadership and economic role orientation is significantly positive ($\gamma = 0.26, p < 0.05, M_4$), supporting H5. Next, economic role orientation is significantly and negatively associated with relational behavior ($\gamma = -0.10, p < 0.05, M_7$), supporting H6. Therefore, economic role orientation mediates the influence of transactional leadership on relational behavior, supporting H7.

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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</thead>
<tbody>
<tr>
<td>1. TFL</td>
<td>0.77*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. TSL</td>
<td>0.45***</td>
<td>0.74</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3. NRO</td>
<td>0.27***</td>
<td>0.03</td>
<td>0.97</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. ERO</td>
<td>0.03</td>
<td>0.20**</td>
<td>-0.19</td>
<td>-0.19</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. RB</td>
<td>0.16*</td>
<td>0.10</td>
<td>0.38***</td>
<td>-0.15*</td>
<td>0.81</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>6. PD</td>
<td>0.05</td>
<td>-0.10</td>
<td>0.09</td>
<td>0.09</td>
<td>-0.16*</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>7. PI</td>
<td>-0.08</td>
<td>0.05</td>
<td>0.06</td>
<td>-0.09</td>
<td>-0.07</td>
<td>0.26**</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. OTPC</td>
<td>0.07</td>
<td>0.08</td>
<td>-0.02</td>
<td>-0.08</td>
<td>0.07</td>
<td>-0.29***</td>
<td>0.11</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. PCE</td>
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<td>0.06</td>
<td>0.10</td>
<td>-0.02</td>
<td>-0.10</td>
<td>-0.07</td>
<td>0.16*</td>
<td>-0.16*</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10. EFI</td>
<td>0.09</td>
<td>0.04</td>
<td>-0.04</td>
<td>-0.04</td>
<td>0.08</td>
<td>-0.01</td>
<td>-0.03</td>
<td>-0.10</td>
<td>0.06</td>
<td>-</td>
</tr>
<tr>
<td>Mean</td>
<td>10.53</td>
<td>2.85</td>
<td>3.95</td>
<td>-1.78</td>
<td>7.76</td>
<td>1.92</td>
<td>1.32</td>
<td>1.18</td>
<td>1.68</td>
<td>1.97</td>
</tr>
<tr>
<td>SD</td>
<td>8.32</td>
<td>2.47</td>
<td>2.13</td>
<td>2.55</td>
<td>4.53</td>
<td>0.66</td>
<td>0.77</td>
<td>0.39</td>
<td>0.47</td>
<td>0.18</td>
</tr>
</tbody>
</table>

**Note(s):** N = 175. *p < 0.05; **p < 0.01; ***p < 0.001. SD: Standard deviation. TFL: transformational leadership, TSL: Transactional leadership, NRO: Normative role orientation, ERO: Economic role orientation, RB: Relational behavior, PD: Project duration, PI: Project investment, OTPC: Ownership type of parent company, PCE: Prior collaborative experience, EFI: Expectation of future interaction

*Italic values on the diagonal represent the square root of the average variance extracted (AVE). This value does not apply to all the control variables, as they are the single-item construct

**Source(s):** Author’s own work

Table 3. Descriptive statistics and correlations
To further verify the mediating effects, we applied the bootstrapping method with 5,000 samples and replacement and percentile bootstrapping confidence intervals (CI) (Hayes, 2017). The mediation is supported when CI does not include zero. These results indicate that the indirect effects of transformational leadership on relational behavior via normative role orientation (CI = [0.07, 0.25]) are significant, but those via economic role orientation (CI = [0.01, 0.03]) are not. Thus, H4a is supported, and H4b is not. By conducting the same procedure and applying the same criteria, these results show that economic role orientation (CI = [0.19, 0.01]) rather than normative role orientation (CI = [0.05, 0.23]) mediates the effect of transactional leadership on relational behavior, supporting H7b and not supporting H7a. Overall, the bootstrapping mediation method results were consistent with those for the hierarchical regression analysis.

