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Upper echelons and intra-organizational learning: How executive narcissism affects knowledge transfer among business units

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Abstract

Research Summary: What affects organizational units' propensity to learn from each other? Extending the insights of upper echelons theory to the business unit level, we examine the relationship between executive narcissism and inter-unit knowledge transfer. We predict that the narcissism of executives heading business units is negatively related to a unit's receptivity to knowledge emanating from other units. We further theorize that the effect of narcissism is reduced when there is high environmental complexity or dynamism as these challenging situations provide narcissists an excuse for external learning. Conversely, the effect is amplified when high perceived inter-unit competition enhances narcissists' distinctiveness-seeking tendencies. Using a two-wave, multisource survey design and collecting primary data from 118 business units of a headhunting company in China, we find strong support for hypotheses.

Managerial Summary: Knowledge transfer among business units inside a multi-unit firm is beneficial to firm performance but is never easy. Our research suggests that narcissistic executives are likely to impede inter-unit knowledge transfer, because their sense of superiority may lead them to overestimate the value of internal knowledge and underestimate the value of external knowledge. This tendency is dampened in complex and dynamic environment

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which give narcissists an excuse for external learning. Conversely, this tendency is amplified by high inter-unit competition which motivates narcissists to seek distinctiveness with other units. Thus, when seeking to promote inter-unit knowledge transfer, firms should be aware of the crucial impact of executive narcissism, and more importantly be careful when undertaking relative performance evaluations or other similar practices which strengthen inter-unit competition.

KEYWORDS

Bayesian methodology, knowledge transfer, narcissism, organizational learning, upper echelons theory

1 | INTRODUCTION

Inter-unit knowledge transfer—that is, knowledge transfer among different business units or subsidiaries inside a multi-unit firm (Tsai, 2001, 2002; Van Wijk, Jansen, & Lyles, 2008)—has been identified as a key approach for business units or subsidiaries to build their capabilities, maintain their competitive advantage, and in the meantime facilitate firm performance (Kogut & Zander, 1992; Tsai, 2001). Hence, business units are supposed to be willing to receive knowledge from other units of the same firm. However, inter-unit knowledge transfer is never easy, even for the units in a superordinate position relative to their knowledge-exchange partners (Argote, 2013; Gupta & Govindarajan, 2000b). Studies have found, for instance, that the not-invented-here (NIH) syndrome operates in the process of knowledge transfer, indicating that units may reject external knowledge even when it can benefit their own operations (Antons & Piller, 2015; Katz & Allen, 1982). One possible reason for the reluctance to engage in knowledge exchange is that units seek distinctiveness and compete with other units in the same firm (Tsai, 2002). Recognizing the complexities involved in such transfers, scholars have long sought to understand which factors can promote or impede inter-unit knowledge transfer.

The existing literature indicates that inter-unit knowledge transfer is determined by knowledge characteristics, unit characteristics, and network characteristics (Van Wijk et al., 2008). By comparison, the impact of executives heading business units (or unit heads, for ease) has been relatively overlooked. This is a critical omission because studies based on the strategic choice (Child, 1972) and upper echelons (Hambrick & Mason, 1984) perspectives have documented that top executives significantly affect organizational outcomes. Indeed, in related work focusing on inter-firm knowledge transfer, Zhu and Chen (2015a) found that narcissistic chief executive officers (CEOs) are influenced by corporate strategies that they have witnessed at other firms but are less likely to imitate those demonstrated by other directors. Moreover, we know little about the role of knowledge recipients' characteristics in the process of inter-unit knowledge transfer. For example, Gupta and Misangyi (2018) explored how source—rather than recipient—firms' CEO characteristics affect inter-firm imitation. This omission is not just theoretically salient but also practically important, as knowledge transfer among units is key to

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building units' capabilities, maintaining their competitive advantage, and ultimately contributing to firm performance.

Building upon the literature on inter-organizational knowledge transfer and upper echelons theory, we posit that unit heads' characteristics in knowledge-recipient units will affect inter-unit knowledge transfer. Our research focuses on unit head narcissism because the upper echelons literature has identified narcissism as a prominent and fundamental personality trait of top executives that affects their strategic decisions and organizational strategies (Cragun, Olsen, & Wright, 2020). Indeed, top executive narcissism has generated great interest among management researchers interested in examining its influence on organizational strategies and outcomes, such as firm performance and corporate strategy (e.g., Chatterjee & Hambrick, 2007; Patel & Cooper, 2014; Petrenko, Aime, Ridge, & Hill, 2016; Zhu & Chen, 2015a, 2015b). Our study builds on this line of research by arguing that, just as CEOs' narcissism shapes the actions and fortunes of their organizations, narcissism of executives leading business units can fatefully determine those units' decisions and outcomes. In this vein, extending the insights of upper echelons theory to the level of business units, we can expect that unit head narcissism will have an impact on inter-unit knowledge transfer.

Narcissistic individuals tend to believe that their competence, intelligence, and judgment are superior to those of others (Campbell & Miller, 2011). Meanwhile, they are ready to grasp any opportunity, including that afforded by their own high performance, to reinforce their inflated self-views (Campbell & Miller, 2011; Rhodewalt & Morf, 1998; Wallace & Baumeister, 2002). Given this propensity, and based on the narcissism and knowledge transfer literature, we theorize that narcissistic executives in knowledge-recipient units will impede inter-unit knowledge transfer from other units for two major reasons: (a) their sense of superiority may bias their perception of the value of internal and external knowledge (e.g., Campbell & Miller, 2011; Zhu & Chen, 2015a) and (b) their fundamental need to maintain their grandiosity and superiority may weaken their basic motivation to learn from others (Farwell & Wohlwend-Lloyd, 1998; Paulhus, 1998).

Furthermore, we posit that narcissistic executives' general resistance to learn from other units in the same firm is moderated by contextual conditions in and around the firm. Based on the key features of narcissism (Cragun et al., 2020), we propose that narcissistic executives will have opposing reactions under extra-organizational and intra-organizational challenges that either provide cover for narcissists' sense of insecurity or fuel their desire to distinguish themselves, respectively. Specifically, we hypothesize that the negative relationship between executive narcissism and inter-unit knowledge transfer will be weakened by environmental complexity and dynamism, but will be strengthened by inter-unit competition.

To empirically test our hypotheses, we conducted a survey study among unit heads in all business units of a headhunting company in China. Analysis of the two-wave and multisource survey data supported our hypotheses. We found that narcissism of unit heads in recipient units serves as a barrier to inter-unit knowledge transfer. Furthermore, this relationship is weakened by environmental complexity and dynamism and strengthened by perceived inter-unit competition.

Our study makes several theoretical contributions. First, our research contributes to the knowledge transfer literature by examining deterrence of inter-unit knowledge transfer from the perspective of executives' attributes in knowledge-recipient organizations. By showing how narcissism of executives heading the units affects organizational engagement in inter-unit knowledge transfer, we advance the understanding of why units demonstrate different motivations and patterns of inter-unit knowledge transfer activities and offer leader-level antecedents

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of inter-unit knowledge transfer. Second, by investigating how and when executive narcissism leads to units' reception or rejection of external knowledge, our study unpacks the environmental contingencies of the NIH syndrome in organizations (Antons & Piller, 2015; Katz & Allen, 1982). Third, we contribute to upper echelons theory by extending its insights to the business unit level, a relatively underexplored arena for upper echelons research. Meanwhile, by examining the contingencies of environmental complexity, dynamism, and perceived inter-unit competition, we respond to the call to further explore *when* executives' personality (e.g., narcissism) influences organizational outcomes (Neely, Lovelace, Cowen, & Hiller, 2020). Last, we advance the narcissism literature by demonstrating the relevance of narcissism for inter-unit knowledge transfer, and by highlighting the contrasting moderating effects of extra-organizational and intra-organizational challenges in determining narcissistic leaders' reactions (Cragun et al., 2020).

2 | THEORY AND HYPOTHESES

2.1 | Executive narcissism

Narcissism has long been studied in psychology. Whereas the early literature often considered narcissism as a clinical disorder, this trait is now widely treated as a personality dimension across all individuals (Campbell & Miller, 2011; Emmons, 1984). From a cognitive perspective, narcissists define themselves in a grandiose way. They have inflated self-views and think they are special and unique (Campbell, Foster, & Finkel, 2002; Emmons, 1984). Moreover, they tend to overestimate their intelligence, competence, and achievements (Campbell, Goodie, & Foster, 2004; Gabriel, Critelli, & Ee, 1994). In comparison with others, narcissists view other people as inferior to themselves (Campbell et al., 2002).

