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RESEARCH ARTICLE

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An examination of shared leadership configurations and their effectiveness in teams

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Summary

A key challenge in the shared leadership literature has been a limited understanding of how multiple leadership activities are shared across team members and roles. We address this issue by conceptualizing and operationalizing shared leadership using both its content (i.e., *what* leadership roles are shared) and distribution (i.e., *how* leadership is shared across members and roles). In an exploratory study comprised of 129 work teams, we use latent profile analysis (LPA) to identify multiple shared leadership configurations that vary in the extent of sharing. Our second study of 103 MBA teams supports these findings and further (a) considers what shared leadership configurations have the greatest influence on team effectiveness, (b) examines the mediating role of teamwork processes, and (c) investigates the moderating role of temporal dispersion. We advance current research by demonstrating that shared leadership typically manifests in collective (i.e., members share all leadership roles) and distributed configurations (i.e., members hold one leadership role while other members hold other leadership roles), which has implications for team processes and effectiveness. Specifically, we show that collective configurations have higher team effectiveness (compared to distributed configurations) owing to improved teamwork processes and observe that these effects are more pronounced when temporal dispersion is high.

KEYWORDS
latent profile analysis, shared leadership, virtual teams

1 | INTRODUCTION

The widespread use of teams to enhance productivity, stimulate innovation, and foster participation in organizations has drawn attention to the critical role of team leadership (Martin & Bal, 2006). In recent decades, the focus of team leadership has shifted from understanding the way teams organize around formal leaders to informal leaders, fostering the study of shared leadership (e.g., Kozlowski et al., 2016; Pearce, 2004; Pearce & Sims, 2000). Shared leadership is an emergent team property that entails mutual influence and shared responsibility between team members (Carson et al., 2007; Pearce & Sims, 2000) and has been shown to increase team efficacy and satisfaction, improve team cohesion, and enhance team effectiveness (Carson et al., 2007; D'Innocenzo et al., 2016; Wang et al., 2014).

Problematically, our understanding of the effectiveness of shared leadership has been hindered by an overly simplistic conceptualization of the shared leadership construct itself, despite multiple scholars pointing to the necessity of more work in this area (D'Innocenzo et al., 2016; Kozlowski et al., 2016; Wang et al., 2014; Zhu et al., 2018). To date, research on shared leadership has been

grounded in two key assumptions. First, regarding the content of shared leadership, scholars have typically focused on only a single leadership role being performed by team members at a given time (Carson et al., 2007; DeRue, 2011; Liang et al., 2021; Mehra et al., 2006; Wu et al., 2020). This singular focus overlooks the possibility that each team member may enact a variety of leadership roles, and that different team members may engage in different leadership behaviors (Zhu et al., 2018). Second, regarding the distribution of shared leadership, scholars have assumed that leadership is shared among all members of the team. This assumption of a shared group construct manifests both in the definition of shared leadership as continual and collective influence of team members on one another, and in its measurement as an aggregate of individual behaviors or an evaluation of a team's collective leadership capacity (Liang et al., 2021; Pearce et al., 2004; Seibert et al., 2003; Wu et al., 2020). This assumption suggests that leadership roles are pervasive and evenly distributed, failing to account for any variation in a team member's leadership contributions to the team.

Scholars have contested these assumptions, pointing out that multiple leadership roles can be enacted concurrently within a team (Contractor et al., 2012; McGrath, 1964; Morgeson et al., 2010; Zhu et al., 2018). Indeed, prior research has proposed a variety of activities that may comprise team leadership (Contractor et al., 2012; Dust & Ziegert, 2016; Mathieu et al., 2015; Mumford et al., 2006), but little empirical work has accounted for variation in leadership roles among members (Bergman et al., 2012). Further, leadership is not always evenly distributed among team members (Carter et al., 2015; DeRue, 2011) and may be shared in multiple configurations that vary in the extent to which individuals take on one or more leadership roles within their team (e.g., Friedrich et al., 2009; Gronn, 2002). Several scholars have proposed typologies to account for these potential configurations (Contractor et al., 2012; DeRue, 2011; Dust & Ziegert, 2016; Mehra et al., 2006; Seibert et al., 2003), but unfortunately, much of this work is theoretical in nature, limiting the conclusions that can be drawn regarding the prevalence or type of shared leadership configurations that may exist within teams.

Confusion regarding the shared leadership construct is problematic for teams generally but has particular significance for teams that execute their processes virtually or across time and space. These teams inherently have more complexities to manage relative to face-to-face teams, creating higher barriers to effectiveness (Cohen & Gibson, 2003). The sharing and shifting of responsibilities that occur among team members in different configurations of shared leadership may be helped or harmed when teams need to manage their activities across multiple locations or time zones. Given the importance of context in understanding leadership within teams (e.g., Carter et al., 2015), consideration of this issue is both timely and relevant, particularly with increasing virtuality due to hybrid and remote work options (Spataro, 2022).

The purpose of this paper is to offer a more comprehensive understanding of shared leadership configurations within teams and examine how different configurations influence team effectiveness. Guided by the distributional parameters and leadership roles proposed by theory (Contractor et al., 2012; DeRue, 2011), we use latent profile analysis (LPA) to first explore the range of shared leadership configurations that may exist using a sample of 129 work teams (Study 1). We find evidence of multiple shared leadership configurations that differ in the extent of sharing across roles and team members. We build upon these findings in our second study (consisting of 103 MBA teams), in which we argue that shared leadership configurations that involve sharing across more roles and people (i.e., collective configurations) will have higher team effectiveness via team processes than configurations that involve less sharing across roles and people (i.e., distributed and centralized configurations) owing to greater team member integration (Study 2). We define team effectiveness as the extent to which a team meets its objectives (Ilgen et al., 2005) and team processes as the cognitive, verbal, and behavioral activities executed by teams to complete tasks and achieve goals (Marks et al., 2001). We predict that these effects are accentuated by the extent to which team members are temporally dispersed or spread across time zones. Our conceptual model is shown in Figure 1.

Our article makes several contributions. First, we clarify current conceptualizations of shared leadership by defining *what* team members share when they engage in shared leadership (i.e., content) and by more holistically capturing *how* teams share leadership across and within multiple leadership roles (i.e., distribution). This effort builds on recent work to advance our understanding of shared leadership configurations beyond a centralized versus decentralized dichotomy (Contractor et al., 2012; DeRue, 2011) as we consider contributions to shared leadership across multiple leadership roles. In so doing, our work also addresses criticisms of ignoring the content of shared leadership (Wang et al., 2014; Zhu et al., 2018) and measuring shared leadership using an aggregation approach (D'Innocenzo et al., 2016).

Second, we integrate research on shared leadership configurations in teams (Contractor et al., 2012) with theory on team processes (LePine et al., 2008; Marks et al., 2001) to provide new insight into the work on teams. Specifically, we explore how configurations of shared leadership influence team effectiveness through teamwork processes. Whereas theoretical work has suggested that different configurations may have distinct relationships with outcomes (Carter et al., 2015), our study explicitly demonstrates that prototypical collective and distributed configurations each uniquely influence team processes and subsequent team effectiveness.

Finally, we consider how the degree of virtuality in the form of temporal dispersion, or the spanning of team members across multiple time zones, may influence the strength of these relationships. In particular, we build upon research that notes the potential benefits of shared leadership relative to formal, hierarchical leaders in the virtual environment (Hoch & Kozlowski, 2014). Temporal dispersion, a more extreme form of virtuality relative to co-location (Cohen & Gibson, 2003; O'Leary & Cummings, 2007), introduces challenges to the rhythm of teamwork processes (Maznevski & Chudoba, 2000), and we offer insights as to how different shared leadership configurations may help overcome these difficulties.

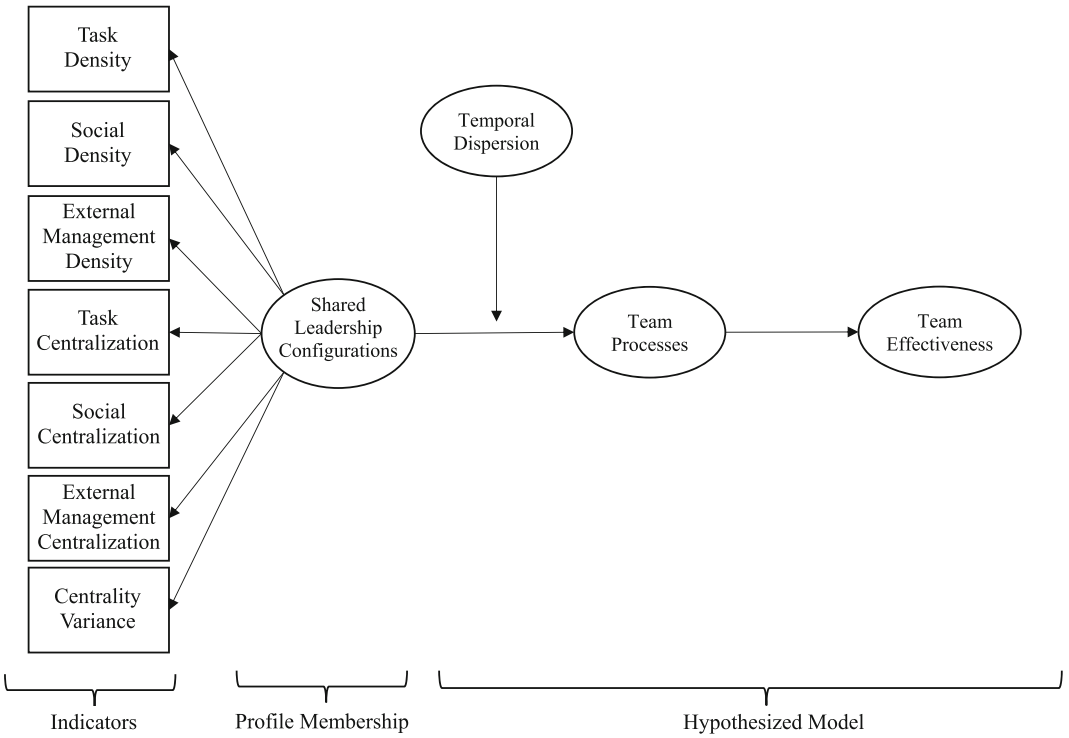

FIGURE 1 Conceptual model.

2 | THEORY DEVELOPMENT

2.1 | Shared leadership: Content and distribution

As an emergent and dynamic team phenomenon, shared leadership describes how team members distribute leadership roles and influence within the team (D'Innocenzo et al., 2016). Inherent in this definition are both the types of leadership roles shared within the team and the configuration, or pattern of individual member interactions and leadership contributions (Contractor et al., 2012). Before examining *how* leadership is shared in terms of various configurations, we first address the content of shared leadership or *what* is shared. Functional leadership theory asserts that leaders engage in whatever behaviors are necessary to meet the needs and goals of the team (McGrath, 1964; Morgeson et al., 2010). Applied to shared leadership, this suggests that individuals within a team will engage in behaviors relevant to accomplishing the team's objectives. Across different types of teams, the behaviors required to obtain goals tend to be consistent and similar (Stevens & Campion, 1994) and can be concretely conceived in terms of roles or characteristic patterns of identifiable behavior based upon the shared expectations of group members (Dust & Ziegert, 2016; Mumford et al., 2006).

Aligned with a functional leadership perspective, scholars have acknowledged that multiple leadership roles exist within teams (Bergman et al., 2012; Contractor et al., 2012; Dust & Ziegert, 2016) but initially lacked consistency in identifying the behaviors that comprise these roles within the shared leadership literature. Drawing on research on team roles has subsequently provided more consensus regarding the types of leadership activities that individuals may enact. Although there is variation in specific role descriptions, most team role typologies converge around three general sets of responsibilities: task management, social management, and external management (for a detailed description of team roles, see Mathieu et al., 2015; Mumford et al., 2006). Task roles address task completion and goal fulfillment, social roles facilitate interpersonal relationships, and external management roles coordinate a team's activities with other individuals or teams (Mathieu et al., 2015; Mumford et al., 2006). These core team roles largely align with behaviors identified as key to leadership (Yukl, 2012) and fit within the functional leadership framework by reflecting activities most central to the fulfillment of tasks and goals among team members (Burke et al., 2006).[1] Thus, we suggest that the task, social, and external management roles enacted by team members comprise the content of shared leadership.