Further analysis of the mediating effect of economic role orientation demonstrated that economic role orientation is a suppressor in the relationship between transactional leadership and relational behavior. The suppressor variable refers to a variable that increases the predictive validity of another variable by its inclusion in a regression equation (MacKinnon et al., 1995). This sharply contrasts with the mediating effect, where the statistical adjustment for a third variable reduces the magnitude of the relationship between the independent and dependent variables due to the third variable explaining part or all of such relationships. The suppressing effect occurs when an independent variable’s direct and indirect effects on a dependent variable display opposite signs. The common method for testing the suppressing effect was proposed by MacKinnon et al. (1995), referring to which \( \alpha \) represents the effect of transactional leadership on economic role orientation, \( \beta \) denotes the influence of economic role orientation on relational behavior, and \( c \) estimates the direct effect of transactional leadership on relational behavior considering the effect of economic role orientation. If \( \alpha \beta \) (the indirect effect of transactional leadership on relational behavior) and \( c \) are significant but show opposite signs, a suppression effect is present. The results of \( \alpha \), \( \beta \), and \( c \) in this study were 0.26, −0.11, and 0.19, respectively, confirming the suppressing effect of economic role orientation. Table 5 summarizes the results of this study.

### Table 4.
Results of hierarchical regression analysis

<table>
<thead>
<tr>
<th>Variables</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
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<tbody>
<tr>
<td>PD</td>
<td>−0.02</td>
<td>0.01</td>
<td>0.10</td>
<td>0.12</td>
<td>−0.14</td>
<td>−0.11</td>
<td>−0.11</td>
</tr>
<tr>
<td>PI</td>
<td>0.04</td>
<td>0.06</td>
<td>−0.10</td>
<td>−0.11</td>
<td>−0.02</td>
<td>−0.01</td>
<td>−0.04</td>
</tr>
<tr>
<td>OTPC</td>
<td>0.17</td>
<td>0.02</td>
<td>−0.10</td>
<td>−0.10</td>
<td>0.20</td>
<td>0.06</td>
<td>0.04</td>
</tr>
<tr>
<td>PCE</td>
<td>0.05</td>
<td>0.05</td>
<td>−0.01</td>
<td>−0.02</td>
<td>−0.05</td>
<td>−0.06</td>
<td>−0.08</td>
</tr>
<tr>
<td>EFI</td>
<td>0.04</td>
<td>−0.02</td>
<td>−0.04</td>
<td>−0.04</td>
<td>0.08</td>
<td>0.03</td>
<td>0.03</td>
</tr>
<tr>
<td>TFL</td>
<td>0.57</td>
<td>0.26</td>
<td>−0.19</td>
<td>0.47</td>
<td>0.20</td>
<td>0.19</td>
<td></td>
</tr>
<tr>
<td>TSL</td>
<td>0.11</td>
<td>0.03</td>
<td>0.06</td>
<td>0.09</td>
<td>0.48</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>NRO</td>
<td>0.39</td>
<td>0.40</td>
<td>0.03</td>
<td>0.03</td>
<td>0.10</td>
<td>0.39</td>
<td>0.11</td>
</tr>
<tr>
<td>ERO</td>
<td>0.11</td>
<td>0.03</td>
<td>0.06</td>
<td>0.09</td>
<td>0.48</td>
<td>0.59</td>
<td></td>
</tr>
<tr>
<td>RB</td>
<td>0.03</td>
<td>0.43</td>
<td>0.03</td>
<td>0.06</td>
<td>0.09</td>
<td>0.48</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Note(s):  
- \( a \) M1 to M7 denotes Model 1 to Model 7, respectively
- Entries in this table are standardized path coefficients. \( N = 175 \); \( **p < 0.01;***p < 0.001; p < 0.05; p < 0.1 \) (two-tailed). TFL: transformational leadership, TSL: Transactional leadership, NRO: Normative role orientation, ERO: Economic role orientation, RB: Relational behavior, PD: Project duration, PI: Project investment, OTPC: Ownership type of parent company, PCE: Prior collaborative experience, EFI: Expectation of future interaction

Source(s): Author’s own work
5. Discussion
After the above hypothesis testing approach, we found that owners’ transformational and transactional leadership positively affect POs’ relational behavior in MCPs, which responds to our RQ1. Moreover, the results of mediating effects indicated that the normative role orientation of POs mediates the effect of transformational leadership on relational behavior, while economic role orientation suppresses the relationship between transactional leadership and relational behavior, which answers RQ2. These results are discussed in detail below.