From a motivational aspect, on the one hand, narcissists exploit every opportunity that can enhance their sense of superiority and help them garner the admiration of others (Campbell & Miller, 2011; Morf & Rhodewalt, 2001). For instance, studies have found that narcissists are more motivated and persistent in tasks that offer more potential for self-enhancement (Wallace & Baumeister, 2002; Wallace, Ready, & Weitenhagen, 2009). On the other hand, narcissists adopt various strategies to defend their inflated self-views when faced with threats to their grandiose self. For example, studies have found that narcissists are more likely to attribute failures to external factors such as bad luck, rather than to internal factors such as ability and effort (Farwell & Wohlwend-Lloyd, 1998; Rhodewalt & Morf, 1998; Stucke, 2003).

More recently, a growing body of research has portrayed narcissism as a fundamental personality type among top executives and further examined its organizational outcomes (for a review, see Cragun et al., 2020). These studies trace their theoretical foundations to the upper echelons perspective, which proposes that an organization reflects the values, personalities, and other individual characteristics of its top executives as they make strategic choices through highly personalized lenses (Hambrick & Mason, 1984). Top executives can affect organizational outcomes through their own decisions as well as through their attitudes and reactions to the proposals made by other members of their organization (Burgelman, 1983; Gerstner, König, Enders, & Hambrick, 2013). Scholars have found that top executive narcissism is associated with the dynamism and grandiosity of corporate strategies (Chatterjee & Hambrick, 2007). Also, more narcissistic top executives often adopt an approach focus and tend to pursue riskier strategies (Gerstner et al., 2013; Patel & Cooper, 2014), especially when such strategies are likely to attract more attention from the focal community (Chatterjee & Hambrick, 2011; Gerstner

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et al., 2013; Petrenko et al., 2016). Oftentimes, top executive narcissism can affect the selection of directors (Zhu & Chen, 2015b) and diminish directors' impact on corporate strategies (Zhu & Chen, 2015a). Similarly, in business units, the executive occupying the highest position can determine the unit's decisions, especially when this leader has high autonomy (Pfeffer, 1981). Hence, we expect that unit head narcissism can have potent effects on inter-unit knowledge transfer.

2.2 | Unit head narcissism and inter-unit knowledge transfer

According to the knowledge-based view (Grant, 1996; Kogut & Zander, 1992), the process of organizing requires that executives choose problems and identify knowledge sets both within and outside the organization[1] to search for the solutions to those problems (Nickerson & Zenger, 2004). This theoretical perspective stresses the importance of knowledge transfer from other organizations. Scholars have found that organizations more adept at knowledge transfer are more likely to survive and thrive than their less effective counterparts (Argote, 2013). This logic can be envisioned as having even greater relevance for inter-unit knowledge transfer, which takes place by design rather than by default, and crucially underlies the parent organization's ability to create more value than its competitors can (Hamel, 1991; Kogut & Zander, 1992; Tsai, 2001, 2002; Van Wijk et al., 2008).

For the units on the receiving end of the knowledge transfer, two key determinants have been shown to affect their receptivity to external knowledge. One determinant is absorptive capacity, defined as the ability to recognize the value of new knowledge and to assimilate and use that knowledge (Cohen & Levinthal, 1990; Tsai, 2001). The other determinant is motivation (Argote & Fahrenkopf, 2016; Argote, McEvily, & Reagans, 2003; Gupta & Govindarajan, 2000b; Hamel, 1991). Within recipient units, their intention to learn may affect their resource allocations geared toward inter-unit knowledge transfer. Inter-unit knowledge transfer can be a resource-intensive process, and less motivated recipients may devote fewer resources than necessary to accomplish such transfer (Szulanski, 1996). Once a unit decides to learn, however, it has many feasible ways to promote knowledge transfer, including holding workshops or meetings, designing training programs, transferring personnel, and sharing codified documents between knowledge-donor and knowledge-recipient units (e.g., Argote, 2013; Inkpen & Dinur, 1998; Szulanski, Ringov, & Jensen, 2016). In business units, executives in charge of operations can largely determine whether to invest those units' resources into the activities of knowledge transfer. This is particularly true for heads of relatively autonomous units, who are empowered to make their own strategic decisions rather than needing to take orders from the company headquarters.

We argue that narcissistic unit heads who are less motivated to receive external knowledge will hinder knowledge transfer to the focal unit from other units, for two major reasons. First, studies have found that narcissists tend to think that they are more intelligent, competent, and capable than others (Farwell & Wohlwend-Lloyd, 1998; Paulhus, 1998). Narcissistic unit heads may strongly believe that they have a superior knowledge stock compared to executives in other units and have a deeper understanding of the problems they are dealing with (Zhu & Chen, 2015a). In consequence, these narcissists are less likely to view the knowledge of others

[1]"Organization" is a general concept here, referring to both firms and the business units or subsidiaries of the same firm.

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as valuable inputs and are more likely to believe that they are capable of providing the best solutions to problems all by themselves (Zhu & Chen, 2015a). Thus, narcissistic unit heads are less likely to identify valuable external knowledge because they are less likely to closely benchmark the practices of other units.

Second, knowledge transfer may diminish the grandiose self-image and sense of superiority and uniqueness that are characteristic of narcissistic unit heads. Narcissists have an ongoing need to bolster their inflated self-views and reinforce their sense of superiority and uniqueness (e.g., Campbell & Miller, 2011). Extant research, however, has suggested that knowledge transfer for recipients can be perceived as a help-seeking process, in which those who know less seek help from those with superior knowledge (Bunderson & Reagans, 2011). As such, knowledge transfer may imply that the knowledge recipient is less competent than the knowledge donor (Lee, 1997). Meanwhile, receiving knowledge from other units is likely to reduce the focal unit head's ability to claim distinctiveness, which narcissists are known to crave (Campbell & Miller, 2011). Thus, out of fear of being perceived as weaker and less adept than their knowledge-donor counterparts, and to maintain their grandiose self-views and sense of superiority and uniqueness, narcissistic heads may decline to receive external knowledge and learn from other units, thereby reducing inter-unit knowledge transfer.

By contrast, less-narcissistic unit heads are less likely to deny the value of external knowledge that can help improve the competence of their units, which in turn motivates them to learn from other units. Moreover, less-narcissistic unit heads are more tolerant of and less threatened by the fact that they are not superior or distinctive to others (Bogart, Benotsch, & Pavlovic, 2004), which also lowers the barriers to inter-unit knowledge transfer.

Given these rationales, we argue that narcissistic unit heads who have a lower level of motivation to learn from the best practices of other units will decrease the level of inter-unit knowledge transfer. They may exert their influence either by rejecting proposals for inter-unit learning programs (Argote, 2013; Burgelman, 1983) or by creating a structural context, including strategic planning, organizational structure, and resource allocation, that inhibits inter-unit knowledge transfer (Bower, 1970; Burgelman, 2002). Thus, we expect that:

> **Hypothesis 1.** *Unit head narcissism is negatively associated with knowledge transfer to the focal unit from other units.*

2.3 | The moderating role of extra- and intra-organizational challenges

So far, our theorizing has focused on the negative effects of unit head narcissism on the unit's receptivity to knowledge transfer from peer units. Yet, the effect of narcissistic personality is likely to be differentially activated by contextual factors. Since narcissists' sense of self tends to be fragile, they can exhibit high sensitivity to contextual challenges in terms of altering their attitudes toward superiority and external learning (Campbell, Hoffman, Campbell, & Marchisio, 2011; Cragun et al., 2020). As an initial step toward unpacking the contextual moderators of the effect of unit heads' narcissism on inter-unit knowledge transfer, we build on prior research on narcissistic personality to theorize that the effect of unit head narcissism will be contingent on both extra- and intra-organizational challenges the units are facing. However, we expect that these two types of contextual conditions will provide distinct stimuli to the narcissistic executives, such that the influence of their narcissistic tendencies will be mitigated by

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extra-organizational challenges and heightened by intra-organizational challenges. In the following discussion, we unpack these dueling forces by focusing on environmental complexity and dynamism as two manifestations of extra-organizational challenges (Dess & Beard, 1984), and perceived competition with other units as a form of intra-organizational challenge (Tsai, 2002).

2.3.1 | Environmental complexity

Environmental complexity describes the heterogeneity of environmental factors with which organizations have to contend (Dess & Beard, 1984; Miller & Friesen, 1982). It shows "differences in competitive tactics, customer tactics, customer tastes, product lines, channels of distribution, etc. across the firm's respective markets" (Miller & Friesen, 1983, p. 233). A rising level of complexity in an environment increases organizations' propensity to engage in inter-organizational relationships (Grimm & Lee, 2006; Tang, Li, & Yang, 2015). Thus, in a highly complex environment, executives must deal with more intricate problems and challenges than are present in a less complex environment (Dess & Beard, 1984). Under this condition, we argue that the negative impact of unit head narcissism on inter-unit knowledge transfer will be mitigated.