Contrary to the scholarly convergence on the content of shared leadership, there remains considerable disagreement regarding the distribution of shared leadership, or how teams share leadership across (dispersion of leadership) and within (amount of leadership) roles. As shown in Table 1, some scholars have considered only a single aspect of distribution by either examining the amount (Bergman et al., 2012) or the dispersion (Mehra et al., 2006) of leadership, whereas others have offered taxonomies that theoretically integrate

[1]As an astute reviewer noted, leaders are also likely to engage in change management activities or behaviors intended to initiate change and foster learning and innovation (Yukl, 2012). However, this is not a role consistently identified by team role typologies (e.g., Mathieu et al., 2015; Mumford et al., 2006), which is the focus of our theorizing. As such, change management is not included here but is an area we identify for future research.

TABLE 1 Taxonomies of shared leadership configurations.

	Number of configurations	Empirically tested	*Content* Multiple leadership roles	*Distribution* Amount of leadership	*Distribution* Dispersion of leadership
Bergman et al. (2012)	2	Yes	✓	✓	–
Mehra et al. (2006)	4	Yes	–	–	✓
DeRue (2011)	4	No	–	✓	✓
Seibert et al. (2003)	5	No	–	✓	✓
Scott et al. (2018)	5	No	–	✓	✓
Dust and Ziegert (2016)	9	No	✓	✓	✓
Contractor et al. (2012)	Continuum	No	✓	✓	✓

Note: "✓" indicates consideration of the factor within the study.

both aspects and propose varying numbers of discrete configurations (Contractor et al., 2012; DeRue, 2011; Dust & Ziegert, 2016; Scott et al., 2018; Seibert et al., 2003). In spite of the varied coverage across studies, this body of work collectively suggests that fully understanding the manifestation of shared leadership within teams requires consideration of content, amount, and dispersion; yet the number, form, and prevalence of configurations that may emerge remains a question. Additionally, many of these typologies present theoretically ideal forms of shared leadership, but the likelihood that shared leadership configurations consistently manifest with such perfection in organizations is low. Unfortunately, this body of work has offered little guidance regarding how and to what extent configurations may deviate from these ideals. Further, few typologies offer actionable instruction regarding how to empirically identify the configurations they propose, creating challenges in testing different possible frameworks. As a notable exception, DeRue (2011) provides clear direction on how to examine the manifestation of possible configurations.

Overall, this prior research suggests that what is being shared in terms of the content of the leadership role(s) and how teams share these roles with regard to the amount and distribution of leadership are critical factors for understanding shared leadership configurations. This implies the existence of multiple shared leadership configurations ranging from configurations in which all members share all leader roles to those that are devoid of any leadership. As such, we ask the following research question:

Research Question 1: What are the types of shared leadership configurations that manifest in teams?

3 | STUDY 1

3.1 | Sample and procedures

To provide a preliminary answer to this research question, we conducted an exploratory study. Our sample was comprised of team members working across 85 different organizations located in the Netherlands and Germany. This sample was collected as part of a larger study looking at determinants of team effectiveness. Data on teams was collected from a variety of organizations by graduate students. This student-recruited sampling strategy has been shown to yield samples that are equally representative compared to non-student-recruited sampling strategies, has the benefits of yielding larger and more heterogeneous samples, and tends to have higher statistical power and external validity than can typically be achieved by an individual researcher within a single organization (Demerouti & Rispens, 2014; Wheeler et al., 2014). Following prior recommendations (Demerouti & Rispens, 2014), students received clear instructions about the data collection procedures and were each expected to collect 100 surveys.

In accordance with established definitions (Kozlowski & Ilgen, 2006), teams were eligible for inclusion in this sample when they were (a) work teams (i.e., no student teams or sports teams), (b) embedded in a larger organization (i.e., no stand-alone new venture teams), (c) comprised three or more team members, and (d) psychologically meaningful to respondents (i.e., it was clear to survey takers who were and were not part of their team). Of the 915 surveys administered to team members, 720 were returned (79% response rate). Within our analysis, we only included teams with a response rate of 75% or higher among team members (e.g., Sparrowe et al., 2001; Wasserman & Faust, 1994), resulting in a final sample of 526 individuals within 129 teams (average team size = 4.08; $SD = 1.82$). On average, participants were 38.16 years old ($SD = 11.77$), and 45% of participants were male. The average team tenure was 3.13 years ($SD = 11.63$).

3.2 | Measures

3.2.1 | Shared leadership

We evaluated the content of shared leadership using the four-item measure specified by Contractor et al. (2012); see also Chiu et al., 2016; De Jong et al., 2021). The task role was measured with two items ($\alpha = 0.82$), and the social and external management roles

were each rated with a single item. Participants used a round-robin approach to rate each of their team members on each item using a response scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Items are listed in Supplemental Materials A. We then operationalized the distribution of shared leadership for each of the three role behaviors using the distributional properties outlined by DeRue (2011): density, centralization, and centrality variance.

Density captures the amount of shared leadership, or the extent to which a given role behavior is present within a team. We calculated density as the sum of valued tie strengths in the team divided by the total possible number of ties among all team members, represented as: $\sum v_k / g(g-1)$ (DeRue, 2011; Wasserman & Faust, 1994). In the context of our study, a "tie" refers to a link between members in which one individual indicates that another team member fulfills the given role, and the value of this tie is based on the rating (1 to 5) assigned. Thus, for each role behavior (task, social, and external management), we summed the value of the ratings team members provided to one another ($\sum v_k$, wherein v_k refers to the value of each rating for each team member) and divided this by the total number of ratings team members theoretically could have provided one another ($g(g-1)$, wherein g refers to the number of team members).

Centralization represents the concentration of leadership within a given role or the extent to which the influence of a role behavior resides in a single actor. A centralized role indicates that one or a few team members are fulfilling the role, whereas a decentralized role indicates that many or all team members share the role. We evaluated centralization in role behaviors using the Freeman et al. (1991) formula for centralization in valued networks ($\sum_{i=1}^{n} \frac{[C'_B(p^*) - C'_B(p_i)]}{n-1}$), which calculates the sum of differences in centrality between the most central node in a network ($C'_B(p^*)$) and all other nodes in the network ($C'_B(p_i)$). This sum is then divided by the theoretically largest sum of differences in a network of equivalent size ($n-1$). We specifically calculated in-degree centralization (i.e., number of directional links to the actor from other actors; Brass, 2012) as it conceptually represents one team member recognizing the influence of another team member in a given role. We used valued ties to capture the extent to which a team member rated teammates' contributions within a given role behavior (DeRue et al., 2015).

Centrality variance reflects the extent to which team members act as leaders across multiple leadership roles. Although DeRue (2011) considered centrality variance of leadership at multiple points in time, we adapted this formula to account for multiple leadership roles: $[\sum_{i=1}^{g} \sqrt{\frac{\sum_{r=1}^{n} (C_{ar} - \overline{C}_a)^2}{n}}]/g$, wherein C_{ar} equals weighted in-degree centrality for actor a within role r, C_a is the out-degree centrality of actor a, n is the number of roles actor a enacts within the group, and g is the number of individuals in the team. As such, we first calculated each team member's centrality for each of the three roles (task, social, and external management) based on their individual normed centrality scores ranging from 0 to 1 $(C_{ar} - \overline{C}_a)$ (Sparrowe et al., 2001). We then calculated the standard deviation of these individual centrality scores for all roles for each team member ($\sqrt{\frac{\sum_{r=1}^{n} (C_{ar} - \overline{C}_a)^2}{n}}$). The resultant value gave us a measure of variance in centrality scores for each individual across roles, or variance in the extent to which an individual is acting as a leader across multiple roles. High centrality variance indicates that an individual is leading to a large extent in one role and a smaller extent in other roles. Finally, we took the mean of individual scores by summing the variance scores of each team member and dividing by the number of team members to arrive at an aggregate team score that captured the average variance in the extent to which team members were leaders across multiple roles.

3.3 | Data analysis

We statistically explored shared leadership configurations using LPA in Mplus 8.2 (Muthén, 2004; Nylund et al., 2007). LPA is a type of person-centered approach that allows for the identification of homogeneous subgroups in a sample by assessing similarity in patterns of a given set of variables, or indicators (Spurk et al., 2020). Although labeled "person" centered, this type of analysis can be applied to any unit of analysis (such as a team) in which unobserved heterogeneity within the population could account for relationships among variables (O'Neill et al., 2018; Wang & Hanges, 2011; Woo et al., 2018). In this regard, LPA differs from variable-centered approaches, such as regression, which assume that the data are homogeneous and do not account for the possibility of subgroups (Gabriel et al., 2015; Howard & Hoffman, 2018; Morin et al., 2011). LPA can also readily account for the complexity of interactions among numerous indicators (such as the seven included in the current research; see Figure 1), whereas alternative types of analyses, such as regression or ANOVA, are more limited in their ability to do so (e.g., Morin et al., 2011). Moreover, LPA does not restrict the number or type of configurations, allowing for the possibility of yet unknown profiles to manifest. This exploratory aspect of LPA is particularly useful in cases such as ours (i.e., shared leadership), in which theory has not provided a clear framework or typology for the expected number or type of subgroups (e.g., Bennett et al., 2016; Gabriel et al., 2015; Gabriel et al., 2022; Hancock et al., 2023; Morin et al., 2011). In sum, LPA allows us to inductively evaluate profiles within a population based on a set of theoretically grounded indicator variables identified in prior research.

LPA uses maximum likelihood (ML) estimation to estimate the probability that a case fits a given profile, which enables each case to then be categorized into the best-fitting profile (Muthén, 2004). We specifically used ML with robust standard errors in order to account for non-normality in the distribution of our indicator variables (Spurk et al., 2020; Vermunt & Magidson, 2002). We classified teams into homogeneous subgroups based on seven indicators. As noted in Figure 1, these included density and centralization values for the task, social, and external management role behaviors. The seventh indicator was centrality variance, which captures the dispersion of task, social, and external management roles across team members. These indicators enabled us to consider the amount of leadership within each role (i.e., density), the concentration of leadership within each role

(i.e., centralization), and the extent to which team members acted as leaders across multiple roles (i.e., centrality variance).

3.4 | Results

We first evaluated potential profile solutions profiles based on goodness of fit indices (Marsh et al., 2009; Masyn, 2013). Scholars have consistently suggested the value in examining the Bayesian information criterion (BIC), consistent Akaike information criterion (CIAC), and sample-size–adjusted BIC (SABIC), for which lower values indicate a better fit (Nylund-Gibson & Choi, 2018). We also considered entropy, in which values exceeding 0.80 represent a good classification (Muthén, 2004), and the bootstrapped likelihood ratio test (BLRT), in which a significant result suggests that the number of profiles being considered (*k*) is a better fit than a solution with one fewer profiles ($k - 1$, Nylund et al., 2007). However, scholars have also noted that fit indices should not be considered in isolation when making decisions to retain profiles and that it is critical to additionally account for the theoretical relevance and conceptual distinction of each profile (Howard et al., 2016; Marsh et al., 2009; Masyn, 2013; Nylund-Gibson & Choi, 2018; Spurk et al., 2020; Woo et al., 2018). As such, we also evaluated each prospective profile to ensure that it offered theoretical novelty.

Table 2 offers fit statistics for LPA solutions ranging from two to seven profiles. As we proceeded to test the various profile solutions, we noted that the values for BIC, CAIC, and SABIC were smallest for a two-profile solution. However, entropy continued to be acceptably strong (>0.80) through the seven-profile solution, and the results of the BLRT were significant for all seven profile solutions. Thus, whereas the BIC, CAIC, and SABIC implied that a smaller profile solution would be acceptable, the entropy and BLRT values suggested that additional profiles may be preferred. As our fit indices offered some ambiguity regarding the best-fitting solution, we followed the guidance of scholars who have suggested that the appropriate number profile solutions may be best guided by theoretical decisions (Spurk et al., 2020). Thus, we explicitly examined each of the profile solutions for conceptual distinctiveness. We continued to find qualitatively different profiles of theoretical interest up through the six-profile solution. For the seven-profile solution, two of the emergent profiles exhibited substantial conceptual overlap (i.e., displayed significant similarity in their indicators) and could not be clearly distinguished as separate profiles. As such, we retained a six-profile model, in which all profiles were conceptually distinct, and for which entropy was within optimal range with a significant BLRT value. Our decision aligns with suggestions in prior work supporting the inclusion of profiles that may offer meaningful new insights into the focal variables (Spurk et al., 2020; Woo et al., 2018).