5.1 The effects of owners’ transformational-transactional leadership on POs’ relational behavior (RQ1)
As predicted, our results reveal that owners’ transformational leadership positively affects POs’ relational behavior (H1a). Previous research has highlighted the importance of middle managers’ leadership on participants’ relationships in ordinary construction projects, e.g. project managers’ transformational leadership enhances the participants’ relationship satisfaction and solves inter-organizational conflict by eliciting a higher level of trust (Zhang et al., 2018). However, this study turns to the leadership of top managers (i.e. owners) since owners play a pivotal role in strategic decisions, complex problem-solving, resource allocation, and value achievement in MCPs (Le et al., 2020; Sainati et al., 2017). The results indicate that transformational owners significantly motivate the POs to implement relational behavior in MCPs. A possible explanation is that MCPs have a huge demand for innovation that requires numerous POs to share resources and take collaborative actions to deal with the tough challenges of the project environment and uncertainty with innovative solutions (Chen et al., 2018; Sankaran et al., 2023). Especially, transformational owners help shape a trusting and harmonious project climate to encourage cross-boundary information exchange and cooperative actions to overcome tough issues. Contrary to our expectations, owners’ transactional leadership also positively affects POs’ relational behavior (H1b). Some studies pointed out that transactional leaders in firm organizations reduce the cooperation within teams and limit their subordinates’ opportunities to implement creative solutions as leaders make individual performance salient by specifying rewards and punishment based on...
achieving goals (Hamstra et al., 2014; Jung, 2001). A plausible reason is that most MCPs involve simultaneous and substantial overlapping of design, construction, and procurement activities under condensed schedules (Shokri et al., 2016), which requires POs to manage complex interfaces and increase alignment with other parties to expedite their schedules. Motivated by transactional owners’ emphasis on individual performance, POs must solve complex interface issues between organizations by achieving real-time information exchange and jointly solving potential conflicts. Therefore, owners’ transactional leadership also promotes POs’ relational behavior.

In addition, we found that owners’ transformational leadership is more effective than transactional leadership in motivating POs’ relational behavior in MCPs. This result is similar to the findings of previous studies that showed that compared with transactional leadership, project managers with transformational leadership could better encourage environmentally-friendly behaviors such as sharing knowledge about environmental protection in MCPs (Wang et al., 2021). MCPs are viewed as voyages of discovery that rely on inter-organizational learning while underway to respond to high levels of ambiguity and complexity (Liu et al., 2021). However, various relatively strict constraints (such as duration, cost, and environmental impact) increase the difficulty of effectively knowledge exchanging and inter-organizational learning (Jin et al., 2022). Compared with transactional leadership, transformational owners show a more proactive attitude and open mindset to coordinate resources and break the ice, which is pivotal in motivating knowledge sharing, mutual learning, and joint commitment among POs. Therefore, owners’ transformational leadership is more likely to encourage POs’ relational behavior.

5.2 The mediating effects of POs’ role orientations (RQ2)

The result verified that owners’ transformational leadership positively affects POs’ normative role orientation (H2), and normative role orientation increases relational behavior of POs (H3). Meanwhile, POs’ normative role orientation partially mediates the positive impact of owners’ transformational leadership on relational behavior of POs (H4). Specifically, the result for H2 supports the findings of Heide and Wathne (2006), who posited that trust and negotiation deployed by suppliers create friend roles for distributors in marketing relationships. Our results confirmed that transformational owners also encourage the normative role orientations of POs in MCPs. This may be because the successful delivery of MCPs covers a broad range of social values, such as public welfare improvement, regional economic growth, and building the region’s image (Ma et al., 2022). Owners with transformational leadership can develop shared values and portray inspiring visions to convey these societal values to POs (Felicio et al., 2013). Therefore, POs feel obligated to contribute to society’s greater good and keep normative role orientation for the benefit of the whole project rather than focusing only on their short-term interests. The result for H3 supplements the view of Yang and Wong (2020), who asserted that employees are likely to cooperate and voluntarily assist coworkers in responding to emergencies when the level of workplace friendship increases in enterprise organizations. Our results indicated that POs with normative role orientation would also be willing to conduct relational behavior. This could be explained by the fact that such POs will view the successful delivery of MCPs as their social responsibility to provide public goods (Yang et al., 2020). To achieve these social values, normative role-oriented POs often downplay their benefits and voluntarily obey social norms to maintain a harmonious relationship with their partners, assist other parties at the interface, and share resources and valuable information to support the project implementation.