Research suggests that narcissists are highly resistant to both behaviors and information that may disconfirm their grandiose self-views, and that this stubbornness acts as a barrier to adoption of learning processes that may require narcissistic individuals to undergo changes to achieve a better self (Bergman, Westerman, & Daly, 2010). However, if they can offer social accounts and justifications that preserve their sense of superiority and avoid broadcasting an impression of weakness and vulnerability, narcissists are less likely to resist learning behaviors and new information (Wallace et al., 2009). An environment characterized by complexity is particularly suitable for providing such face-saving justifications or "cover" for narcissists' fragile self-esteem (e.g., Dess & Beard, 1984; Hough & White, 2003; Li & Simerly, 1998; Tang et al., 2015). In a complex environment, narcissistic executives can readily provide a situational excuse for learning from others—namely, that the learning is necessary because they are dealing with uniquely intricate problems, and not because of any lack of a personal capability (e.g., McFarlin, Baumeister, & Blascovich, 1984; Tafarodi & Vu, 1997; Wallace et al., 2009). This explanation provides narcissistic unit heads with a rationale for receiving knowledge from other units without threatening their grandiose self-views, which in turn enables them to engage in learning behaviors and keeps them from discouraging their subordinates from obtaining requisite knowledge from peer units (Campbell, 2001; Farwell & Wohlwend-Lloyd, 1998; Rhodewalt & Morf, 1998). In comparison, less complex environments do not afford narcissistic unit heads with such an excuse for engaging in external learning, but instead sustain their dispositional insecurities and the tendency to resist knowledge transfer from other units. Thus, we hypothesize that:

> **Hypothesis 2.** *Environmental complexity will weaken the negative relationship between unit head narcissism and inter-unit knowledge transfer.*

2.3.2 | Environmental dynamism

Environmental dynamism indicates the rate of unpredictable change and the degree of instability in an organization's external environment, which can pose significant challenges to

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corporate executives (Dess & Beard, 1984). In a highly dynamic environment, organizations are less able to take full advantage of existing resources and capabilities, as their utility changes rapidly due to changes in the environment (Oliver, 1997). In such a case, executives heading the units face greater uncertainty and experience greater difficulty in enacting appropriate strategic decisions (Li & Simerly, 1998). We believe that such environmental dynamism will weaken the negative effects of unit head narcissism on inter-unit knowledge transfer: much like environmental complexity, it offers narcissistic executives an excuse to seek out external learning, thereby allowing them to salvage their need for superiority (Wallace et al., 2009).

Relatedly, environmental dynamism imposes greater requirements on units' knowledge stock. In dynamic environments, business units are more likely to encounter problems that cannot be solved by relying solely on their existing knowledge reservoir; indeed, executives are likely to encounter new problems more frequently and intensely in such a milieu (Dess & Beard, 1984; Li & Tang, 2010; Miller & Friesen, 1982; Simsek, Veiga, & Lubatkin, 2007; Tang et al., 2015). This will necessitate—and provide a legitimate justification for—executives to engage in knowledge searches outside of the existing stock and resources in an effort to find more productive solutions (Danneels & Sethi, 2011). In essence, such demands will reduce narcissistic executives' dispositional propensity to enhance their sense of self-worth by refusing to engage in external knowledge searches; that is, environmental dynamism will increase narcissistic unit heads' receptivity to external knowledge and inter-unit knowledge transfer. Therefore, we hypothesize that:

> **Hypothesis 3.** *Environmental dynamism will weaken the negative relationship between unit head narcissism and inter-unit knowledge transfer.*

2.3.3 | Inter-unit competition

Narcissists are highly sensitive to competition (Luchner, Houston, Walker, & Alex Houston, 2011; Morf, Weir, & Davidov, 2000), regarding it as a test of their superiority. In a competitive context, organizations are more likely to find themselves in a zero-sum relationship with others and vying for the same pool of resources (Barnett, 1997). Contrary to the mitigating roles of environmental complexity and dynamism, we argue that unit heads' perceived competition with potential knowledge-source units will strengthen the negative impact of unit head narcissism on inter-unit knowledge transfer.

When they perceive the existence of a stronger competition with peer units, narcissistic unit heads may show a reduced willingness to cooperate with peer units and a lower proclivity for knowledge sharing. In a highly competitive environment, organizational units are generally prone to reducing knowledge sharing out of a fear of losing ownership of, and the distinctiveness bestowed by, their knowledge resources (Osterloh & Frey, 2000; Szulanski, 1996). Interestingly, competitive environments can also hinder units' willingness to *receive* knowledge from other units, as receiving knowledge from peer units can create an expectation of reciprocity, which can preemptively trigger a fear of dilution of distinctiveness of a unit's resource portfolio and competitive position in the marketplace (e.g., Argote, 2013; Gupta & Govindarajan, 2000b; Szulanski, 1996).

In addition, because competition by definition is a comparative process, perceiving a higher level of competition may intensify narcissistic executives' compulsion to maintain their superiority vis-à-vis others (Morf et al., 2000; Tesser, 1988). Narcissistic unit heads are likely to

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respond forcefully to any perceived challenge to their grandiose self-views, especially when they believe that a fiercer competition exists among business units. Additionally, receiving external knowledge may be perceived as the knowledge-recipient unit's tacit acknowledgment of the superior ability of the knowledge-source unit to cope with critical problems (Menon & Pfeffer, 2003)—an impression that narcissitic unit heads may loathe and go to great lengths to avoid. Consequently, when they perceive a higher level of inter-unit competition, narcissistic unit heads may more strongly resist learning from other units. Taken together, we propose that:

> **Hypothesis 4.** *Perceived inter-unit competition with potential source units will strengthen the negative relationship between unit head narcissism and inter-unit knowledge transfer.*

3 | OVERVIEW OF STUDIES[2]

Before conducting a formal test of our hypotheses, we performed an exploratory analysis of our ideas. For this exploratory study, we collected data from all 52 business units of a Chinese corporation that designs charging systems and devices and provides charging services for electric cars. Details of this study's procedures and results are summarized in an appendix available at https://osf.io/ygbpa/?view_only=feec0d615a0e4787895fc6e411638589. Overall, although this exploratory study had a relatively small sample size and a more limited set of control variables, the results were largely supportive of our expectations. With this preliminary support for our ideas, we conducted the main study, which we describe next.

4 | METHODS

4.1 | Empirical setting

We tested our hypotheses by surveying all business units (also known as subsidiaries) of a Chinese headhunting corporation. These units, though located in 78 cities across China, have similar business activities—that is, they aim to help client organizations from various industries recruit middle- and upper-level management talent and search for key technical personnel. The core function of the business units necessitated that they learn from each other—for example, by seeking knowledge on how to build the talent pool, how to help organizations identify specific talents, and how to persuade the prospective technical personnel to accept the proffered jobs.

We chose this context for four reasons. First, a defining feature of the headhunting industry is its diversity and complexity. Headhunting companies' major business activities entail providing different and flexible services for companies in different industries seeking different types of talents, which requires a high level of flexibility so that they can adapt to rapid changes in the market. This was the case in the company we studied. In this company, all unit heads can, to a

[2]All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee. Informed consent was obtained from all individual participants included in studies.

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large degree, determine their units' daily operations and make strategic decisions. Hence, differences in knowledge transfer patterns among different units in our context are less likely to be affected by factors that unit heads cannot control (such as organizational routines and directions from the headquarter). Second, although the headhunting industry has experienced rapid development along with the expansion of China's economy over recent years, technology and business models in this industry remain immature and there are no well-recognized benchmarks or best practices. Consequently, the value of external knowledge is primarily determined by the unit head. Third, although all the units in our sample are in the same business domain and are geared toward providing similar services, they face different environments in their local markets. This variance mainly stems from uneven development of human resources, enterprises, and economies across the different geographic regions where the units are located. For example, the units in cities such as Beijing and Shanghai operate in a more mature and fast-growing environment, whereas the units in small cities such as Hohhot face a rather nascent environment. Such variance allows us to investigate the impact of environmental factors without introducing the influence of differences in industries. Finally, analyzing units in the same business domain allows us to mitigate the impacts of corporate culture, vision, and values. All of these factors can affect inter-unit knowledge transfer, but are often difficult to measure (Van Wijk et al., 2008).

4.2 | Data collection

To test our hypotheses without incurring the potential contamination of common method variance (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff, MacKenzie, & Podsakoff, 2012), we conducted a two-wave survey with a six-week interval to collect multisource data. The top management team of the corporation agreed to allow unit heads and one of their deputies from each of the 127 business units to participate in our study. An employee from the human resources department of the corporation helped us finalize the respondent list and coordinate the survey. To conduct the survey, we sent electronic questionnaires to all of the invited unit heads and their deputies. The completed electronic questionnaires were returned directly to the researchers, rather than to the corporation. In addition, we assured all participants of their confidentiality and asked them to respond honestly. All participation was voluntary, and participants were informed that they could quit the research project at any time.