Research Question 1 referred to the types of shared leadership configurations that will manifest in teams. Table 3 contains means and standard deviations for densities, centralization, and centrality variance scores for each profile. Following the guidance offered by prior scholars, we used the information provided by these factors to determine the emergent configurations of leadership. In particular, we utilized DeRue (2011) as a starting point, as this typology offered clear guidance on how to identify the emergence of four configurations that have been similarly proposed in multiple typologies using measures that have been advocated by shared leadership scholars (Contractor et al., 2012; Dust & Ziegert, 2016): collective, distributed, centralized, and void. For example, a collective configuration would have multiple team members leading multiple roles (task, social, and external management) and would thus exhibit high density and low centralization for each role. Collective configurations would also exhibit low centrality variance, as this indicates that on average, team members are relatively equal in their leadership across roles. In contrast, a distributed configuration would have different individuals

TABLE 2 Fit statistics for latent profile analysis.

Number of profiles	CAIC	BIC	Sample-size adjusted BIC	Entropy	Parametric bootstrapped likelihood ratio test
Study 1					
2	−460.22	−421.74	−491.32	0.98	177.07***
3	−529.98	−477.50	−572.38	0.89	264.33***
4	−578.21	−511.73	−631.92	0.89	304.43***
5	−587.67	−507.21	−652.69	0.89	348.20***
6	−593.90	−499.44	−670.23	0.85	364.91*
7	−600.50	−492.05	−688.13	0.89	379.05*
Study 2					
2	−1283.49	−1247.81	−1317.30	0.87	613.00***
3	−1334.95	−1286.30	−1381.06	0.92	674.89***
4	−1357.80	−1296.17	−1416.20	0.90	712.67***
5	−1370.70	−1296.09	−1441.40	0.91	731.24***

*$p < .05$, **$p < .01$, and ***$p < .001$.

TABLE 3 Profiles of team configurations.

Description	Profile	*n*	*Task role*		*Social role*		*External management role*		*Centrality variance across roles*
			Density	Cent.	Density	Cent.	Density	Cent.	
Study 1									
Prototypical collective	1	20	3.43 (.31)	.16 (.08)	3.70 (.29)	.10 (.06)	3.47 (.44)	.15 (.07)	.03 (.02)
Quasi-prototypical collective	2	59	2.84 (.31)	.17 (.08)	3.12 (.39)	.17 (.09)	2.76 (.52)	.13 (.08)	.03 (.02)
Prototypical distributed	3	12	2.34 (.25)	.32 (.11)	2.57 (.36)	.29 (.11)	2.38 (.38)	.34 (.06)	.02 (.01)
Quasi-prototypical distributed	4	16	3.28 (.31)	.32 (.10)	3.40 (.33)	.32 (.08)	3.33 (.31)	.29 (.09)	.04 (.03)
Prototypical centralized	5	5	2.97 (.45)	.67 (.12)	3.13 (.58)	.70 (.06)	2.37 (.61)	.61 (.15)	.03 (.01)
Quasi-prototypical void	6	17	2.00 (.27)	.10 (.05)	2.18 (.41)	.11 (.04)	2.10 (.47)	.14 (.06)	.02 (.01)
All teams		129	2.83 (.54)	.21 (.14)	3.07 (.59)	.20 (.15)	2.81 (.64)	.19 (.14)	.03 (.02)
Study 2									
Prototypical collective	1	19	4.39 (.11)	.06 (.02)	4.54 (.16)	.07 (.03)	3.67 (.37)	.13 (.06)	.02 (.004)
Quasi-prototypical collective	2	55	3.97 (.16)	.09 (.03)	4.15 (.20)	.08 (.04)	3.11 (.53)	.09 (.04)	.01 (.01)
Prototypical distributed	3	22	3.57 (.21)	.15 (.05)	3.66 (.32)	.14 (.04)	2.75 (.46)	.13 (.05)	.02 (.01)
Quasi-prototypical centralized	4	7	4.18 (.28)	.06 (.04)	4.30 (.26)	.08 (.03)	3.31 (.72)	.31 (.07)	.04 (.01)
All teams		103	3.97 (.31)	.10 (.05)	4.13 (.36)	.09 (.05)	3.15 (.58)	.12 (.07)	.02 (.01)

Note: Means of density, centralization, and centrality variance for team role behaviors across team configurations. Standard deviations are shown in parentheses.
Abbreviation: Cent., centralization.

leading the task, social, and external management roles, indicated by low or moderate density scores, high centralization for each role, and high centrality variance. Centralized configurations would similarly have low to moderate density and high centralization, but low centrality variance. Void configurations would have low scores for each density, centralization, and centrality variance.

We refer to configurations that clearly align with the guidelines offered by DeRue (2011) as "prototypical," meaning that they exemplify each of the qualities as described in this typology. For example, prototypical collective configurations will have higher (task, social, and external management) density, lower (task, social, and external management) centralization, and lower centrality variance relative to all other profiles. We additionally anticipated the existence of configurations that did not directly fit into these categories (e.g., Dust & Ziegert, 2016). Specifically, configurations that display the same or similar characteristics as prototypical configurations, but exhibit these qualities to a lesser extent are referred to as "quasi-prototypical." Following from the previous example, a quasi-prototypical collective configuration may exhibit higher (task, social, and external management) density, lower (task, social, and external management) centralization, and lower centrality variance relative to most other profiles, but have lower density scores or higher centralization scores relative to prototypical collective configurations. We provide a conceptual representation of each of these configurations in Figure 2. In addition to examining each profile qualitatively, we also utilized ANOVA to test for significant between-profile differences for each of the role densities, role centralizations, and centrality variance.

Profile 1 has higher density scores relative to Profile 3 ($p < .001$ for all roles), Profile 5 ($p < .05$ for all roles), and Profile 6 ($p < .001$ for all roles) and lower centralization scores relative to Profile 3 ($p < .001$ for all roles), Profile 4 ($p < .001$ for all roles), and Profile 5 ($p < .001$ for all roles). Similarly, Profile 2 exhibits higher density scores relative to Profile 3 ($p < .001$ for task and social roles, *ns* for the external management role), and Profile 6 ($p < .01$ for all roles) and lower centralization scores relative to Profile 3 ($p < .001$ for all roles), Profile 4 ($p < .001$ for all roles), and Profile 5 ($p < .001$ for all roles). Given that both Profile 1 and Profile 2 generally exhibit higher densities and lower centralizations (relative to other profiles), we consider both collective configurations. In looking more carefully at the differences between Profile 1 and Profile 2, we observe that Profile 1 has higher density relative to Profile 2 ($p < .001$ for all roles) and find no significant differences in centralization scores or centrality variance between Profiles 1 and 2. We label Profile 1 *prototypical collective*, as the higher density scores (relative to Profile 2) better align with theoretical conceptualizations of this form of shared leadership (e.g., DeRue, 2011) and make it a more exemplary representation of this type of sharing. We label Profile 2 *quasi-prototypical collective*, as it retains the basic properties of collective configurations, but falls short of the fully idealized form.

Profiles 3 and 4 both exhibit qualities of distributed configurations in that they each have higher centralization scores compared to Profiles 1 and 2. Density scores for Profile 3 are also lower relative to Profiles 1 and 2. We find no significant differences in density scores when comparing Profile 4 with Profile 1 but do find that Profile 4 has higher density scores for task ($p < .001$) and external management ($p < .01$) roles relative to Profile 2. As Profile 3 has lower density scores relative to Profile 4 ($p < .001$ for all roles) but exhibits no significant differences in centralization scores or centrality variance, we

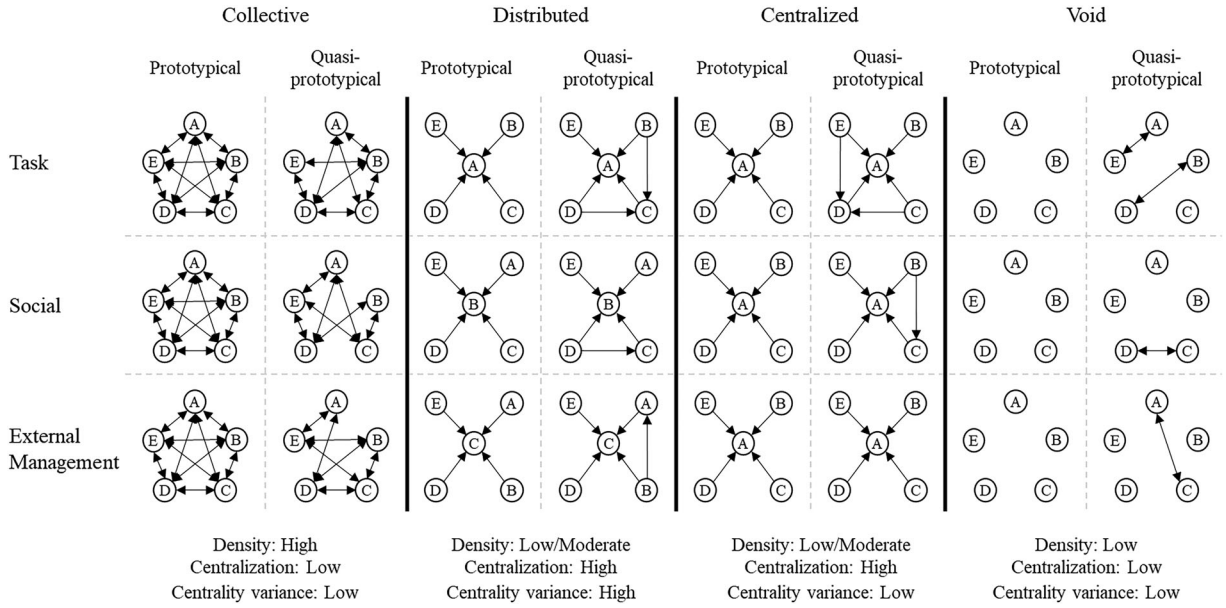

FIGURE 2 Conceptual representation of prototypical and quasi-prototypical shared leadership configurations. *Note*: This representation of shared leadership configurations builds upon the depiction offered by DeRue (2011, p. 133).

label this configuration *prototypical distributed*, because it represents a more ideal form of distributed sharing per prior theory (e.g., DeRue, 2011). We label Profile 4 *quasi-prototypical distributed*, as these configurations display most, but not all, of the theorized characteristics of the prototypical form.

We consider Profile 5 to be *prototypical centralized* due to the moderate density scores (significantly lower relative to Profile 1; $p < .05$ for all roles), high centralization scores (significantly different from all other profiles; $p < .001$ for all roles), and relatively low centrality variance. Finally, Profile 6 has significantly lower density relative to Profile 1 ($p < .001$ for all roles), Profile 2 ($p < .01$ for all roles), Profile 4 ($p < .001$ for all roles), and Profile 5 ($p < .001$ for task and social roles, *ns* for external management roles). Profile 6 also had significantly lower centralization scores relative to Profile 3 ($p < .001$ for all roles), Profile 4 ($p < .001$ for all roles), and Profile 5 ($p < .001$ for all roles). Centrality variance is also relatively low. These characteristics suggest very little engagement in leadership across roles, and we correspondingly label Profile 6 as *quasi-prototypical void*. Although we have summarized our findings here, full results of our ANOVA comparisons for differences in role densities, role centralizations, and centrality variance for all profiles can be found in Supplemental Materials B. Table 4 provides descriptive statistics and correlations for each configuration and the inputs for our LPA.