Additionally, owners’ transactional leadership positively affects POs’ economic role orientation (H5), and the latter alleviates POs’ relational behavior (H6). Meanwhile, POs’
economic role orientation partially suppresses the positive relationship between transactional leadership and relational behavior (H7). Combined with the result for H1b, these results show the double-edged effects of owners’ transactional leadership, namely that transactional leadership positively affects relational behavior, while transactional leadership also motivates economic role orientation (H5) and thus reduces relational behavior (H6). The analysis of the negative impact of transactional leadership on relational behavior is as follows. Our finding indicates that transactional owners who focus on reward and punishment also increase the POs’ economic role orientation in MCPs (H5), which supports the findings of Maestrini et al. (2018) that buyer’s economic incentives measures increase the likelihood of supplier opportunism. In MCPs, the high uncertainty with the long implementation duration makes the return of future cooperation unpredictable (Eweje et al., 2012). Moreover, owners with transactional leadership will signal POs that they are unwilling to provide a reliable commitment to future cooperation due to the highlighting of strict rewards and punishments system and mistakes monitoring. Therefore, the mindset of POs will shift to economic role orientation and thus focus on maximizing their interest in a “one-off business”. The result for H6 is similar to the findings of Lu et al. (2016), who asserted that opportunism damages the confidence fostered in cooperation, thus weakening collaboration satisfaction in construction projects. Our finding indicated that economic role-oriented POs that pursue maximal self-interest do not tend to conduct relational behavior. Compared to ordinary construction projects, MCPs are deemed higher risk as numerous project tasks and requirements cannot be accurately defined initially and can only be gradually formed into clear outlines (Liu et al., 2022a), thus resulting in frequent engineering changes during implementation. These changes conceal the additional efforts and resources that POs invest in adopting relational behavior (Giezen et al., 2015). In this case, POs with economic role orientation are reluctant to adopt relational behaviors due to the pursuit of maximizing their interests.

5.3 Theoretical implications

Our study makes significant theoretical contributions to the construction management literature. First, this research is among the first to highlight and empirically validate the role played by owners’ leadership styles as an essential source for developing the relational behavior of POs, thus expanding our theoretical understanding of inter-organizational relationship management in MCPs. Previous studies on MCPs tended to merely involve intra-organizational leader–follower relationships, i.e. focused more on the effect of project managers’ (i.e. middle manager) leadership on the members in the same contractor (e.g. Ding et al., 2017; Yang et al., 2011), which provides a limited understanding of complex inter-organizational relationship management in MCPs. Owners are generally considered to sit at the top of the “pyramid” of the construction project organization, exerting a huge impact on the whole project (Sainati et al., 2017), and thus existing literature has emphasized the crucial role of owners’ leadership in MCPs’ success (Liu et al., 2022b). However, little attention has been paid to the effectiveness of owners’ leadership on inter-organizational relationship management, thus hindering the development of effective channels for enhancing MCPs’ performance by encouraging active relational behavior among the POs. This study confirms that owners’ transformational leadership is more effective than transactional leadership in promoting POs’ relational behavior. Therefore, our study broadens the research on the drivers of relational behavior, highlighting the critical role of owners’ leadership styles in advancing inter-organizational relationship management in MCPs.

Second, this study contributes to the extant research on construction project leadership by extending role theory to explore the organizational psychological mechanisms for two distinct role orientations (i.e. normative and economic) and how they affect owners’
leadership and POs’ relational behavior. Although previous studies have identified several psychological mechanisms (e.g. trust and organizational commitment) that mediate the effect of project leadership on members’ behavior, such as information sharing and collaborative behavior related to environmental concerns (e.g. Wan et al., 2020; Wang et al., 2021), the psychological mechanisms to explain how owners’ leadership affect POs’ relational behavior in MCPs are still largely unexamined. As the perceived “role” is essential to explain how leaders influence their subordinates (Paterson and Huang, 2019), this study draws on role theory to provide novel insights and uncover precisely how owners’ leadership styles impact the relational behavior of POs via distinct role orientations. Especially, this study confirmed the double-edged sword effect of owners’ transactional leadership on POs’ relational behavior by revealing the suppressing effect of POs’ economic role orientation, indicating that transactional owners who highlight performance achievement and punishment to encourage relational behavior may partially hinder such behaviors of POs due to the evoked economic role orientation. These findings not only open the lid of the “black box” between owners’ leadership and POs’ relational behavior, but also expand the application of role theory in construction management, which enhances our understanding of the organizational psychology mechanisms in MCPs.