In the first wave, we invited all 127 unit heads to rate their own narcissism; the environmental complexity, dynamism, and munificence (as a control) of their local market; their perceived competition with other units; the ambiguity of knowledge required in operations; the absorptive capacity of their units; decentralization in the corporation; unit autonomy and self-sufficiency; and other units' willingness to share knowledge. In addition, we asked them to provide their demographic information, including age, gender, education, and working experience in related industries. In the second wave, we invited all deputies to rate the general level of knowledge transfer to their own units from other units in the corporation. Units' age and size were archival data obtained from the company's human resources department.

After matching the two-wave data, the final sample consisted of 118 business units. In the final 118 unit heads sample, 92 (77.97%) had undergraduate or higher education degrees, and 62 (52.54%) were female. Their average age was 31.64 years ($SD = 3.41$).

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4.3 | Measures

To ensure proper understanding, we followed translation and back-translation procedures to translate all materials from English into Chinese (Brislin, 1986). Unless otherwise noted, responses used a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree).

4.3.1 | Inter-unit knowledge transfer

We adapted a measure of inter-unit knowledge transfer from Williams (2007). A three-item scale was used to assess the degree of knowledge transfer to the focal unit from other units. An example item from this scale is "We learned a lot from other units." Because of the risk that narcissistic unit heads might underrate the degree of inter-unit knowledge transfer from other units in an attempt to maintain their grandiose self-views and sense of superiority (Campbell & Miller, 2011), we asked the deputies of the unit heads in each focal unit to provide the rating so as to avoid this bias (Bunderson & Reagans, 2011; Lee, 1997). The rating used a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Cronbach's alpha (α) was .90.

4.3.2 | Narcissism

Unit head narcissism was measured using the self-report Narcissistic Personality Inventory 16-item scale (NPI-16; Ames, Rose, & Anderson, 2006). This forced-choice scale captures individual narcissism. Unit heads were presented with 16 pairs of statements and asked to choose which statement best fit them. An example pair of items is "I like to be the center of attention" and "I prefer to blend in with the crowd." Narcissism-consistent responses were coded as 1, while narcissism-inconsistent statements were coded as 0. However, the inter-item reliability of the full scale (NPI-16) was somewhat low (Cronbach's $\alpha = .63$).

To deal with this issue, we assessed the degree to which each item loaded onto a common factor. Ames et al. (2006), who developed the NPI-16, noted that the "loadings on the first unrotated factor ranged from 0.13 to 0.66" (p. 442). Following the same procedure, we found that two pairs of items—namely, "I expect a great deal from other people"/"I like to do things for other people" and "I insist upon getting the respect that is due me"/"I usually get the respect that I deserve"—had lower loadings on the first unrotated factor than those reported by Ames et al. (2006). Thus, we removed these two items. The Cronbach's α then increased to .7. Our review of prior survey research on narcissism using the same instrument with a forced choice scale suggested that the Cronbach's α of our measure was within the commonly observed range.[3] Given these observations, we concluded that the reliability of our 14-item measure is acceptable, particularly given that our results are robust to using the full scale and alternative cut-offs (0.3 and 0.4) for item loadings.

[3]For example, the original paper that developed this NPI-16 measure (Ames et al., 2006) reported five studies with α ranging from 0.65 to 0.72 (i.e., 0.72, 0.68, 0.69, 0.69, 0.65 across Studies 1–5). Our value was also in the ballpark of the studies using field survey data in China: 0.71 in Liu, Chiang, Fehr, Xu, and Wang (2017), 0.72 in Huang, Krasikova, and Harms (2020), and 0.71 in Liu et al. (2021). Moreover, as noted by some scholars (Ackerman, Donnellan, & Robins, 2012; Cortina, 1993; Gentile et al., 2013), given that the NPI-16 aims to capture various facets of narcissism, low reliabilities are to be expected with this measure.

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4.3.3 | Environmental complexity

We adapted the scale from Miller and Friesen (1982) to measure environmental complexity. This four-item scale captures the environmental heterogeneity and range of a unit's activities (Dess & Beard, 1984). A sample item from this scale is "There are great differences among the products/services your unit offers, with regard to customers' requirements" ($\alpha = .7$).

4.3.4 | Environmental dynamism

We used the scale from Jansen, Van Den Bosch, and Volberda (2006) to measure environmental dynamism. This five-item scale captures the rate of change and the instability of the external environment. An example item from this scale is "In your unit's local market, changes are taking place continuously" ($\alpha = .90$).

4.3.5 | Perceived inter-unit competition

To measure unit heads' perceptions of competition with other units, we asked each unit head to respond to the question, "How would you describe the competitive nature between your unit and other units in the corporation?" Adapted from Hansen, Mors, and Løvås (2005), this item used a seven-point Likert scale ranging from 1 (noncompetitive: never compete for status, performance evaluation, and resources in the corporation) to 7 (strongly competitive: frequently compete for status, performance evaluation, and resources in the corporation).

4.3.6 | Control variables

To control for plausible alternative explanations, we included several variables that had been reported to be relevant to inter-unit knowledge transfer in the previous literature. First, we controlled for environmental munificence, a key indicator of environmental characteristics, which refers to an environment's capacity to support sustained growth (Dess & Beard, 1984; Miller & Friesen, 1983). We adapted the scale from Sutcliffe (1994) to measure environmental munificence. This seven-item scale captures the extent of an industry's growth of sales, capital expenditures, and net assets in the focal unit's local market. An example item from this scale is "In your unit's local market, sales of your industry have been growing and are likely to grow" ($\alpha = .93$).

Second, we controlled for the ambiguity of the knowledge. According to the extant literature, ambiguous knowledge increases the difficulty of ensuring successful knowledge transfer between units (e.g., Grant, 1996; Simonin, 1999b). Our two-item measure of *knowledge ambiguity* was adapted from Simonin (1999b). An example item is "The association between causes and effects, inputs and outputs, and actions and outcomes related to the skills and know-how which your unit needs is clear." In the original scale, a higher score indicated a lower level of knowledge ambiguity. To make it consistent with the construct, we reverse-coded the score before we conducted the analyses ($\alpha = .73$).

Third, we controlled for *centralization* of the corporation, referring to the extent to which decision making and authority are dispersed in the corporation rather than controlled by a formal authority such as the company headquarters (Damanpour, 1991). Prior research has

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discussed the determining role of centralization in facilitating inter-organizational knowledge transfer (Gupta & Govindarajan, 2000a; Van Wijk et al., 2008). We adapted the five-item scale from Jaworski and Kohli (1993) to measure this construct, with responses given on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). A sample item is "There can be little action taken in the unit until headquarter approves a decision" ($\alpha = .87$).

Fourth, we controlled for some key characteristics of the focal unit, including absorptive capacity, organic structure, autonomy, and self-sufficiency. *Unit absorptive capacity* is a salient determinant of how well organizations acquire, assimilate, transform, and exploit external knowledge (Cohen & Levinthal, 1990). A high level of absorptive capacity can facilitate inter-unit knowledge transfer (Tsai, 2001). We used a 21-item scale adapted from Jansen, Van Den Bosch, and Volberda (2005) to measure absorptive capacity. An example item is "We quickly analyze and interpret changing market demands" ($\alpha = .90$). *Unit organic structure*, which is characterized by relatively flexible rules and regulations, decentralized power distributions, and open communication styles within a business unit, might also influence inter-unit knowledge transfer (Slevin & Covin, 1997; Van Wijk et al., 2008). We used the seven-item scale from Slevin and Covin (1997) to measure this construct. A sample item is "Open channels of communication with important financial and operating information flowing quite freely throughout this unit" ($\alpha = .7$). *Unit autonomy* represents the extent to which units enjoy freedom and discretion in carrying out business activities; it is also a salient predictor of inter-unit knowledge transfer (Paulsen & Hjertø, 2014). We employed a six-item scale from Frost, Birkinshaw, and Ensign (2002) to measure unit autonomy, asking unit heads to identify the level at which certain decisions were made (1 = corporate level, 2 = region level, 3 = unit level). Sample decisions include "hiring unit top management such as deputies" and "introduction of new products/services" ($\alpha = .76$). *Unit self-sufficiency* refers to units' independence of and lesser need to obtain assistance from other units due to having sufficient resources; it may theoretically impair inter-unit knowledge transfer. We developed five items to measure this construct: "This unit is independent from other units in the corporation," "This unit is less in need of assistance from other units in the corporation," "This unit has sufficient resources for management and operation," "This unit is less in need of external knowledge and skills," and "This unit is self-sufficient" ($\alpha = .77$).

Fifth, given that knowledge transfer is bidirectional—that is, it involves not only the recipient units' willingness to learn but also the source units' willingness to share knowledge (Gupta & Govindarajan, 2000a)—we controlled for *other units' willingness to share knowledge*. We measured this construct using an eight-item scale adapted from Bartol, Liu, Zeng, and Wu (2009). A sample item is "Other units in this corporation are willing to pass along information that may be helpful to the work of your unit" ($\alpha = .98$).