3.5 | Summary of Study 1

In Study 1, we found evidence of multiple shared leadership configurations by examining the amount of leadership within roles (i.e., density), the concentration of leadership within roles (i.e., centralization), and the extent to which team members act as leaders across multiple roles (i.e., centrality variance). The results demonstrate that shared leadership typically manifests as collective (i.e., all team members sharing all roles) and distributed configurations (i.e., some team members leading in one or more roles while other team members lead in other roles), with a smaller number of teams emerging as centralized configurations (i.e., a single leader across all roles) or void configurations (i.e., little to no sharing across all roles). To provide a more quantitative synopsis, we find that 61.24% of all teams within the sample could be considered collective (Profiles 1 and 2), with 15.50% representing prototypical collective teams (Profile 1) and 45.73% representing quasi-prototypical collective teams (Profile 2). Distributed teams comprised 21.71% of the sample (Profiles 3 and 4), with 9.00% reflecting prototypical distributed configurations (Profile 3) and 12.40% representing quasi-prototypical distributed configurations (Profile 4). We find that only 3.88% of teams form centralized configurations (Profile 5) and 13.18% emerge as void configurations (Profile 6).

Interestingly, our analysis demonstrates that shared leadership configurations manifest in both prototypical and quasi-prototypical forms. Although both prototypical and quasi-prototypical configurations exhibit similar properties, prototypical configurations exemplify the given type of shared leadership, representing a matured form of sharing that more closely aligns with theory. For example, in prototypical collective configurations, density is higher in one or more roles relative to quasi-prototypical collective configurations. Compared to prototypical collective teams, in which we would anticipate all team members to be exchanging leadership responsibilities across all roles, not all team members in quasi-prototypical collective teams are fully engaged in sharing leadership across all roles. Thus, prototypical

TABLE 4 Study 1: Means, standard deviations, and correlations among study variables.

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Prototypical collective	(20)[a]	–	–											
2. Quasi-prototypical collective	(59)[a]	–	−.39**	–										
3. Prototypical distributed	(12)[a]	–	−.16	−.35**	–									
4. Quasi-prototypical distributed	(16)[a]		−.14	−.29**	−.12	–								
5. Prototypical centralized	(5)[a]		−.09	−.18*	−.08	−.06	–							
6. Quasi-prototypical void	(17)[a]		−.17	−.36**	−.15	−.12	−.08	–						
7. Task density	2.83	0.54	.48**	.01	.31**	−.30**	.05	−.61**	(.82)					
8. Task centralization	0.21	0.14	−.16	−.26**	.30**	.25**	.64**	−.30**	.16	–				
9. Social density	3.07	0.59	.46**	.08	.211*	−.27**	.02	−.58**	.63**	.09	–			
10. Social centralization	0.20	0.15	−.28**	−.20*	.30**	.19*	.67**	−.25**	.08	.72**	−.01	–		
11. External management density	2.81	0.64	.44**	−.06	.31**	−.21*	−.14	−.43**	.50**	.01	.52**	−.07	–	
12. External management centralization	0.19	0.14	−.14	−.42**	.27**	.34**	.61**	−.14	.05	.71**	−.03	.67**	.00	–
13. Centrality variance	0.03	0.02	−.04	.05	.19*	−.11	.02	−.14	.12	.20*	.14	.16	.01	.01

Note: $N = 129$.
[a]Represents a count of teams that belong to a given profile.
$^*p < .05$, $^{**}p < .01$.

collective and quasi-prototypical collective teams share the same basic attributes (i.e., there is substantial sharing among individuals across roles), but quasi-prototypical collective teams have less sharing among individuals relative to prototypical collective teams.

The example of collective teams applies similarly with respect to prototypical and quasi-prototypical distributed teams. Prototypical distributed teams have a clearly defined leader within each role, meaning that there is lower density, higher centralization, and higher centrality variance as leadership activities become concentrated around a single individual. In quasi-prototypical distributed configurations, leadership is still concentrated within a given role but may be shared by two individuals (or more, in large groups) rather than just a single person. In this regard, many quasi-prototypical distributed configurations represent a slight variation of the prototypical distributed configurations in that leadership remains concentrated within each role but may be enacted by more than one individual. Additionally, we find that the small number of centralized teams emerge in a prototypical form, due to the high centralization scores across each role and relatively low density. Finally, theoretical conceptualizations of void configurations suggest a complete absence of leadership across any role; given that we do observe some very limited sharing among members across roles in this configuration, we consider these quasi-prototypical void (and not a prototypical representation of the form).

In sum, our findings from Study 1 provide preliminary empirical support for the emergence of shared leadership configurations that have been previously theorized within the extant literature (e.g., collective, distributed, centralized, and void). Importantly, we note that while we did observe some variation within these profiles (i.e., prototypical versus quasi-prototypical forms), we did not find any configurations that deviated beyond these four structures of sharing. Further, the vast majority of teams engaged in either collective or distributed forms of shared leadership (82.95%; Profiles 1–4), relative to centralized or void configurations.

Our findings in Study 1 provide a platform for further investigation in Study 2. Study 1 clarifies the types of shared leadership configurations that may occur, providing a starting point for considering how different configurations may influence important team outcomes, and creating an opportunity to consider contextual factors. In Study 2, we utilize existing theory and our findings from Study 1 to make predictions about the impact of these configurations on team processes and effectiveness and explore temporal dispersion as a boundary condition. We focus our hypothesizing on the prototypical configurations that emerged empirically in Study 1 (e.g., collective, distributed, and centralized) and have been supported by theory (Contractor et al., 2012; DeRue, 2011; Dust & Ziegert, 2016). Although we anticipate non-prototypical configurations, as occurred in Study 1, concentrating on prototypical configurations allows us to examine the form with the purest features (i.e., density, centralization, and centrality variance) of a particular configuration. Thus, we are able to provide stronger theoretical support for our arguments, greater clarity and precision in our predictions, and more direct interpretation of results.

3.6 | Shared leadership configurations and team effectiveness

Previous research has consistently pointed to the influence of shared leadership on team effectiveness, highlighting the mixed results of this relationship (D'Innocenzo et al., 2016; Wang et al., 2014). These inconsistent findings may be driven by how leadership is shared. We suggest that not only will different configurations of shared leadership manifest within teams, but that each configuration will uniquely affect team effectiveness or the extent to which a team accomplishes its objectives (Ilgen et al., 2005). We specifically propose that how teams execute team processes—the cognitive, verbal, and behavioral efforts directed toward carrying out taskwork to achieve collective goals—will account for these differences in team effectiveness. Team processes broadly encompass the activities executed by groups, such as specifying goals and planning tasks (transition processes), coordinating efforts and monitoring task execution (action processes), and encouraging team members and minimizing conflict (interpersonal processes; Marks et al., 2001). Within the literature on teams, processes have been consistently identified as a key mediator influencing outcomes (Ilgen et al., 2005; Mathieu et al., 2008), and research on shared leadership has similarly pointed to team processes as a prominent proximal outcome (Zhu et al., 2018). Yet, how specific configurations of leadership within teams influence processes and subsequent effectiveness has been less well understood in these literatures.

As individuals come together within teams, they integrate their efforts to manage their interdependences and coordinate activities among members (Kozlowski & Bell, 2013). In order to do so, individuals engage in activities that provide benefit to another team member, engendering feelings of obligation that require reciprocation (Blau, 1964). These exchanges become mutually reinforcing as individuals continue to perform in ways that they believe will produce similar responses from others (Cropanzano & Mitchell, 2005; Emerson, 1976; Gouldner, 1960). In the context of shared leadership, these exchanges are based upon influence attempts that are reinforced through the reciprocated influence of others within the team (Carter et al., 2015; Scott et al., 2018). Team members become embedded in a network of mutual influence and shared responsibility as they initiate and exchange efforts to complete goals or objectives through their various leadership roles (Seibert et al., 2003). As leadership is exchanged across multiple roles, connections between individuals grow stronger and more stable (e.g., Brass, 2012). The emergent pattern of exchange relationships, based on team members' influence on one another, can be represented as a network (Scott et al., 2018; Seibert et al., 2003). Scholars have argued that network structure, and specifically the increased linking among team members, is foundational to teamwork processes (Crawford & LePine, 2013) as such efforts influence the action, transition, and interpersonal activities that drive team effectiveness (LePine et al., 2008; Marks et al., 2001).

The unique patterns of sharing that emerge within prototypical collective, distributed, and centralized configurations are likely to differentially effect team processes.[2] Specifically, we anticipate that the way in which leadership is shared in prototypical collective configurations will strengthen its relationship with team processes relative to either prototypical distributed or centralized configurations. In a collective configuration, multiple team members share leadership across multiple roles, and this continual exchange offers individuals more opportunities to interact and contribute to an array of leadership efforts. Thus, the patterns of sharing that develop among collective configurations lend themselves to enhanced coordination, greater sharing of task-related knowledge and information, and more consistent monitoring of task and goal progression (Barker, 1993; Erez et al., 2002). Further, the patterns of sharing that occur in collective configurations are likely to foster cohesion among members and allow for the development of cooperative norms that reduce team conflict (e.g., Tjosvold et al., 2014).

In contrast, prototypical distributed and centralized configurations have a less integrated and reinforced network of mutual influence and shared responsibility relative to prototypical collective configurations. In a distributed configuration, each team member engages in one or more leadership roles in response to other group members enacting different leadership roles within the team whereas centralized configurations have only a single team member leading across multiple roles. Relative to collective configurations, both distributed and centralized configurations have patterns of sharing in which information or knowledge about tasks and goals may only exist within certain team members (e.g., Friedrich et al., 2009). Furthermore, distributed and centralized configurations are likely to experience reduced cooperation and cohesion among team members in comparison to collective configurations, as a single leader maintains responsibility for certain tasks across all roles (e.g., DeRue, 2011; Mehra et al., 2006).

Whereas prototypical collective configurations are likely to have stronger relationships with team processes relative to both prototypical distributed and centralized configurations, we suggest that prototypical distributed configurations are likely to have a stronger relationship with team processes relative to prototypical centralized configurations. Both distributed and centralized configurations have less sharing across leadership roles; however, distributed configurations exchange leadership responsibilities among multiple members who take leadership in a specific role, implying that members will have a greater need and ability to collaborate and cooperate across tasks and activities. Sharing leadership across multiple roles is likely to result in greater communication and improved relationships among team members in distributed configurations (versus centralized configurations), as the concentration of leadership in a single individual for centralized configurations does not necessitate similar communication or relationship-building (e.g., Gronn, 2002; Mehra et al., 2006; Shaw, 1964; Sparrowe et al., 2001). To a greater extreme than distributed configurations, centralized configurations may be prone to increased challenges in planning

[2]Although we acknowledge the potential emergence of void configurations, we exclude this configuration from our examination as individuals fail to share responsibility for leadership in any role, denoting no shared leadership within the team.

and coordination, as only one individual is primarily responsible for directing task activities (Contractor et al., 2012; Gronn, 2002).

> **Hypothesis 1.** Teams that adopt a prototypical collective configuration of shared leadership will have a stronger positive relationship with team processes compared to teams that adopt a (a) prototypical distributed or (b) prototypical centralized configuration of shared leadership.

> **Hypothesis 1c.** Teams that adopt a prototypical distributed configuration of shared leadership will have a stronger positive relationship with team processes compared to teams that adopt a prototypical centralized configuration of shared leadership.

We anticipate that the patterns of shared leadership that emerge within teams will ultimately lead to differing relationships with team effectiveness via team processes. Shared leadership has been increasingly viewed "as a means of enhancing team performance" (D'Innocenzo et al., 2016, p. 1965), and scholars have identified team processes as the primary mediating mechanism in the relationship between shared leadership and team effectiveness (Zhu et al., 2018). Indeed, a key goal of team leadership is to achieve greater effectiveness by enhancing collective synergy in critical team activities while limiting process loss (Zaccaro et al., 2009). Empirically, meta-analytic evidence provides strong support for a positive relationship between team processes and team effectiveness (LePine et al., 2008).