5.4 Practical implications
This study has practical implications for owners in MCPs. First, we recommend that owners attach greater importance to transformational leadership for top leader selection and training in MCP personnel management, specifically under huge uncertainty in MCPs (e.g. disruptions and delays during the COVID-19 era). The inherent unpredictability of MCP uncertainties increasingly emerged, appealing to POs to actively implement relational behavior via flexibly adjusting their strategies and resolving difficulties with others (Jiang et al., 2023). As our results confirmed that owners’ transformational leadership promotes POs’ relational behavior more than transactional leadership, it is imperative to highly emphasize and cultivate transformational leadership in an uncertain era (Li et al., 2023). In this way, owners could promote a high level of POs’ relational behavior, contributing to speeding up MCP progress even when confronting great schedule pressure. Therefore, when selecting top leaders, owners need to evaluate candidates’ current leadership by investigating whether they fully utilize the strengths of the different POs and how they stimulate POs to commit to complex tasks in previous projects. Additionally, owners need regular leadership training programs to help them acquire and consolidate transformational leadership capabilities, such as understanding POs’ various needs and providing positive support, expressing confidence in POs’ abilities and playing to their strengths, and encouraging POs to seek creative and better solutions to deal with a disproportionate number of unexpected events in MCPs. The enhancement of owners’ transformational leadership capabilities also involves improving their dynamic capabilities (i.e. the capabilities of adapting, integrating, and reconfiguring the organizations’ resources), which enables POs to flexibly meet project requirements and adjust the management routines to adapt to the dynamic and complex construction environments caused by the interaction of numerous POs (Zhang et al., 2023b). Various measures that foster the transformational leadership capabilities of the owners’ managers could facilitate POs’ relational behavior for better fulfillment of the “iron triangle” (project timeliness, quality and cost) as well as long-term value creation in MCPs, such as expected social and ecological values planned at the front-end stage (Morkan et al., 2023).

Second, owners are recommended to select POs with high teamwork and market reputation representing their high-level normative role orientation. Our results indicate that the psychological characteristics of POs (i.e. role orientations) are an important self-determining factor in their adoption of relational behaviors. POs with normative role orientation tend to adopt relational behavior, thus contributing to satisfactory
inter-organization collaborations. Therefore, owners should choose trustworthy and familiar partners based on their previous cooperation experience or those with a good market reputation in the bidding phase of MCPs. This would signal that they are more likely to adopt a normative role orientation to conform to social norms. In addition, inter-organizational conflicts and misunderstandings are frequent in the face of complexities and huge performance pressures, which may weaken the POs’ willingness to comply with the social norms and turn to economic role orientation to safeguard their interests. Therefore, owners should recognize POs’ role orientation changing over the megaproject lifecycle. For example, the often exploitation of contractual loopholes for self-interest indicates the POs intend to transfer to an economic role orientation. In this case, owners should take action to deter such adverse transitions to prevent POs from overcharging their interests to the detriment of the overall interests of the project. For example, owners could encourage teamwork to strengthen POs’ cohesion and open communication with POs to understand their needs and fulfill them appropriately.

6. Conclusion
Although relational behavior is crucial to improving MCPs’ performance, little is known about the mechanisms linking construction project owners’ leadership styles to POs’ relational behavior. This study presents empirical support for utilizing role theory as a theoretical lens to integrate owners’ leadership with organizational psychology mechanisms and the relational behavior of POs. Our research highlights the prominent role of owners’ transformational and transactional leadership on POs’ relational behavior through role orientations as organizational psychological mediators. We thus highlight the critical role of owners’ leadership styles in advancing inter-organizational relationship management in MCPs.

This study suffers from three main limitations. First, a one-time survey was employed in this study, ignoring the dynamic processes in that POs may change their collaborative decisions. Future research should undertake a longitudinal analysis to reveal how the effects of owners’ leadership on POs’ relational behavior evolve. Second, a self-reporting survey was utilized to collect behavior information from a single contracting party, which is inevitably affected by observer bias. Future research could obtain matched-dyad data from paired respondents in the same project. For instance, POs are asked to report owners’ leadership styles, and owners report relational behavior. Third, our research and previous studies have shed light on the driving factors of POs’ relational behavior from various perspectives in MCPs. However, studies on the outcomes of relational behavior are relatively rare. We thus encourage future research to investigate the influencing mechanisms of relational behavior on project outcomes, such as the project quality and value of engineering. Finally, this study focused mainly on the owners’ leadership, neglecting how to foster owners’ capabilities to promote POs’ relational behavior. The huge challenges of MCPs require owners to possess appropriate capabilities to control POs’ behavior (Zhang et al., 2023b). Therefore, future studies could examine how owners’ leadership capabilities (e.g. dynamic capability) affect POs’ relational behavior, in turn contributing to realizing MCPs’ value creation.

References


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