Sixth, we controlled for the unit heads' education level (*unit head education*), age (*unit head age*), gender (*unit head gender*), and working experience (*unit head experience*). These demographics have been found to be predictors of how executives affect organizational outcomes in the literature on upper echelons theory (e.g., Hambrick, 2007; Hambrick & Mason, 1984). Unit head education was coded as 1 if the education level was a high school degree, as 2 for a junior college degree, as 3 for a bachelor's degree, and as 4 for a master's degree. Unit head gender was coded as 1 for male and 2 for female. Unit head experience was calculated as the number of years for which the executive had worked in related industries.

Finally, we controlled for unit characteristics including unit age and size, as prior research has identified they are potential antecedents of knowledge transfer (Van Wijk et al., 2008). *Unit age* was measured as the number of years since the unit was founded. *Unit size* was measured as the number of employees (Josefy, Kuban, Ireland, & Hitt, 2015).

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4.4 | Estimation technique

We applied Bayesian regression analysis to test our hypotheses. The essence of the Bayesian approach is reallocating credibility across candidate parameters (Kruschke, 2015). This type of analysis computes the posterior distribution of parameters by starting from a prior distribution and updating the prior distribution when new observations are made. Many aspects of Bayesian inference are explained in detail elsewhere (e.g., Gelman et al., 2014; Kruschke, 2015). Management studies have increasingly used this approach (e.g., Hansen, Perry, & Reese, 2004; Mackey, Barney, & Dotson, 2017). The use of Bayesian regression analysis offered two advantages in our study. First, Bayesian estimation is more stable for a small-size sample than is a frequentist approach. That is, the Bayesian approach offers more precise findings with small sample sizes because it does not rely on large-sample properties of estimators, as do classical models (Hahn & Doh, 2006; Kruschke, Aguinis, & Joo, 2012).

Second, Bayesian regression analysis provides more information compared to the frequentist approach. The frequentist approach relies on null hypothesis significance testing (NHST). In regression analysis, whether researchers accept or reject the null hypothesis is based on the confidence interval and *p* values. For example, researchers will reject the null hypothesis with a 95% confidence interval when the *p* value of the estimated coefficient of interest is less than .05. NHST merely creates a simple comparison between zero and nonzero effects (McKee & Miller, 2015). By contrast, Bayesian estimation provides a complete distribution of parameters in a regression model. Instead of simply rejecting or accepting the null hypothesis, as NHST-based analysis does, Bayesian analysis allows researchers to make probability statements about the estimated parameters (Hansen et al., 2004; Jebb & Woo, 2015; Kruschke, 2015).

Due to the differences between Bayesian and NHST-based analyses, hypothesis testing is different with Bayesian regression analysis. Bayesian estimation tests a hypothesis based on the full distribution of a parameter—specifically, based on the mean of the distribution and the probability that the true parameter is greater (or less) than zero (Kruschke, 2015).

5 | RESULTS

Table 1 reports the descriptive statistics for the variables and the correlation matrix.

5.1 | Hypotheses testing

To reduce multicollinearity issues in our model, we centered the independent variable and moderator before including the interaction term in the model (Christensen, 2011). Consistent with the previous literature, our dependent variable was modeled by a normal distribution (Kruschke et al., 2012). In addition, we followed prior studies and adopted the weakly informative default prior distribution for the intercept and other parameters (Jebb & Woo, 2015). Specifically, we modeled the intercept using a Cauchy distribution with center 0 and scale 10, and modeled the coefficients of independent variables using a Cauchy distribution with center 0 and scale 2.5 (Gelman, Jakulin, Pittau, & Su, 2008).

Given that a likelihood and prior distributions were specified across all parameters, we conducted the estimation using standard Bayesian inference. Specifically, we estimated the model with Hamiltonian Monte Carlo methods using 50,000 draws, with a burn-in period of 25%

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TABLE 1 Descriptive statistics and correlation matrix

	Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Inter-unit knowledge transfer	3.514	0.839																		
2	Narcissism	0.479	0.195	−0.120																	
3	Environmental complexity	3.475	0.989	0.079	−0.084																
4	Environmental dynamism	3.488	1.244	0.036	−0.111	0.398															
5	Perceived inter-unit competition	4.373	1.052	0.097	0.073	−0.210	−0.058														
6	Environmental munificence	3.126	1.114	−0.098	−0.162	0.326	0.326	−0.058													
7	Knowledge ambiguity	4.843	1.107	−0.092	0.165	−0.258	−0.247	0.091	−0.267												
8	Centralization	2.261	0.701	−0.049	−0.074	−0.101	−0.213	0.122	−0.023	0.070											
9	Unit absorptive capacity	4.975	0.713	0.124	0.209	−0.240	−0.278	0.125	−0.285	0.514	0.043										
10	Unit organic structure	4.576	0.733	−0.125	−0.153	−0.227	−0.077	0.032	−0.217	−0.004	0.101	0.127									
11	Unit autonomy	1.866	0.569	0.151	−0.066	0.038	0.091	0.141	0.108	−0.174	−0.010	−0.248	−0.031								
12	Unit self-sufficiency	2.715	1.068	−0.067	0.165	0.102	−0.093	−0.007	−0.098	0.085	−0.016	0.051	0.067	0.038							
13	Other units' willingness to share knowledge	5.219	1.002	0.050	0.125	−0.167	−0.149	0.123	−0.181	0.389	−0.072	0.252	0.049	−0.088	−0.139						

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TABLE 1 (Continued)

Variables	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
14 Unit head education	2.805	0.494	−0.182	−0.010	0.125	0.067	−0.188	0.216	0.006	0.109	0.013	−0.001	−0.008	0.082	−0.073					
15 Unit head age	31.640	3.414	−0.081	0.082	0.014	−0.063	−0.190	−0.096	0.038	0.068	0.116	0.174	0.098	0.114	−0.022	0.105				
16 Unit head gender	1.525	0.501	0.023	−0.045	−0.124	−0.026	0.209	0.014	0.065	0.205	0.107	0.189	−0.100	−0.245	0.041	−0.066	0.044			
17 Unit head experience	5.071	1.779	0.047	0.150	0.036	−0.219	−0.062	−0.117	−0.107	−0.033	0.132	0.176	0.125	0.241	−0.014	−0.136	0.343	−0.032		
18 Unit age	3.805	1.945	−0.015	0.091	0.005	−0.280	−0.064	−0.136	−0.072	−0.145	0.126	0.120	0.037	0.311	−0.170	0.094	0.406	−0.157	0.663	
19 Unit size	23.898	19.856	−0.050	0.085	0.128	−0.077	−0.079	−0.107	0.025	−0.180	0.121	0.108	−0.002	0.241	0.034	0.150	0.309	−0.227	0.534	0.711

Note: $N = 118$, $|r| > .181$ is significant at $p < .05$.

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draws of every 25,000 draws (Kruschke, 2015; Mackey et al., 2017). Table 2 reports the results of the Bayesian regression analysis. Model 1 is the baseline model including all control variables; Models 2 to 5 report the tests for our hypotheses. Figure 1 shows the probability distributions of the coefficients of interest.

Hypothesis 1 predicted a negative association between unit head narcissism and inter-unit knowledge transfer. To test this hypothesis, we included the variable *narcissism* in our model. In Model 2, the coefficient of *narcissism* had a posterior mean of −.769. Of the posterior distribution, 96.71% was located below 0 (see Figure 1-1). These results imply that narcissistic unit heads are very likely to decrease inter-unit knowledge transfer in the focal units. Thus, Hypothesis 1 was supported.

In Hypothesis 2, we predicted that environmental complexity would weaken the negative link between unit head narcissism and inter-unit knowledge transfer. We tested this hypothesis by interacting *environmental complexity* with *narcissism*. In Model 3, the coefficient of the interaction term had a posterior mean of 1.118. Of the posterior distribution, 99.67% was located above 0 (see Figure 1-2). These results indicate that the negative impact of unit head narcissism on inter-unit knowledge transfer becomes weaker in more complex environments. Thus, Hypothesis 2 was supported.

To test Hypothesis 3, we interacted *environmental dynamism* with *narcissism*. This hypothesis predicted that the presence of a dynamic environment would mitigate the negative effects of unit head narcissism on inter-unit knowledge transfer. In Model 4, the coefficient of the interaction term had a posterior mean of .707. Of the posterior distribution, 98.39% was located above 0 (see Figure 1-3). These results indicate that environmental dynamism moderates the negative relationship between unit head narcissism and inter-unit knowledge transfer such that the negative relationship becomes weaker in more dynamic environments. Therefore, Hypothesis 3 was supported.

Hypothesis 4 predicted that unit heads' perceived competition with potential information-source units would strengthen the negative impact of unit head narcissism on inter-unit knowledge transfer. To test this hypothesis, we interacted *perceived competition* and *narcissism*. In Model 5, the coefficient of the interaction term had a posterior mean of −.839. Of the posterior distribution, 98.66% was located below 0 (see Figure 1-4). These results indicate that unit head narcissism impedes inter-unit knowledge transfer more strongly when unit heads perceive a higher level of competition with potential knowledge-source units. Thus, Hypothesis 4 was supported.