We suggest that prototypical collective configurations will have a stronger indirect relationship with team effectiveness owing to an enhanced ability to complete team processes. The increased amount of sharing that occurs as team members trade off responsibilities across multiple leadership roles within collective configurations provides greater opportunities for team members to build awareness of strategic priorities, execute the most goal-relevant activities, and maintain coordination among one another (Dust & Ziegert, 2016; Friedrich et al., 2009). This pattern of multiple leaders across multiple roles ensures that teams are continuously and consistently driving toward goal achievement by completing the tasks and activities required to be successful. In comparison, prototypical distributed and centralized teams may be hindered by reduced integration and sharing among team members, limiting consistent task or goal progress and effective communication while increasing the risk of conflict or confusion among members (e.g., Dust & Ziegert, 2016). These differences suggest that prototypical collective configurations will likely be more successful in executing team processes and that their ability to do so will enhance team effectiveness relative to prototypical distributed or centralized configurations.

Additionally, we suggest that prototypical distributed configurations, relative to prototypical centralized configurations, will have a stronger indirect relationship with team effectiveness via team processes. Though to a lesser extent than collective configurations, the sharing of leadership across different roles in distributed configurations provides opportunities for teams to utilize a range of knowledge and skills among members and necessitates some degree of cooperation and coordination in order to complete goal-oriented tasks and activities (Dust & Ziegert, 2016; Mehra et al., 2006). Thus, prototypical distributed configurations (compared to prototypical centralized configurations) are better positioned to execute the team processes that ultimately contribute to the team's success because team members have more opportunities to communicate, share strategic priorities, and work together to complete tasks.

> **Hypothesis 2.** Teams that adopt a prototypical collective configuration of shared leadership will have a stronger positive relationship with team effectiveness compared to teams that adopt a (a) prototypical distributed or (b) prototypical centralized configuration of shared leadership.

> **Hypothesis 2c.** Teams that adopt a prototypical distributed configuration of shared leadership will have a stronger positive relationship with team effectiveness compared to teams that adopt a prototypical centralized configuration of shared leadership.

> **Hypothesis 3.** Teams that adopt a prototypical collective configuration of shared leadership will have a stronger positive indirect relationship with team effectiveness via team processes compared to teams that adopt a (a) prototypical distributed or a (b) prototypical centralized configuration of shared leadership.

> **Hypothesis 3c.** Teams that adopt a prototypical distributed configuration of shared leadership will have a stronger positive indirect relationship with team effectiveness via team processes compared to teams that adopt a prototypical centralized configuration of shared leadership.

3.7 | The moderating influence of temporal dispersion

Thus far, we have considered the effects of shared leadership within teams generally. However, teams working across time and space have become increasingly common (Gilson et al., 2015; Liao, 2017), and scholars have noted how the distribution of team members across time zones presents additional challenges to team functioning (e.g., Cummings et al., 2009; Klein & Kleinhanns, 2003). Teams that are more temporally dispersed encounter increased difficulties in scheduling and coordinating work activities due to workdays beginning and ending at different times (Chudoba et al., 2005; Olson & Olson, 2000). Differences in location may further affect team processes due to reduced opportunities for "real-time" interactions and increased use of asynchronous forms of communication (e.g., e-mail) that interrupt or

delay coordination, task execution, and team member preparedness (Cummings et al., 2009; Klein & Kleinhanns, 2003). Similarly, difficulties communicating can inhibit planning and goal prioritization, and limited interactions can make it difficult to foster strong, trusting relationships that boost confidence and reduce dysfunction among team members (Jarvenpaa & Leidner, 1999; Shaw, 1964). Collectively, these factors obscure perceptions of when and how work activities are taking place, affecting the rhythm of teamwork and execution of team processes.

The disruptive nature of temporal dispersion is likely to influence the execution of team processes and subsequent team effectiveness for any team, but we expect that prototypical collective configurations, which have greater sharing across roles and team members, will be more effective than prototypical distributed or centralized configurations in conditions of high temporal dispersion. Collective configurations offer the critical benefit of having multiple individuals contribute to leadership functions within each role such that activities are carried out continuously as members adopt the roles that are most important for any stage of the work process (Morgeson et al., 2010). Within collective configurations, norms of sharing encourage team members to carry out whatever crucial task is at hand, enabling these teams to capitalize on the ability to work from any location at any point in time. A team member whose workday is beginning can take on the same leadership roles as a team member whose workday has finished, meaning that teams with a collective configuration can "follow the sun" in their activities (Olson & Olson, 2000; Siebdrat et al., 2009). Further, the high level of team member integration within these collective configurations allows them to manage complexities associated with coordinating and planning activities across multiple time zones. The enhanced integration of the team is also likely to build trust and strengthen interpersonal relationships among team members.

In contrast, prototypical distributed and centralized configurations rely on designated leaders for each of the leadership roles within the team. As such, when team members are dispersed across multiple time zones, task completion is inhibited by periods of inactivity because a specific leader may not be available to advance team objectives. This reduces opportunities for team members to make the cognitive, verbal, and behavioral contributions necessary to continuously move teamwork processes forward. Unlike team members in a collective configuration, who can pass off work to team members in a later time zone, team members in a distributed or centralized configuration may be delayed in completing their work because they must wait for others to contribute (Siebdrat et al., 2009). Further, the reduced integration of members in distributed configurations, and more extremely in centralized configurations, is likely to limit the ability to plan or set team goals. Relative to prototypical collective configurations, prototypical distributed configurations, and even more so prototypical centralized configurations, are hindered in developing the strong interpersonal relationships that would foster coordination efforts and encourage task completion (e.g., Mehra et al., 2006).

Hypothesis 4. Temporal dispersion moderates the relationship between shared leadership configurations and teamwork processes such that as temporal dispersion increases, the relationship becomes stronger for (a) prototypical collective configurations compared to prototypical distributed configurations, (b) prototypical collective configurations compared to prototypical centralized configurations, and (c) prototypical distributed configurations compared to prototypical centralized configurations.

Hypothesis 5. Temporal dispersion moderates the relationship between shared leadership configurations and team effectiveness through teamwork processes in the first stage. Specifically, as temporal dispersion increases, the positive indirect relationship between shared leadership configurations and team effectiveness will be stronger for (a) prototypical collective configurations compared to prototypical distributed configurations, (b) prototypical collective configurations compared to prototypical centralized configurations, and (c) prototypical distributed configurations compared to prototypical centralized configurations.

4 | STUDY 2

4.1 | Sample and procedures

Our study included individuals from an online MBA program at a large public university in the United States. Individuals were placed into teams of four to six people at the beginning of their program, met together at a mandatory team orientation, and worked together on a variety of team-based projects over 8 months. These projects included case analyses, simulations, course-specific team exercises, and discussion board assignments. Teams completed similar team-based projects that had the same duration and deadlines, received the same instructions, were tied to requirements in their courses, and contributed to their overall course grade. In both courses in which we collected data, an individual's contribution to the team was evaluated by peers and comprised on average 10% of an individual's grade in the course. Thus, participants were motivated to engage within the course, a situation not unlike work teams in which performance may be evaluated on completion of goal-related projects as well as overall involvement in the workplace. Participants received course credit in a separate course for participating in our study.

We initially collected data after participants completed their first course, approximately 5 weeks into the program (Time 1). During this time, team members had several opportunities to work together on multiple team assignments. A total of 550 participants completed our Time 1 survey (93% response rate). Our second data collection occurred approximately 34 weeks into the program (Time 2) after teams had been interacting together in multiple courses on a variety of team assignments. Based on work within the group development literature, we deemed this a sufficient period of time for norms of sharing to develop and affect teamwork processes, as the teams were likely to be past the early phases of development and into the phase

of focusing on teamwork capabilities (Kozlowski & Bell, 2013). In total, our time points were separated by approximately 6 months. A total of 533 completed our Time 2 survey (97% response rate).

As in Study 1, we included teams with a response rate of at least 75% among team members (e.g., Sparrowe et al., 2001; Wasserman & Faust, 1994), resulting in a final sample of 460 individuals within 103 teams (average team size = 4.47; *SD* = 0.62). On average, participants were 30.76 years old (SD = 5.57) and primarily (75%) male. Participants identified as Caucasian (78%), Asian/Pacific Islander (11%), Hispanic (6%), and African American (4%). Teams were spread across an average of 2.29 time zones, with some separated by as many as 15 time zones.

Our sample provided an appropriate setting in which to test our hypotheses for a number of reasons. First, the MBA team environment offered natural controls for factors that often make research on teams complex, such as multiple team memberships, varied nature and duration of team projects, and variation in team size and tenure (Wageman et al., 2012). In contrast, membership in our teams was limited and assigned, team projects were the same duration across groups, and team size was restricted to a narrow range. Second, these teams are representative of organizational teams in that they controlled management and execution of their tasks (Roberson & Williamson, 2012), and as noted above, were motivated to engage with their group based on peer evaluations and course grades that were tied to team projects. Indeed, MBA teams are intended to mirror real work teams and experience the pressures of deadlines and competition that would be present in organizations (Newton et al., 2022). These benefits have encouraged the use of student samples for shared leadership research (Carson et al., 2007; De Jong et al., 2021; Kukenberger & D'Innocenzo, 2020), and multiple meta-analyses (D'Innocenzo et al., 2016; Wang et al., 2014) have provided evidence that associations between shared leadership and team outcomes are likely to be higher in field samples relative to student samples, suggesting that our use of an MBA sample is a conservative test of our proposed relationships.

The virtual nature of these teams also made this sample well-suited to our study, particularly in considering how temporal dispersion may influence the effectiveness of shared leadership. Teams met once in person at the beginning of their program and communicated through virtual media for the remainder of their time together. Virtual media tools included e-mail or live chat, video conferencing, phone calls, discussion boards, shared documents, and project management tools. Team members reported spending the majority of their working time for this program collaborating with their team (57.85% of time working with team members versus 42.15% of time spent working independently). Of the time spent engaged in teamwork, team members reported that they spent the most time communicating through video conferencing tools (27.68%), shared documents (27.33%), and e-mail or live chat (21. 57%).

4.2 | Measures

Items for all measures and their rating scales are included in Supplemental Materials C.

4.2.1 | Shared leadership

We measured shared leadership content (i.e., task, social, and external management roles) at Time 1 using a 10-item scale adapted from Mumford et al. (2008). The task role was rated with five items ($\alpha = 0.83$), the social role was rated with three items ($\alpha = 0.79$), and the external management role was rated with two items ($\alpha = 0.86$). Our calculation of shared leadership distribution was the same as described in Study 1 using three distributional properties: social network density, centralization, and centrality variance (DeRue, 2011).

4.2.2 | Team processes

At Time 2, team members rated team processes using a 10-item measure based on the team process typology offered by Marks et al. (2001). Our measure included four items related to action processes, three items related to transition processes, and three items related to interpersonal processes. We aggregated these facets based on meta-analytic findings that they load onto a single, higher-order factor (LePine et al., 2008), high correlations between the three underlying processes within our data (average $r = 0.78$), and the overall reliability of our teamwork processes measure ($\alpha = 0.90$; $r_{wg} = 0.90$; *ICC1* = 0.14; *ICC2* = 0.42).

4.2.3 | Temporal dispersion

We measured temporal dispersion by taking a count of time zones over which a team is spread (e.g., Cummings et al., 2009; O'Leary & Cummings, 2007). Time zone information came from archival data provided by the MBA office.

4.2.4 | Team effectiveness

At Time 2, respondents rated team effectiveness using a four-item measure from Campion et al. (1993; $\alpha = 0.86$; $r_{wg} = 0.94$; *ICC1* = 0.21; *ICC2* = 0.55).

4.2.5 | Control variables

We controlled for a number of variables that had the potential to influence the proposed set of relationships within our study. Specifically, team size has been related to team coordination, task completion, and participation, factors that influence a team's ability to complete processes (e.g., Campion et al., 1993). Similarly, scholars have consistently shown an effect of interdependence on team outcomes (Campion et al., 1993; Shea & Guzzo, 1987; Wageman, 1995), with meta-analytic evidence pointing to its significance within research on shared leadership (D'Innocenzo et al., 2016). As such, we initially controlled for both of these group attributes. For

interdependence, team members rated Campion et al. (1993)'s three-item measure ($\alpha = 0.65$). We found that neither team size nor interdependence had a significant effect on team processes or effectiveness, and neither variable affected our pattern of results.

