Check for updates

Article

Dual Leadership in the Matrix: Effects of Leader-Member Exchange (LMX) and Dual-Leader Exchange (DLX) on Role Conflict and Dual Leadership Effectiveness

Journal of Leadership & Organizational Studies
1–19
© The Authors 2022

Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/15480518221096547
journals.sagepub.com/home/jlo

Ben Sahlmueller[1,2], Niels Van Quaquebeke[2], Steffen R. Giessner[1], and Daan van Knippenberg[3]

Abstract

While strategic management theories have heavily engaged with the reality of matrix organizations, leadership theories that actually focus on the people working within such arrangements are missing. We argue that (a) followers perceive dual leadership effectiveness to be more than the sum of each leader's effectiveness, (b) a core detriment to perceived dual leadership effectiveness is role conflict experienced by the follower, and (c) Leader-Member Exchange (LMX) needs to be theoretically extended to the triadic level to capture the influence of dual leadership. Specifically, followers' role conflict and leadership effectiveness perceptions are driven not only by how they perceive their LMX relationships with both leaders, but also how they perceive the relationship quality between their leaders (dual leadership exchange, DLX). As such, even though higher LMX is still better than lower LMX, having a similar exchange relationship with both leaders reduces employees' role conflict and, by extension, heightens dual leadership effectiveness. Additionally, we reason that when employees lack a good relationship with one of the leaders, higher DLX can act as a substitute. We find support for our hypotheses by applying polynomial regression analyses to a dataset of 111 managers from a matrix organization who report to both a regional and business unit leader.

Keywords

leader-member exchange, role conflict, dual leadership effectiveness, dual leadership, matrix organization, collective leadership, leadership dyad

Leader-Member Exchange (LMX) theory (Graen & Uhl-Bien, 1995) is arguably one of the most established frameworks for understanding leadership effectiveness (Dinh et al., 2014; Gottfredson & Aguinis, 2016). Originally built on vertical dyad linkage theory (VDL, Dansereau et al., 1975) to understand the leader-follower dyad, it has in recent decades been widely extended to account for relationships such as those between colleagues (team-member exchange, TMX; see Seers, 1989) or a leader and his/her supervisor (leader-leader exchange, LLX; see Liu et al., 2013; Tangirala et al., 2007; Venkataramani et al., 2010; Zhou et al., 2012). With the present study, we argue for another extension: namely, to situations where employees report to two leaders, which is a reality in many bigger organizations. In these situations—as we will later argue in detail—it is not only necessary to look at followers' relationships with each of both leaders, but also at the quality of leaders' relationship with each other, which we coin Dual-Leader Exchange (DLX).

Indeed, matrixed leadership is core to many multinational organizations. In a matrix, dual leadership is not about Co-CEOs sharing leadership at the top. Instead, certain employees (often lower or middle management) report to a unique pair of two leaders (usually higher management). These matrix leaders represent different strategic dimensions such as global functional and business units, products, or geographical regions. As such, towards their shared follower, both leaders represent potentially conflicting strategic objectives, for example establishing global standards on the one side while fostering local adaptability

[1]Rotterdam School of Management, Erasmus University, Rotterdam, Netherlands
[2]Kühne Logistics University, Hamburg, Netherlands
[3]Drexel University, Philadelphia, PA, USA

Corresponding Author:
Ben Sahlmüller, Rotterdam School of Management, Erasmus University, Burgemeester Oudlaan 50, Rotterdam 3000 DR, Netherlands.
Email: research@bensahlmueller.com

on the other (Davis & Lawrence, 1977; Ford & Randolph, 1992; Knight, 1976). The study of matrix organizations was at its height in the 80s and 90s, mostly focusing on the strategic advantages and challenges of the matrix (Galbraith & Kazanjian, 1986; Goold & Campbell, 2003). Yet, academic interest has vaned since. While scientists mostly criticized the matrix due to its high degree of complexity and potential conflict, practitioners see these challenges as a feature and not a bug as they allow to manifest conflicting and paradoxical goals in their organizational structure and create explicit channels through which to solve them on a day-to-day basis (Egelhoff et al., 2013; Galbraith, 2009). Thus, the matrix is still frequently used, especially in multinational manufacturing companies (e.g., Siemens and BASF). For example, taking a representative sample of Germany's largest 500 as well as smaller firms, Wolf and Egelhoff (2001) showed that 29 of 156 (19%) used matrix structures. Similarly, in a survey of the biggest multinational manufacturing companies in Germany, 33 of 72 (46%) firms reported to be structured as matrix (Adžić, 2006). Given practitioners' continued conviction of the matrix' utility, we think it is important for leadership research to step beyond arguing *whether* matrixes work in general. Instead, we should look at *when* it works and *how* to make it work better for those who still work in them.