These findings are practically important regarding effect sizes: Low (−1 *SD*) versus high (+1 *SD*) values of the key independent variable *narcissism* predicted significant differences in the dependent variable, *inter-unit knowledge transfer*. The results showed that low (−1 *SD*) versus high (+1 *SD*) levels of *narcissism* corresponded to a difference of 0.300 in *inter-unit knowledge transfer*, which was equivalent to slightly more than one-third of a standard deviation in the distribution of the dependent variable.

5.2 | Endogeneity assessment and robustness check

We took several measures to reduce potential issues with endogeneity, as this effect is a growing concern among upper echelons theorists (Neely et al., 2020). Three situations are vulnerable to endogeneity issues (Bascle, 2008; Hill, Johnson, Greco, O'Boyle, & Walter, 2021; Wooldridge, 2001). The first involves reverse causality—that is, high (or low) inter-unit

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TABLE 2 Bayesian regression analysis for inter-unit knowledge transfer

	Model 1		Model 2		Model 3		Model 4		Model 5	
Variables	**Mean**	**% < 0**	**Mean**	**% < 0**	**Mean**	**% < 0**	**Mean**	**% < 0**	**Mean**	**% < 0**
Environmental complexity	0.114	11.25%	0.101	14.00%	0.121	8.95%	0.097	14.74%	0.104	12.81%
Environmental dynamism	0.045	28.33%	0.045	27.96%	0.037	31.01%	0.047	26.67%	0.040	29.58%
Perceived inter-unit competition	0.006	47.10%	0.019	40.96%	0.016	42.05%	0.013	43.64%	0.002	49.02%
Environmental munificence	−0.116	92.36%	−0.133	95.03%	−0.110	91.82%	−0.122	93.90%	−0.121	93.75%
Knowledge ambiguity	−0.171	96.65%	−0.170	96.97%	−0.152	95.91%	−0.152	95.42%	−0.158	96.19%
Centralization	0.016	44.55%	−0.005	51.87%	−0.026	58.66%	−0.037	62.13%	−0.014	54.73%
Unit absorptive capacity	0.356	0.58%	0.378	0.29%	0.279	2.08%	0.349	0.45%	0.323	0.94%
Unit organic structure	−0.171	93.25%	−0.224	97.11%	−0.239	98.16%	−0.268	98.75%	−0.225	97.34%
Unit autonomy	0.306	1.95%	0.286	2.62%	0.275	2.58%	0.301	1.78%	0.198	9.19%
Unit self-sufficiency	−0.034	66.79%	−0.012	56.35%	−0.015	57.34%	−0.018	59.16%	−0.006	53.08%
Other units' willingness to share knowledge	0.076	20.07%	0.085	17.11%	0.062	23.83%	0.096	14.07%	0.083	17.83%
Unit head education	−0.248	91.77%	−0.225	89.97%	−0.227	91.10%	−0.238	91.51%	−0.226	90.62%
Unit head age	−0.026	83.61%	−0.021	79.15%	−0.023	81.43%	−0.020	78.30%	−0.015	71.29%
Unit head gender	0.080	32.25%	0.08	32.03%	0.073	33.22%	0.108	26.33%	0.072	33.42%
Unit head experience	−0.010	55.82%	0.009	44.80%	0.020	37.96%	0.011	43.18%	0.008	44.59%
Unit age	0.044	27.72%	0.034	32.25%	0.058	21.32%	0.032	33.03%	0.029	34.52%
Unit size	−0.003	71.03%	−0.004	72.02%	−0.006	84.37%	−0.002	62.62%	−0.004	72.63%
Narcissism			−0.769	96.71%	−0.579	92.24%	−0.641	93.93%	−0.725	96.12%
Narcissism × environmental complexity					1.118	0.33%				
Narcissism × environmental dynamism							0.707	1.61%		
Narcissism × perceived inter-unit competition									−0.839	98.66%
Constant	3.514	0.00%	3.514	0.00%	3.532	0.00%	3.533	0.00%	3.526	0.00%
Number of observations	118		118		118		118		118	

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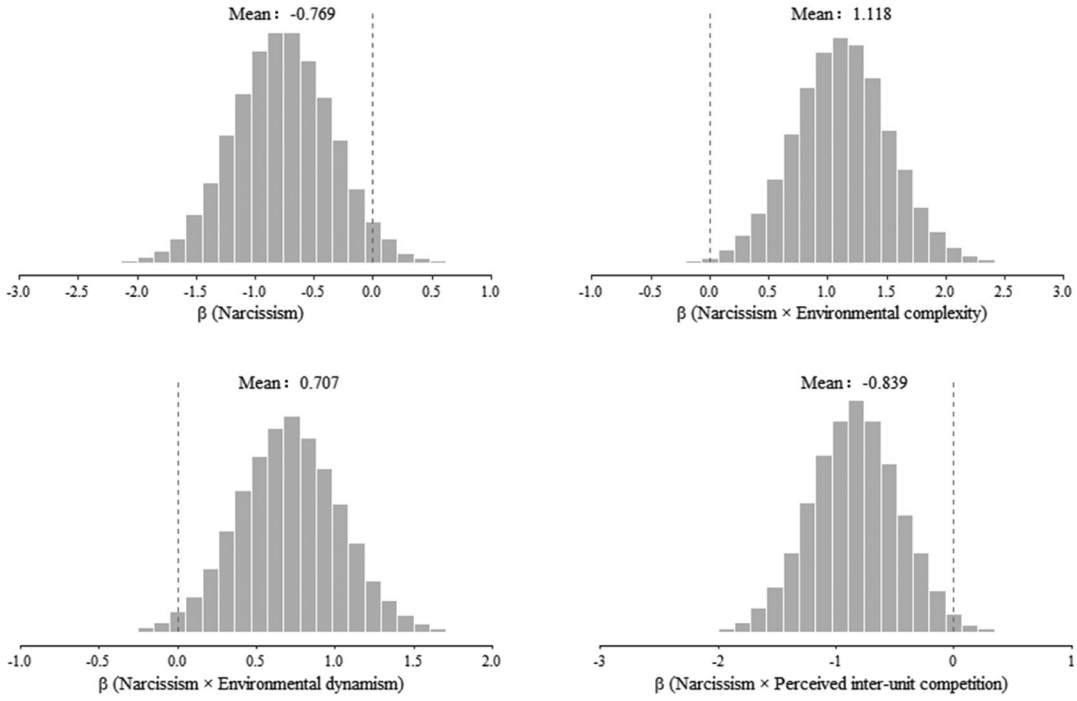

FIGURE 1 Posterior distributions of the coefficients of interest

knowledge transfer might cause unit heads to become less (or more) narcissistic over time. Theoretically, because narcissism is a relatively stable trait (Campbell & Miller, 2011; Emmons, 1984), it is not likely that inter-unit knowledge transfer would affect unit head narcissism. Empirically, to reduce this concern, we followed the established principle of temporal precedence by inviting unit heads to evaluate their own narcissism in the first-wave survey and inviting deputies to rate inter-unit knowledge transfer in the second-wave survey. The second situation focuses on measurement error. To address this concern, we used reliable and validated scales to measure all constructs. The third endogeneity-related concern deals with omitted variable bias. For instance, more narcissistic individuals might potentially be selected to lead units that are more self-sufficient (i.e., more independent of and less in need of assistance from other units in the company). As an initial step to mitigate this possibility, as discussed earlier, we included an array of control variables in all our analyses.

We also calculated the impact threshold for a confounding variable (ITCV; Busenbark, Yoon, Gamache, & Withers, 2022; Frank, 2000) to empirically test for the potential impact of omitted variables. The ITCV results suggested that an omitted variable would have to be correlated $|r| > .171$ ($\alpha = .10$) with the outcome and the predictor to invalidate our findings. Correspondingly, the minimum impact to invalidate an inference for a null hypothesis would be 0.0291. We found that no control variable in our study had an impact higher than this threshold, which renders it highly unlikely that an omitted variable would explain (or invalidate) our results (Busenbark et al., 2022; Gamache & McNamara, 2019; Lee, Gupta, & Hambrick, 2022).