Scholars have also noted that team processes may be affected by the attributes of team members (LePine et al., 2008), pointing to the particular importance of demographic characteristics (Kukenberger & D'Innocenzo, 2020; Van Knippenberg et al., 2004). We examined the average age of team members and used a Blau index to account for team gender and ethnicity. As the ability to develop and build trust among members has subsequent implications for cooperation and coordination (Costa et al., 2018), we evaluated trust propensity using four items developed by Mayer and Davis (1999). We also calculated an average of prior virtual team membership, as experience working virtually may influence the ability to communicate with virtual tools or enhance efficiency in completing tasks in the virtual environment. In testing each of these controls individually, we noted that none had a significant effect on either team processes or effectiveness and did not influence our overall pattern of results. Following recommendations to remove variables that are not impactful to the study (Becker, 2005; Carlson & Wu, 2012), we did not retain any of these variables in our final model.

4.3 | Data analysis

In order to evaluate our first two hypotheses, we identified configurations of shared leadership using LPA and following the three-step process outlined by Asparouhov and Muthén (2014). In the first step, similar to Study 1, we classified teams into homogenous subgroups utilizing our seven indicators (task, social, and external management density; task, social, and external management centralization; centrality variance) to determine the best fitting profile solution. In the second step, we determined the most likely profile membership using the posterior distribution obtained by enumerating profiles in Step 1. This allowed us to account for any error in classifying a given team to a specific profile (Asparouhov & Muthén, 2014). Finally, in the third step, we used the Bolck–Croon–Hagenaars (BCH) approach to determine differences in the profiles obtained in Step 2 on our outcomes of interest (team processes and effectiveness). The BCH approach utilizes a weighted multiple group analysis to avoid shifts in latent classes and is more effective in evaluating mean differences in distal outcomes relative to the final step proposed by Asparouhov and Muthén (2014).

In order to examine the mediation, moderation, and moderated mediation proposed in Hypotheses 3, 4, and 5, we utilized a path analysis approach with partially latent variables in Mplus 8.2 (Muthén & Muthén, 1998–2017). Scholars have suggested that both mediation and moderation can be conducted using variations on the three-step process outlined above (McLarnon & O'Neill, 2018), but these variations do not account for the complexity of our current model. Instead, we classified each team to their respective configuration (i.e., prototypical collective and prototypical distributed) based on the profile membership enumerated in Step 1 (above). In categorizing each team to one configuration, our analysis does not account for the probability that a team may have been miscategorized (as does the three-step process). However, the average probability that a team belonged to an assigned profile was over 90%, providing support for the categorization of a team into a specific configuration. In our analysis, we treat one configuration as the reference group and changed the reference group for various comparisons of effects. The coefficients for the configurations in the path analysis and their significant tests represent a comparison to the reference group (Cohen et al., 2003). To test the indirect effects predicted in Hypotheses 3 and 5, we used the product of coefficients approach (MacKinnon et al., 2002). A significant indirect effect exists when there is a significant product of the path coefficient from the independent variable to the mediator and the path coefficient from mediator to the dependent variable (controlling for the direct effect). As the products of path coefficients are typically not normally distributed, we used the Monte Carlo method in the RMediation package (MacKinnon et al., 2004; Tofighi & MacKinnon, 2011) to calculate 95% confidence intervals (CIs) for our tests of mediation. We tested the simple slopes for a high and low group (i.e., plus and minus one standard deviation) to examine temporal dispersion as a Stage 1 moderator (Cohen et al., 2003). We examined moderated mediation by testing for a significant difference between the high and low groups of temporal dispersion on the relationship of shared leadership configurations to team effectiveness through teamwork processes.

4.4 | Results

Table 2 contains fit statistics for our LPA solutions, ranging from 2 to 5 profiles. As in Study 1, we considered BIC, CIAC, SABIC, entropy, and the BLRT for the best-fitting LPA solution. The values for BIC, CAIC, and SABIC were smallest for a two-profile solution, but entropy was acceptable (>0.80) through the five-profile solution, and the results of the BLRT were significant for all five profile solutions. Much like Study 1, our fit indices did not clearly point to the best fitting solution as the BIC, CAIC, and SABIC suggested a smaller profile solution, whereas the entropy and BLRT values again indicated that a larger profile solution may be more appropriate. We then examined each of the profiles for conceptual distinctiveness, finding that within the five-profile solution, two of the emergent profiles could not be distinguished as unique from one another (i.e., displayed significant similarity in their indicators). As such, we retained a four-profile model in which all profiles were conceptually distinct and were supported by an adequate entropy value and a significant BLRT value. We report the means and standard deviations for densities, centralization, and centrality variance scores for each of the emergent profiles in Table 3. As in Study 1, we used ANOVA to test for significant between-profile differences for each of the role densities, role centralizations, and centrality variance and report the results of these tests in full in Supplemental Materials D.

Similar to Study 1, we found that Profiles 1 and 2 exhibited higher density and lower centralization scores relative to other profiles, as well as low centrality variance. In comparing these two profiles more

explicitly, we find that relative to Profile 1, Profile 2 had significantly lower densities for all roles ($p < .01$), but no significant differences for task, social, or external management centralization roles, or centrality variance. Due to higher density scores relative to Profile 2, we label Profile 1 as a *prototypical collective* configuration, because its structure more closely aligns with its theoretical conceptualization and provides the strongest example of the form, and subsequently labeled Profile 2 *quasi-prototypical collective*.

Compared to Profile 1, densities for Profile 3 were significantly lower for task, social, and external management roles ($p < .001$ for all roles). Additionally, centralization was significantly higher for task and social roles ($p < .001$) relative to Profile 1 but did not significantly differ in terms of external management roles. Centrality variance was also not significantly different between Profiles 3 and 1. Compared to Profile 2, Profile 3 had significantly lower densities for task ($p < .001$), social ($p < .001$), and external management roles ($p < .05$). Centralization for Profile 3 was also significantly higher for task role and social roles compared to Profile 2 ($p < .001$) but did not significantly differ for external management roles. Centrality variance across roles was significantly higher for Profile 3 compared to Profile 2 ($p < .001$). These differences in densities and centralization (relative to Profiles 1 and 2) support our conceptualization of Profile 3 as distributed and specifically *prototypical distributed*.

Finally, we found a few significant differences between Profile 4 and the other profiles, likely due to the small number of teams within this group. However, this configuration had a highly centralized external management role ($p < .001$ compared to Profiles 1, 2, and 3) and high centrality variance ($p < .001$ compared to Profiles 1, 2, and 3). Given that we did not find significantly higher centralization across all roles (relative to other profiles), we describe Profile 4 as *quasi-prototypical centralized*, as this does not represent the prototypical form. Table 5 provides the descriptive statistics and correlations for Study 2, including the profiles from our analysis, variables included in our model, and inputs for our LPA analysis (i.e., densities and centralization scores for each role and centrality variance). Our final model demonstrated good fit to the data: CFI = 0.95, RMSEA = 0.06, and SRMR = 0.03.

Hypothesis 1a proposed that prototypical collective configurations would have a stronger relationship with team processes compared to prototypical distributed configurations. This hypothesis was supported, as prototypical collective configurations (Mean = 3.86) had more effective team processes relative to prototypical distributed configurations (Mean = 3.62; $\chi^2(3) = 2.79$, $p = .095$).[3] We were unable to test Hypotheses 1b and 1c (and subsequently Hypotheses 2b, 2c, 3b, 3c, 4b, 4c, 5b, and 5c), as prototypical centralized configurations did not emerge within our sample. We include an examination of differences in team processes and team effectiveness as they relate to our non-prototypical configurations (i.e., quasi-prototypical collective and quasi-prototypical centralized) in Supplemental Materials E.

In Hypothesis 2a, we suggested that prototypical collective configurations would have a stronger relationship with team effectiveness relative to prototypical distributed configurations. This hypothesis was also supported, as we found that prototypical collective configurations (Mean = 4.71) had enhanced team effectiveness relative to prototypical distributed configurations (Mean = 4.37; $\chi^2(3) = 5.62$, $p = .018$). Hypothesis 3a predicted that prototypical collective configurations would have a stronger positive relationship with team effectiveness through teamwork processes compared to prototypical distributed configurations. Results from our path analysis show that compared to prototypical distributed configurations, prototypical collective configurations had a stronger relationship with teamwork processes ($b = 0.27$, $SE = 0.13$, $p = .03$). Additionally, teamwork processes had a positive relationship with team effectiveness ($b = 0.58$, $SE = 0.08$, $p < .001$). In evaluating differences in the indirect effects of these configurations on team effectiveness through team processes, we find that prototypical collective configurations exhibited a significantly stronger indirect relationship relative to prototypical distributed configurations (*indirect effect* = 0.16, $SE = 0.08$, 95% CI (0.01, 0.32)], supporting Hypothesis 3a.

Hypothesis 4a predicted that the relationship between shared leadership configurations and teamwork processes would be moderated by temporal dispersion such that, as temporal dispersion increased, prototypical collective configurations would have a stronger positive relationship with teamwork processes compared to prototypical distributed configurations. The coefficient for the interaction term was significantly stronger for collective configurations when compared to distributed configurations ($b = 0.19$, $SE = 0.06$, $p = .002$), supporting Hypothesis 4a. The interaction between these configurations and temporal dispersion on team processes is shown in Figure 3. We included temporal dispersion on the *X*-axis and plotted the prototypical collective and prototypical distributed configurations to more clearly illustrate the relationship between these configurations and team processes at high (plus one standard deviation) and low (minus one standard deviation) values of temporal dispersion (cf. Nahrgang et al., 2013).

Hypothesis 5a predicted that as temporal dispersion increased, prototypical collective configurations would have a stronger positive relationship with team effectiveness through teamwork processes compared to prototypical distributed configurations. For prototypical collective configurations compared to prototypical distributed configurations, the indirect effect was significant for high temporal dispersion (*indirect effect* = 0.39, $SE = 0.12$, 95% CI [0.19, 0.68]) but not significant for low temporal dispersion (*indirect effect* = −0.08, $SE = 0.10$, 95% CI [−0.28, 0.13]), and the difference between high and low temporal dispersion conditions was significant (*indirect effect* = 0.47, $SE = 0.16$, 95% CI [0.13, 0.76]). These results support Hypothesis 5a, showing that prototypical collective configurations

[3]We considered teamwork processes as an aggregated construct rather than separately considering action, transition, and interpersonal processes (Marks et al., 2001). Supplementary analysis of disaggregated team processes revealed that prototypical collective configurations, compared to prototypical distributed configurations, had a positive and significant relationship with action processes ($b = 0.31$, $SE = 0.13$, $p = .015$) and positive and non-significant relationships with transition ($b = 0.16$, $SE = 0.17$, $p = .342$) and interpersonal processes ($b = 0.26$, $SE = 0.25$, $p = .290$). Overall, the pattern of improved processes for prototypical collective configurations compared to prototypical distributed configurations appeared to hold for all three processes that underlie the higher order team process construct, and action processes exhibited the strongest effects.

TABLE 5 Study 2: Means, standard deviations, and correlations among study variables.

Variable	Mean	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Prototypical collective	(19)[a]	–	–													
2. Quasi-prototypical collective	(55)[a]	–	−.51**	–												
3. Prototypical distributed	(22)[a]	–	−.25*	−.56**	–											
4. Quasi-prototypical centralized	(7)[a]	–	−.13	−.29**	−.14	–										
5. Temporal dispersion	2.29	2.16	.06	.06	−.04	−.15	–									
6. Teamwork processes	3.63	0.43	.23*	−.14	−.02	−.06	.12	(.90)								
7. Team effectiveness	4.50	0.38	.24*	.01	−.17	−.11	.09	.57**	(.86)							
8. Team project scores	95.43	2.17	.01	.05	−.06	−.03	.02	.09	.22*	–						
9. Task density	3.97	0.31	.62**	−.02	−.67**	.18	.08	.16	.24*	.08	(.83)					
10. Task centralization	0.10	0.05	−.33**	−.13	.59**	−.20*	−.18	.11	−.04	.11	−.52**	–				
11. Social density	4.13	0.36	.54**	.07	−.67**	.13	.06	.20*	.28**	.07	.73**	−.43**	(.79)			
12. Social centralization	0.09	0.05	−.23*	−.23*	.54**	−.09	−.06	−.09	−.25*	−.09	−.36**	.42**	−.59**	–		
13. External management density	3.15	0.58	.42**	−.07	−.36**	.08	.12	.12	.11	.19	.55**	−.14	.36**	−.09	(.86)	
14. External management centralization	0.12	0.07	.03	−.40**	.03	.69**	−.14	.04	−.13	−.06	.16	−.13	.10	.02	.04	–
15. Centrality variance	0.02	0.01	−.06	−.42**	.22*	.58**	−.14	.03	−.04	−.01	.01	.13	−.06	.13	−.01	.57**

Note: $N = 103$. Average coefficient alpha is provided along the diagonal.