As yet another way to address endogeneity, we conducted instrumental variable (IV) regression to assess the robustness of our findings. An ideal instrumental variable would be correlated with the independent variable but uncorrelated with the error term in the

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TABLE 3 Regression results predicting inter-unit knowledge transfer[a]

Variables	Model 1	Model 2[a]	Model 3	Model 4	Model 5
Environmental complexity	0.114	0.067	0.121	0.097	0.104
	(.094)	(.087)	(.090)	(.091)	(.091)
	[.225]	[.445]	[.180]	[.291]	[.256]
Environmental dynamism	0.045	0.045	0.036	0.047	0.041
	(.078)	(.087)	(.074)	(.075)	(.075)
	[.566]	[.609]	[.627]	[.535]	[.591]
Perceived inter-unit competition	0.005	0.058	0.016	0.012	0.001
	(.083)	(.110)	(.079)	(.081)	(.081)
	[.952]	[.600]	[.842]	[.881]	[.993]
Environmental munificence	−0.117	−0.178	−0.109	−0.123	−0.122
	(.080)	(.092)	(.077)	(.078)	(.078)
	[.147]	[.053]	[.160]	[.117]	[.122]
Knowledge ambiguity	−0.173	−0.164	−0.153	−0.152	−0.159
	(.091)	(.100)	(.087)	(.088)	(.088)
	[.060]	[.099]	[.081]	[.087]	[.074]
Centralization	0.017	−0.065	−0.027	−0.037	−0.015
	(.123)	(.144)	(.118)	(.120)	(.119)
	[.893]	[.653]	[.819]	[.760]	[.900]
Unit absorptive capacity	0.359	0.445	0.279	0.352	0.323
	(.135)	(.174)	(.135)	(.132)	(.134)
	[.009]	[.011]	[.041]	[.009]	[.018]
Unit organic structure	−0.172	−0.370	−0.242	−0.273	−0.228
	(.115)	(.156)	(.113)	(.116)	(.114)
	[.137]	[.017]	[.034]	[.021]	[.049]
Unit autonomy	0.309	0.232	0.276	0.302	0.196
	(.147)	(.166)	(.141)	(.143)	(.148)
	[.038]	[.160]	[.052]	[.037]	[.188]
Unit self-sufficiency	−0.034	0.048	−0.014	−0.017	−0.005
	(.080)	(.087)	(.077)	(.079)	(.079)
	[.675]	[.577]	[.856]	[.831]	[.950]
Other units' willingness to share knowledge	0.077	0.106	0.062	0.097	0.083
	(.091)	(.089)	(.087)	(.088)	(.088)
	[.402]	[.230]	[.477]	[.274]	[.347]
Unit head education	−0.252	−0.160	−0.230	−0.239	−0.226
	(.176)	(.181)	(.169)	(.171)	(.171)
	[.156]	[.377]	[.177]	[.166]	[.189]
Unit head age	−0.026	−0.010	−0.023	−0.020	−0.014
	(.026)	(.027)	(.025)	(.026)	(.026)

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TABLE 3 (Continued)

Variables	Model 1	Model 2[a]	Model 3	Model 4	Model 5
	[.330]	[.720]	[.371]	[.439]	[.583]
Unit head gender	0.082	0.075	0.073	0.110	0.071
	(.174)	(.200)	(.166)	(.169)	(.168)
	[.637]	[.710]	[.660]	[.515]	[.673]
Unit head experience	−0.011	0.061	0.020	0.012	0.009
	(.065)	(.062)	(.063)	(.064)	(.064)
	[.869]	[.324]	[.757]	[.857]	[.887]
Unit age	0.045	0.006	0.059	0.032	0.028
	(.075)	(.069)	(.072)	(.073)	(.073)
	[.552]	[.933]	[.419]	[.659]	[.700]
Unit size	−0.003	−0.004	−0.006	−0.002	−0.004
	(.006)	(.005)	(.006)	(.006)	(.006)
	[.585]	[.446]	[.305]	[.748]	[.542]
Narcissism		−2.912	−0.600	−0.672	−0.756
		(1.184)	(.414)	(.418)	(.414)
		[.014]	[.150]	[.111]	[.071]
Narcissism × environmental complexity			1.162		
			(.410)		
			[.006]		
Narcissism × environmental dynamism				0.725	
				(.329)	
				[.030]	
Narcissism × perceived inter-unit competition					−0.869
					(.381)
					[.025]
Constant	3.576	4.538	4.667	4.210	4.262
	(1.354)	(1.690)	(1.174)	(1.173)	(1.172)
	[.010]	[.007]	[.000]	[.001]	[.000]
Number of observations	118	118	118	118	118

Note: Standard errors were reported in parentheses. Two-tailed *p*-values were reported in brackets.

[a]Coefficients for Model 2 are from an instrumented 2SLS regressions; all other models display OLS estimates.

second-stage equation (Bascle, 2008; Busenbark et al., 2022; Kennedy, 2006). Prior research suggests that living in urban versus rural areas while growing up is a key determinant of narcissism (Cai, Kwan, & Sedikides, 2012; Martin, Côté, & Woodruff, 2016). That is, compared to rural areas, urban areas are more industrialized and commercialized, so they provide more opportunities to amplify agency-related values such as autonomy, competitiveness, independence, and uniqueness (Elder Jr., King, & Conger, 1996; Freeman, 1997; Oishi, 2010; Vohs, Mead, & Goode, 2006). Thus, unit heads who grew up in urban areas are more likely to develop higher

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levels of narcissism than those who grew up in rural areas (Cai et al., 2012). Accordingly, we used *urban upbringing*, coded as 1 when unit heads grew up in urban areas and as 0 when they grew up in rural areas, as the instrument, because this variable is a determinant of unit head narcissism but is uncorrelated with inter-unit knowledge transfer.

The IV regression analysis with two-stage least squares (2SLS) estimator showed that the *F*-statistic was 12.23 ($p = .0007$) and the critical value for the weak instrument test, 11.64 in the first-stage model, was larger than the threshold suggested by Stock and Yogo (2002), indicating acceptable instrument strength (Bascle, 2008; Stock, Wright, & Yogo, 2002). Meanwhile, the results of the 2SLS regression (see Model 2 in Table 3) predicting inter-unit knowledge transfer were consistent with our primary analysis, implying that narcissistic unit heads are very likely to decrease inter-unit knowledge transfer in the focal units, and thus reducing the concern about endogeneity.

Moreover, the results of the ordinary least squares (OLS) regression summarized in Table 3 were consistent with the findings using the Bayesian approach. Finally, we tested all hypotheses using the full NPI-16 scale. The results of both the Bayesian and OLS regressions were consistent with those using the shorter 14-item scale, thereby indicating the robustness of our findings. All detailed results are available upon request.

6 | DISCUSSION

The goal of this study was to examine the impact of executive narcissism on inter-unit knowledge transfer. We posited and found empirical evidence that unit head narcissism can impede inter-unit knowledge transfer. In addition, our results showed that environmental complexity and dynamism can weaken the negative relationship between unit head narcissism and inter-unit knowledge transfer, whereas unit heads' perceived competition with potential knowledge-source units can strengthen that relationship. The findings of our study have important implications for theory and practice.

6.1 | Theoretical implications

Building on upper echelons theory and personality psychology, this study extends the knowledge transfer literature by shifting the focus away from the antecedents of inter-unit knowledge transfer and toward individual attributes in knowledge-recipient units. Although research in strategic management has long sought to identify the factors that affect inter-organizational (including inter-unit and inter-firm types) knowledge transfer, how this process is influenced by individual actors has received relatively little attention (Shropshire, 2010). In the current literature, one stream focuses on the effects of knowledge characteristics, such as ambiguity, which may impede the knowledge transfer between organizations (e.g., Simonin, 1999a; Szulanski, Cappetta, & Jensen, 2004). Another stream concentrates on the role of organizational characteristics: Scholars have found that organizations' size, age, and absorptive capacity can be determinants of inter-organizational knowledge transfer (Frost et al., 2002; Gupta & Govindarajan, 2000a; Lane, Salk, & Lyles, 2001; Mowery, Oxley, & Silverman, 1996). A third stream, emphasizing inter-organizational relationships, has shown that social ties, trust, and network structures are powerful predictors of inter-organizational knowledge transfer (Ahuja, 2000; Levin & Cross, 2004; Reagans & McEvily, 2003).

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Until recently, however, scholars had paid scant attention to how individual characteristics affect inter-organizational knowledge transfer. Recent studies suggest that CEO narcissism within knowledge-source organizations will diminish the likelihood of inter-organizational knowledge transfer (as reflected in strategy imitation) because top executives in those organizations may perceive the organizational behaviors exhibited by their narcissistic counterparts in knowledge-source organizations as being ineffective (Gupta & Misangyi, 2018). Other work indicates that narcissistic top executives are more likely to adopt corporate strategies they witnessed in other companies, but are less likely to use corporate strategies that other directors experienced in other companies (Zhu & Chen, 2015a). Nevertheless, we have little understanding of how the characteristics of top executives in knowledge-recipient organizations, who play influential roles in their organizations' interpretation of external knowledge and motivation to engage in inter-organizational knowledge transfer, can directly impact inter-organizational knowledge transfer. By examining the effects of psychological traits of executives heading the units on inter-unit knowledge transfer, our work reveals that executives' psychological traits may significantly affect inter-organizational knowledge transfer. Our findings also highlight the importance of executives' personality in recipient organizations for inter-organizational knowledge transfer.