[a]Represents a count of teams that belong to a given profile.

*$p < .05$, **$p < .01$.

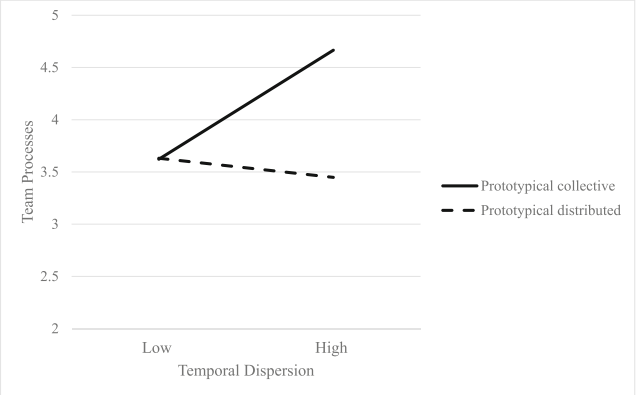

FIGURE 3 Plot of temporal dispersion as a moderator of configurations and teamwork processes.

have a stronger indirect effect on team effectiveness relative to prototypical distributed configurations as temporal dispersion increases.

4.5 | Supplemental analyses

In addition to our self-rated measure of team effectiveness, our sample of online MBA teams allowed us to capture instructor-rated team project scores. Team project scores were archival data provided at the end of the academic year by the MBA office and consisted of an average of scores provided by a single instructor on weekly team-based projects over the course of a 5-week marketing class. Projects included case analyses and assignments related to a marketing simulation. Teams completed similar projects with the same duration and deadlines and received the same instructions. We examined a sequential mediation in which configurations of shared leadership influenced team project scores via team processes and team effectiveness, moderated by temporal dispersion in the first stage.[4] Overall, our pattern of results aligned with the findings of our focal analysis. Specifically, we found that relative to prototypical distributed configurations, prototypical collective configurations had a significant indirect effect on team project scores when temporal dispersion was high (*indirect effect* = 0.50, *SE* = 0.27, 95% CI [0.04, 1.14]), a non-significant indirect effect when temporal dispersion was low (*indirect effect* = −0.10, *SE* = 0.14, 95% CI [−0.45, 0.17]), and a significant difference between the high and low temporal dispersion conditions (*indirect effect* = 0.60, *SE* = 0.34, 90% CI [0.06, 1.12]). These findings suggest that prototypical collective configurations had higher team project scores (via team processes and team effectiveness) relative to prototypical distributed configurations.

[4]To provide greater transparency in our reporting of results, we note that we do not find a direct relationship between team processes and instructor-rated team project scores. This is likely due to a restriction in range as the average team project score was 95.43 (out of 100) with a standard deviation of 2.17. Yet, we recognize the concern of common method bias between our mediator (team processes) and dependent variable (team effectiveness) and felt it prudent to demonstrate that our findings relate to other-rated measures of team effectiveness.

4.6 | Summary of Study 2

Similar to Study 1, the results of Study 2 include the manifestation of collective configurations (71.84%, Profiles 1 and 2), with 18.45% of teams exhibiting prototypical collective configurations (Profile 1) and 53.40% exhibiting quasi-prototypical collective configurations (Profile 2). We also find prototypical distributed configurations (21.36%; Profile 3). As in Study 1, the majority of teams fall into these collective and distributed profiles (93.20%; Profiles 1, 2, and 3) with a small number of teams emerging as centralized (6.80%; Profile 4). Although we found fewer profiles in Study 2 relative to Study 1, the profiles that did emerge within this sample were also present within Study 1. Further, the distribution of profiles in both Studies 1 and 2, wherein more teams emerge as collective or distributed relative to centralized or void, fits within prior work on shared leadership. As Dust and Ziegert (2016) suggest in their review of the shared leadership literature, some forms of shared leadership seem to be more prevalent relative to others. Our work provides support for their conjecture by demonstrating that multiple shared leadership configurations may emerge within a sample, but certain configurations (i.e., collective and distributed) are likely to manifest more frequently.

Our findings in Study 2 extend Study 1 by demonstrating that prototypical collective configurations exhibited a stronger indirect relationship with team effectiveness via team processes relative to prototypical distributed configurations. Further, the effect of prototypical collective configurations (versus prototypical distributed configurations) on teamwork processes was enhanced for teams with high temporal dispersion, and the conditional effects on teamwork processes held for the indirect effect on team effectiveness (both team and instructor-rated).

5 | DISCUSSION

In this study, we considered how configurations of shared leadership uniquely effect team processes and effectiveness. We first identified different configurations of shared leadership across two separate studies, finding consistency in the manifestation of collective, distributed, and centralized configurations, and noting that these configurations may emerge in prototypical and quasi-prototypical forms. We then examined differences between the effects of prototypical collective and distributed configurations on team outcomes. Overall, we found that prototypical collective configurations have higher team effectiveness compared to prototypical distributed configurations due to improved teamwork processes and that these effects are exacerbated when teams are temporally dispersed.

5.1 | Theoretical implications

Our study has several theoretical implications. First, our findings deepen our existing understanding of shared leadership by offering

greater conceptual and empirical precision regarding how leadership is shared among team members. Prior work has offered a number of approaches that have considered only certain aspects of shared leadership (e.g., Bergman et al., 2012; Mehra et al., 2006) and been largely theoretical (DeRue, 2011; Dust & Ziegert, 2016; Seibert et al., 2003) or limited in their accounting for multiple roles of team members (Contractor et al., 2012). We build upon and extend this prior work by accounting for the types of activities (task, social, and external management) that comprise leadership, the distribution of leadership across team members, and the potential for sharing multiple roles simultaneously. By examining these dimensions concurrently, we go beyond previous research to offer a more robust perspective of shared leadership that clarifies how individuals may enact and share leadership roles.

More specifically, utilizing these dimensions of shared leadership allowed us to identify configurations of shared leadership that are more (or less) likely to emerge within teams. This is significant, as the variety of previous approaches taken to explain shared leadership has resulted in a number of typologies that are not well integrated with one another, and provide little agreement on how shared leadership emerges within teams. Our work is a step toward resolving this confusion and advances conceptual clarity within the literature by identifying the consistent expression of configurations across multiple studies. In both Studies 1 and 2, the vast majority of teams exhibited either collective configurations—teams in which all members were engaged in leadership across all roles—or distributed configurations—teams in which a single individual took on leadership responsibilities for a given role. We also found that centralized configurations emerged in both studies, albeit to a much lesser extent. Although we did find void configurations in Study 1, this form of shared leadership (or lack thereof) did not reemerge within Study 2. In sum, our findings suggest that shared leadership is most likely to emerge in one of two forms (collective or distributed), with a smaller percentage of teams adopting a centralized approach, and the possibility that some are void of leadership.

Interestingly, our results also suggest that teams may adopt more or less prototypical forms of shared leadership. For instance, we found prototypical collective and distributed configurations in both Studies 1 and 2 but also found quasi-prototypical collective (Studies 1 and 2) and distributed (Study 1) configurations that exhibited some, but not all, of the characteristics of the fully prototypical form. A similar situation emerged with prototypical centralized (Study 1) and quasi-prototypical centralized (Study 2) configurations. These findings are not without precedent within the extant literature, as prior work has suggested that shared leadership may exhibit variation from archetypes (Dust & Ziegert, 2016). Additionally, we note that across two studies, we did not find any configurations that wholly deviated from these theoretically derived collective, distributed, centralized (and void) forms, pointing to a relatively simple general typology of shared leadership. However, there may be variation in how these forms are expressed in practice (i.e., prototypical versus quasi-prototypical forms).

In addition to the implications associated with the manifestation of shared leadership configurations, our work also advances how we understand the outcomes of shared leadership. Scholars have noted inconsistencies in the relationship between shared leadership and key team outcomes (e.g., D'Innocenzo et al., 2016; Wang et al., 2014) and theorized the value of considering configural differences as an explanation for these discrepancies (Carter et al., 2015). Our work speaks to these assertions, reinforcing the value in accounting for configurations of shared leadership in both theory and measurement, as the results and conclusions may differ based on the type(s) of shared leadership being examined. For example, we find significant differences in the effects of each (prototypical) collective and distributed configurations on team processes and subsequent team effectiveness. Our findings emphasize the need for scholars to be cognizant of configural differences, as unique patterns of sharing may have distinct effects on team outcomes. Although we explicitly consider team processes and team effectiveness within our model, other outcomes (e.g., team conflict, viability, and satisfaction) may be similarly influenced by different configurations of shared leadership and worthy of additional exploration.

Finally, we find that temporal dispersion influences the effect of shared leadership on team effectiveness. Specifically, when temporal dispersion is high, prototypical collective configurations have a stronger influence on team effectiveness through team processes relative to prototypical distributed configurations. The sharing of leadership responsibilities across roles and people that is a hallmark of collective configurations offers teams a clear path for overcoming the challenges typically associated with the temporal dispersion of team members, whereas distributed configurations that maintain a single leader in each role are more susceptible to these difficulties. From a broader perspective, our findings address a need for additional work that considers how contextual factors may influence relationships with shared leadership (e.g., Dust & Ziegert, 2016; Wang et al., 2014). More narrowly, our particular focus on the moderating effects of temporal dispersion offers new directions for research on virtual teams by pointing out how these teams may be more or less successful at executing team process activities, areas within the literature in need of greater attention (Gilson et al., 2015).

To summarize, our findings help direct the conversation in shared leadership by clarifying extant theory and building empirical research around the types of shared leadership configurations most likely to manifest within teams. We open the door for understanding variance in shared leadership configurations, acknowledging that teams may adopt more or less prototypical forms of sharing. Building on these points, we accentuate the need for clarity when considering shared leadership configurations, demonstrating how unique configurations may differentially influence critical team outcomes such as team processes and effectiveness, particularly in cases of temporal dispersion of team members. Our work brings to light the complexities associated with shared leadership and helps provide direction on how to account for such complexity in ways that advance research in this area.

5.2 | Theoretical implications for future research

As the previous section implies, our work serves as a foundation for future research on the topic of shared leadership, and many of our implications warrant deeper conversation regarding the opportunities they provide for scholars. For instance, our examination illuminates the need to carefully consider *how* leadership is shared within teams. Prior work has frequently evaluated shared leadership as an average or aggregate; however, our work demonstrates the necessity of differentiating the configural aspects of shared leadership and clearly identifying the form in which leadership is being shared in order to more adequately evaluate its effects on team outcomes. In addition to clarifying relationships with outcomes, our work points to a need to reconsider the antecedents of shared leadership and specifically investigate the factors that may foster the manifestation of each of the types of sharing we have identified here. Our work suggests that an initial focus on collective and distributed configurations may be worthwhile, given the prevalence of these forms across both studies; however, a range of contextual or situational factors may result in higher frequency of other configurations, and understanding how, when, and why this may occur would significantly advance the shared leadership literature.

We also show that there is variation between teams that establish a more prototypical form relative to those that retain many, but not all, of the core characteristics of a given type of sharing (quasi-prototypical forms). At the most extreme, these findings may suggest that there is a continuum within established categories of shared leadership ranging from teams that exhibit all theorized characteristics of a given configuration (prototypical) to teams that exhibit only some or a few of these characteristics. More generally, our work points to the idea that not all teams mature to a fully prototypical form, setting the stage for deeper exploration as to how or why this may be the case. Providing clarity around this issue is highly relevant, as we observed variation in prototypicality in both studies and noted that quasi-prototypical forms have the potential to be more prevalent relative to their prototypical counterparts. For example, in both Studies 1 and 2, prototypical collective configurations reflected less than 20% of the total sample, whereas quasi-prototypical collective configurations represented the majority of teams in each study. Further, given that we did not find such a stark contrast between the number of prototypical and quasi-prototypical teams with regard to other configurations, such as distributed (Study 1), another line of inquiry may consider the extent to which some configurations may be more prone to the rise of quasi-prototypical forms. Understanding the manifestation of prototypical configurations and their quasi-prototypical variations across forms of shared leadership would provide additional nuance and insight into shared leadership theory and practice.

Building on these ideas, we suggest that these quasi-prototypical configurations likely also have relationships with team outcomes that differ from what might be expected of their more prototypical form. Our supplemental examination of all exhibited configurations (Supplemental Materials E) provides some limited initial support for this notion. This possibility further points to the necessity of accounting for the configurations of shared leadership that emerge within teams and doing so beyond their theoretically ideal forms. For instance, research that does not account for the potential expression of quasi-prototypical configurations may inadvertently attribute results to prototypical forms of shared leadership, confounding the conclusions drawn about the effects of the shared leadership construct. Additionally, there is value in understanding the potential (dis) advantages of quasi-prototypical configurations. For example, it is possible that the appearance of quasi-prototypical configurations is adaptive based on tasks, goals, or contexts and deviates from the prototypical forms in ways that benefit team functioning. Alternatively, it may be the case that these teams simply failed to develop a functional form of sharing across all leadership activities, limiting a team's capabilities. In sum, the consistent manifestation of quasi-prototypical configurations in both of our studies calls attention to the need for deeper exploration as to how and why these configurations may emerge, and what influence they may have on outcomes.

Finally, consideration of teams that are less prototypical in nature also introduces the notion of time to the emergence of shared leadership. In the current study, we did not evaluate the extent to which teams may have shifted or changed patterns of sharing leadership over time, a factor that may influence both the configurations we observed and their relationships to outcomes (particularly in Study 2). Incorporating the element of time in future examinations of shared leadership configurations would help clarify our understanding of how and when certain configurations may be more likely to occur. For example, it is possible that teams quickly adopt a relatively stable configuration of sharing, akin to the notion of "swift trust" (Meyerson et al., 1996), and certain organizational cultures or climates may facilitate such stability. Alternatively, teams may readily shift how leadership is shared over time, depending on the types of tasks or the composition of the team. These possibilities may, in turn, influence how teams are able to execute their processes or ultimately be effective. Further work in this area may help clarify the influence of time in the manifestation and maintenance of shared leadership configurations, and inform how we understand relationships between shared leadership configurations and outcomes.

5.3 | Practical implications

Our research also has important practical implications. We demonstrate that (prototypical) collective configurations enable teams to better manage team processes, particularly when members are temporally dispersed. Fostering the formation of collective configurations may be particularly beneficial as organizations increasingly utilize virtual teams. Managers could encourage greater team member integration by bringing together team members at the inception of the team, as this approach leads to better relationships among team members (Watkins, 2013) and may result in a more collective approach to leadership. Performance reviews and reward systems could be utilized to encourage individuals to contribute to multiple roles in the team, which would simultaneously enhance employees' learning and development.

Relatedly, our study suggests that managers may need to be attentive to the context of the teams they supervise. Our work suggests that temporal dispersion can be particularly challenging for certain configurations of teams; however, virtuality can exist in varying degrees, and not all forms of virtuality may have such strong effects. For instance, factors such as the richness or frequency of electronic communication, capacity to meet face to face, or team members' experience with virtual technology tools may influence the extent to which virtuality enhances or limits shared leadership efforts. Awareness of these forms of virtuality may reduce discrepancies between different shared leadership configurations in terms of effectiveness.

5.4 | Limitations and additional future research

Despite the numerous strengths of our study, we acknowledge several limitations. First, our study focused on the task, social, and external management roles among team members, but greater consideration of the roles specified within the leadership literature would also enhance our findings. For example, scholars have identified change management as a critical leader function (Yukl, 2012), and incorporation of these types of activities would provide greater nuance to our understanding of shared leadership. Our decision to focus on task, social, and external management behaviors arose from the consistent identification of these role types within the team literature (Mathieu et al., 2015; Mumford et al., 2006) and aligns with evidence pointing to the importance of task-oriented and socio-emotional roles (Bales, 1950) as well as work regarding the significance of external management behavior in teams (Marrone, 2010).

Second, and relatedly, we could have utilized alternative measures to evaluate shared leadership. Doing so would have provided more consistency in how we evaluated leadership across both studies and would also provide the opportunity to include additional leadership roles, such as change management. As such, we encourage scholars to consider measures that may assess shared leadership more comprehensively. Additionally, we recognize that our scale anchors (i.e., "strongly disagree" to "strongly agree") may not have fully captured the extent to which a team member was effectively exhibiting a given leadership behavior. For instance, indicating "disagree" may have reflected that a team member was not engaged in a particular leadership behavior but could also be interpreted as a team member unproductively or unsuitably enacting a leadership role. Utilizing scales and scale anchors that more directly evaluate the extent to which a team member is successfully executing a given behavior would clarify how individuals are evaluating the leadership activities of their teammates and provide additional insight into our findings. Future work in this area may also consider assessing counterproductive or abusive leadership behaviors that manifest in a shared leadership context.

Third, our Study 2 sample consisted of MBA students, which may have limited the range of leadership efforts, and thus restricted the number of emergent configurations. MBA programs emphasize personally exhibiting leadership and tend to select individuals with leadership experience or aspirations. Within our sample, this contextual effect and selection bias may have limited the manifestation of teams exhibiting little shared leadership (centralized or void configurations) and exemplified the number of teams exhibiting extensive shared leadership (collective and distributed configurations). The result of this range restriction is the attenuation of effect sizes, suggesting that we may have performed a conservative test of the outcomes of these configurations. However, our focus on MBA teams provides us with a controlled setting to examine team processes and effectiveness, as teams have specific assignments that occur regularly as part of the program. In so doing, we were able to find differential outcomes by comparing (prototypical) collective and distributed configurations.

Fourth, and building on the prior point, the manifestation of both prototypical and quasi-prototypical configurations draws attention to the fact that our studies did not perfectly replicate in terms of the shared leadership profiles that emerged. In many ways, the lack of exact replication is unsurprising, given the variation in our two samples. Indeed, our sample in Study 1 was comprised of teams across multiple organizations, and the variety of organizations and industries included, as well as the wide breadth of team types, likely allowed for a broader range of possibilities with regard to the expression of shared leadership configurations. In contrast, our sample in Study 2 consisted of MBA students who tend to be primed for assuming leadership responsibilities and accustomed to sharing, suggesting a more limited range of emergent configurations. Although we believe these differing samples complement one another, it is possible that their divergence limited the replication of our findings. In this regard, consideration of different study designs (e.g., simulation) and samples (e.g., data collected within a single organization) would reduce these concerns, further illuminating the nuances of shared leadership configurations and the effect of these configurations on subsequent outcomes.

Underlying several of these prior limitations is our use of convenience samples. Specifically, our Study 1 data were part of a larger data collection intended to evaluate team effectiveness, and thus not solely dedicated to the current study. Our Study 2 data consisted of MBA teams, which, as noted, may exhibit range restriction in terms of the leadership efforts exhibited by team members. This use of convenience samples may raise concerns regarding the generalizability of our findings. To ease these apprehensions, we explicitly sought to utilize two complementary samples such that the advantages of one would help offset the disadvantages of the other. For example, the organizational teams used in Study 1 exhibited some variance in terms of their size, relationship to formal leaders, tasks and goals, and team type. Our subsequent use of MBA teams in Study 2 provided us the opportunity to control for some of this variability as these teams generally have the same structure, size, purpose, tasks, and self-managed approach. In spite of these benefits, MBA teams are not a perfect representation of the organizational environment and consequently, may be limited in the range of configurations that manifest. The more robust set of configurations present in Study 1 (our organizational

teams) speaks to this possibility. Acknowledging the potential downsides of each individual sample, we emphasize the value of considering our results in light of both samples, positioning our findings as an initial step toward deeper and more robust examination of shared leadership within teams.

In spite of these limitations in our samples, we did find consistent manifestation of three configurations (collective, distributed, and centralized) across both studies, providing additional validation and support for the notion that these forms are foundational to shared leadership, particularly collective and distributed configurations. Further, the differences across our studies provide nuanced insights into our understanding of shared leadership and help set the course for future work in this area. For instance, the variation in configurations between our two samples implies that context matters in terms of the types of shared leadership configurations that are likely to emerge, particularly when considering forms that are less prototypical in nature. For instance, the likelihood of prototypical versus quasi-prototypical configurations may be a consequence of the type of team, shared values, or the purpose or nature of the work. Relatedly, certain configurations may be more (or less) effective in specific work environments or situations. For instance, prototypical configurations may be more common in stable work environments, whereas less prototypical forms may manifest to adapt in a work context prone to crises or emergencies. Building on a previous point, our inconsistent findings across studies may also be related to the notion of time, in that teams may exhibit different forms of sharing at different points in their lifecycle. Supporting other work that has hinted at the significance of contextual factors (e.g., Wang et al., 2014), we offer a starting point for more careful and comprehensive theorizing about the nature of shared leadership configurations, particularly as it relates to the work environment in which shared leadership is being enacted.

Fifth, and again specific to Study 2, we recognize that our measure of team effectiveness is self-rated, leading to concerns of common method bias. To this end, we include a supplemental analysis in which we demonstrate the strong relationship between our measure of team effectiveness and instructor-rated team project scores. The results of this supplemental analysis demonstrate relative consistency in the pattern and direction of our findings. Moreover, we note that the relationship between team processes and team effectiveness is well established within the extant literature (LePine et al., 2008), offering further support for our assertion that processes are a viable mediator linking shared leadership configurations with team effectiveness.

Finally, we do not consider alternative mediators and boundary conditions of our model. For instance, and aligned with other research on shared leadership (Wang et al., 2014), we expect that collective configurations would experience improved performance through increased team identification because of greater integration of team members as compared to distributed teams. Transactive memory could also serve as a mediator as it captures the extent to which team members combine distributed knowledge (Zhang et al., 2007). Whereas distributed configurations may bring together more diverse information, they may also struggle to compile this information because they are less integrated. In addition, exploring boundary conditions, such as team member characteristics, abilities, and skills, would provide deeper insight into the manifestation of shared leadership configurations and further explain the success with which certain configurations are able to execute their processes and ultimately be effective. Similarly, factors such as team interaction types, patterns, and frequency and relationship dynamics between teams and their formal leaders could influence the current findings. Although we controlled for team size, our teams in Study 2 ranged from four to six individuals, and it is possible that a wider span may influence the relationships we propose here. As an example, distributed configurations may have an advantage over collective configurations in executing team processes when teams are very large, a possibility open for exploration in future research.

5.5 | Conclusion

Our work advances current research by considering the types of configurations that manifest within teams, and examining how different configurations uniquely influence team outcomes. By analyzing both the content and distribution of shared leadership, we offer empirical support to a set of theoretically grounded configurations proposed in the extant literature, specifically finding that collective and distributed forms of sharing are most prevalent with smaller numbers of teams adopting centralized or void configurations. We also observe that these configurations may be more or less prototypical in nature. Our findings move shared leadership research beyond an aggregated perspective of the construct and point to the importance of accounting for different manifestations of shared leadership within groups. We additionally provide evidence that certain configurations are more likely to affect team processes and subsequent effectiveness, demonstrating an advantage of (prototypical) collective configurations over (prototypical) distributed configurations that are enhanced in conditions of high temporal dispersion. In sum, our work suggests that configurations of sharing matter when considering the effects of shared leadership on team outcomes, creating future possibilities for research that further examines the forms and consequences of sharing leadership.

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CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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