In studying the role of executives' narcissism in inter-unit knowledge transfer, our study also sheds light on an alternative mechanism that generates recipient organizations' knowledge transfer motivation. Organizations' intention to learn is one prerequisite for inter-organizational knowledge transfer (Argote & Fahrenkopf, 2016; Argote et al., 2003; Gupta & Govindarajan, 2000b; Hamel, 1991; Szulanski, 2000). The existing literature shows that recipient organizations' motivation to engage in knowledge transfer is a rational consequence of balancing the benefits and costs of such knowledge transfer to the organization (Argote et al., 2003; Szulanski, 2000). When the costs overweigh the benefits, organizations will be reluctant to participate in knowledge exchanges with other organizations (Argote et al., 2003). However, our study suggests that recipient organizations' motivation for engaging in inter-organizational knowledge transfer can stem from executives' psychological tendencies. Narcissistic executives may maintain their inflated self-views to the detriment of their organizations' best interests, by refusing to allocate the resources necessary to support inter-organizational knowledge transfer from other organizations.

In addition, our study advances understanding of NIH syndrome in organizations. NIH syndrome refers to the tendency to reject knowledge derived from an external source, even if that knowledge is actually useful (Katz & Allen, 1982). Scholars have found that it is a salient factor that hinders the acceptance of external knowledge in organizations (e.g., Antons & Piller, 2015; Gupta & Govindarajan, 2000b). Even though NIH syndrome is one of the most widely cited constructs in the knowledge transfer literature, few studies have investigated its antecedents (Antons & Piller, 2015). By integrating an upper echelons perspective and personality psychology, our study identifies one antecedent—executive narcissism—of NIH syndrome in organizations. Further, our study shows that the effects of unit head narcissism on NIH syndrome are not uniform under all circumstances, but rather depend on environmental factors. The effect is weaker in complex and dynamic environments, but becomes stronger when narcissistic executives in recipient organizations perceive the existence of a higher level of competition with potential source organizations. Our study takes a preliminary step toward responding to the call for opening the black box of NIH syndrome in organizations (Antons & Piller, 2015) by examining one determinant of NIH syndrome in recipient organizations and exploring the contingencies surrounding its effects.

Our study also advances understanding of the organizational consequences of executive narcissism. A growing body of research in management has begun to devote more attention to organizational outcomes related to executive narcissism (for a review, see Cragun et al., 2020),

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given that it is a fundamental personality dimension among top executives. Studies have shown that top executive narcissism is associated with corporate social responsibility (Petrenko et al., 2016; Tang, Mack, & Chen, 2018), managerial risk-taking (Chatterjee & Hambrick, 2011; Gerstner et al., 2013), mergers and acquisitions (Chatterjee & Hambrick, 2011), corporate governance (Zhu & Chen, 2015a, 2015b), and firm strategies and performance (Chatterjee & Hambrick, 2007; Patel & Cooper, 2014). Our research complements this stream of literature by explaining the interplay between unit head narcissism and inter-unit knowledge transfer. Moreover, although emerging studies have investigated the boundary conditions of the influence of top executive narcissism on organizational outcomes (Gerstner et al., 2013; Tang et al., 2018; Zhu & Chen, 2015a), scholars have mainly limited their investigations to the contingencies of audience and the status of other organizations, while calling for more research to explore other boundary conditions (e.g., Zhu & Chen, 2015b). In this regard, our research extends the executive narcissism literature by showing that distinctive sources of contextual challenges affect narcissists' attitudes and behaviors differently. In particular, we found that extra-organizational challenges such as environmental complexity and dynamism may weaken the negative relationship between unit head narcissism and inter-unit knowledge transfer, while intra-organizational challenges such as perceived inter-unit competition may strengthen this negative relationship. Thus, our work adds a finer-grained understanding of the important roles of different contextual challenges to the narcissism literature.

Finally, our research enriches upper echelons theory in at least two aspects. The first point relates to level of analysis. Prior research in this area has primarily centered on the impacts of CEOs' personality characteristics on firm outcomes (e.g., Chatterjee & Hambrick, 2007; Zhu & Chen, 2015a, 2015b). In comparison, our research uses upper echelons theory to explain the role of unit heads' narcissism in affecting inter-unit knowledge transfer, which represents a relatively underexplored arena for upper echelons research. Additionally, our work extends prior research on upper echelons theory by bringing to bear first-hand field survey data. When testing the organizational impacts of top executive narcissism, most prior studies have used archival data, such as annual reports, company press releases, executives' relative compensation packages, and videos of top executives, to indirectly estimate top executive narcissism (e.g., Chatterjee & Hambrick, 2007; Petrenko et al., 2016). In contrast, our study examines this relationship by directly measuring the level of executives' narcissism using a widely used scale. In so doing, it provides a more precise estimate of executive narcissism and lends corrobarative credence to the body of research that has fruitfully utilized archival proxies of executive narcissism (e.g., Chatterjee & Hambrick, 2007).

6.2 | Practical implications

Our study shows that unit heads can be barriers to knowledge flow among business units and even among firms. Business units or firms, of course, can benefit from knowledge transfer: They may enhance their competence by learning from their competitors, and they can build their capabilities by promoting knowledge flow among the various units or subsidiaries (e.g., Argote, 2013; Gupta & Govindarajan, 2000a). Hence, many firms make great efforts to facilitate knowledge transfer. For example, US Airways used to send its employees to fly on other airlines to identify its competitors' best practices (Carey, 1998). General Motors Corporation built identical plants in different countries so that knowledge acquired in one plant could be transferred to others more easily (Blumenstein, 1997). Our study suggests that narcissistic unit heads are likely to impede knowledge transfer from other units. Their sense of superiority

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may lead them to overestimate the value of internal knowledge and to underestimate the value of knowledge from other units. Even if valuable knowledge has been identified, narcissistic unit heads may not be motivated to pursue inter-unit knowledge transfer. Thus, as the first step, firms should be aware of the crucial impact of unit head narcissism when they are seeking to promote or implement knowledge transfer.

In addition, corporations with multiple units may use relative performance evaluations to offset the narcissistic tendencies of their executives. For example, the company in our research study evaluates unit heads based on the performance ranking of their particular unit among all of the company's units. However, our study suggests that for corporations with many business units or subsidiaries, such relative performance evaluations of their business units, which can strengthen the competitive intensity between those units, may further impede inter-unit knowledge transfer if unit heads have high levels of narcissism. Given the negative relationship highlighted by our findings, we suggest organizations should be careful when undertaking relative performance evaluations or other similar practices.

6.3 | Limitations and future directions

We acknowledge the limitations of this study, some of which provide directions for future research. First, regarding the antecedents of inter-unit knowledge transfer, we focused on narcissism because of its relevance to learning behaviors (e.g., Gupta & Misangyi, 2018; Zhu & Chen, 2015a), the emphasis placed on this topic in the recent literature (e.g., Chatterjee & Hambrick, 2007, 2011; Gerstner et al., 2013; Gupta & Misangyi, 2018; Patel & Cooper, 2014; Petrenko et al., 2016; Tang et al., 2018; Zhu & Chen, 2015a, 2015b), and its prevalence as a characteristic of top executives (Chatterjee & Hambrick, 2007). However, we do not mean to suggest that narcissism is the only important attribute of unit executives that influences inter-unit knowledge transfer. Future studies can extend this study by examining the effects of other attributes on inter-organizational knowledge transfer.

Second, the fact that our survey was conducted in China may limit the generalizability of our findings to other cultures. To date, the limited studies on cross-cultural differences in narcissism (e.g., Foster, Keith Campbell, & Twenge, 2003; Fukunishi et al., 1996; Meisel, Ning, Campbell, & Goodie, 2016) have yielded inconsistent conclusions. A thorough review of empirical studies using the NPI-16 measure indicated that scores on the NPI-16 do not appear to differ substantially across contexts and that this scale is a valid instrument across both Western (e.g., Den Hartog, De Hoogh, & Belschak, 2020; Gupta & Misangyi, 2018; Owens, Wallace, & Waldman, 2015) and Eastern contexts (e.g., Carnevale, Huang, & Harms, 2018; Huang et al., 2020; Liu et al., 2017). However, a meta-analysis has suggested that the effects of narcissism may vary in different cultural settings (e.g., Grijalva & Newman, 2015). Given that the extant research has not reached an agreement on the cross-cultural implications of narcissism, further research is needed to explore how executive narcissism differentially impacts inter-organizational knowledge transfer in different cultural contexts.

6.4 | Conclusion

Our research examines executive narcissism as an impediment to inter-unit knowledge transfer and investigates the contrasting moderating effects of extra-organizational challenges

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(environmental complexity and dynamism) and intra-organizational challenges (perceived inter-unit competition). A two-wave and multi-source survey data supported the hypotheses. Our findings have important implications for the literatures of knowledge transfer and narcissism as well as for upper echelons theory. We hope our research can inspire future work to contribute to these domains.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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