Matrix organizations offer a window into what happens to leadership once it is enacted by more than one person. The framework of LMX seems particularly suited for its investigation for various reasons: First, matrixed leaders are on the same level on different dimensions of the organizational hierarchy. As such, there is no direct power relation between the two leaders through which to solve conflicts, as is the case in trickle-down leadership situations. Thus, dual leaders likewise have to rely strongly on their own informal relationship with each other (i.e., DLX). Second, both leaders have different areas of responsibilities and hence build comparable but independent working relation (i.e., LMX) with their shared follower. Third, as these areas at the same time overlap in certain situations (e.g., customer relationships, contracts, new business opportunities), both leaders and their follower have to find solutions together, creating situations of actual dyadic influence and thus dual leadership. Together, these points render LMX a suitable framework to study dual leadership in a business world where dual reporting becomes more and more prevalent. Indeed, in a recent Gallup and McKinsey study, featuring a representative sample of 3,956 US employees, 17% of the participants indicated that they formally report to two supervisors (Bazigos & Harter, 2016).

The first—and to our knowledge so far only—empirical study of dual leadership using an LMX approach was conducted by Vidyarthi et al. (2014), studying IT consultant's relationships to an internal agency leader from their own company and an external leader from the client side. Yet, given that one of the involved "leaders" is actually a client, this situation differs from matrix organizations in almost every of the aforementioned points, as the nature of followers' relationship with both leaders is very different, there are few to no areas of overlapping responsibility and thus regarding dual leadership, and leaders do not build an informal exchange-relationship with each other through which to tackle day-to-day issues; also, there is a clear hierarchy between leaders given by their contract. Nonetheless, Vidyarthi and colleagues show that even in this setting followers' LMX relationships with both "leaders" are related to their job satisfaction in a non-linear way, thus indicating that dual leader settings might indeed qualitatively differ from "classical" one-leader settings.

Our study aims to understand the follower's perspective in a dual leadership triad—specifically to connect their perception of the relationship-"parts" within the triad as constructed through LMX theory to their experience of the "whole" and its effectiveness. To this end, we connect various arguments. First, with regard to the "whole", leadership distributed between two (or more) leaders ("pooled" leadership in the terminology of Denis et al., 2012) must be seen as an emergent, collective phenomenon that is constructed through interaction. Yet to this date, it is unclear whether followers actually experience dual leadership as a distinct phenomenon. We thus introduce followers' assessment of dual leaders' collective leadership effectiveness as an independent perception (controlling for individual leadership effectiveness). Second, with regards to the "parts", the literature so far struggles to explain *how* the (higher level) phenomenon of collective leadership emerges from the pattern of relationships, i.e.—in the case of two leaders—to connect the relationships in the dual leadership triad with the phenomenon perceived to be dual leadership (and evaluated in our case as collective leadership effectiveness). To this end, we extended LMX theory to the whole triad by considering how followers perceive not only their vertical LMX relationships with both leaders (LMX), but also their dual leaders' horizontal exchange relationship (DLX) as well as the patterns emerging from all three of them. Third, to address the *why*, we posit that followers role conflict is the proximate experience of misaligned relationships that ultimately feeds into perceptions of leadership ineffectiveness. In sum, we expect that any dissimilarity in followers' LMX relationships with their two leaders (i.e., different ratings of perceived LMX with both leaders and thus different levels of trust and afforded autonomy) will increase experienced role conflict and, correspondingly, decrease dual leadership effectiveness perceptions, but that DLX can act as a substitute for a weaker LMX relationship with one leader. To model these effects appropriately, we use a moderated polynomial regression approach.

With our investigation, we seek to make several contributions to the LMX literature. First, while focusing on the followers' perspective, we provide first quantitative data on dual leadership within one company rather than leadership structures where the leaders exist in "alternative realities" (Vidyarthi et al., 2014, p. 471). Importantly, this allows us to introduce the notion of DLX, which captures the leaders' direct relationship with each other, and study how followers not only perceive LMX, but also DLX and the relationship patterns in the triad. While qualitative research has long argued for the importance of a good relationship among leaders (O'Toole et al., 2002), such a conceptualization has yet to find its way into quantitative leadership research and more formal theorizing. Second, we move beyond the assessment of job satisfaction (cf. Vidyarthi et al., 2014) and focus specifically on dual leadership effectiveness. In line with recent literature on plural leadership (Carter et al., 2015; Cullen-Lester & Yammarino, 2016; Denis et al., 2012), we argue and show that assessments of dual leadership effectiveness are more than just a function of assessing the effectiveness of two individual leaders. Third, by investigating follower role conflict as the theoretically meaningful mediating mechanism, we also extend the logic of LMX dyadic theorizing to the triad. While dyadic LMX theorizing argues that one's role at work is inevitably negotiated in the relationship with one's direct leader, and by way of increased trust and autonomy can allow the follower to take more ownership of his/her role (Gerstner & Day, 1997), we argue that in the role-making process within the dual leadership triad followers have to negotiate their role in exchange with both leaders. In sum, our study tries to provide a first step to more accurately capture the leadership realities for followers in many modern matrixed organizations than classical single-leader focused leadership theorizing of LMX currently cater for (Dinh et al., 2014).

Dual Leadership Effectiveness in the Matrix

Leadership effectiveness refers to a leader's performance in motivating and guiding followers' activities towards reaching a common goal, as well as mobilizing and directing change (Chemers, 2001; Yukl, 2002). However, the nature of matrix organizations compels dual leaders to both influence followers with respect to how they participate in decisions, prioritize time, and spend crucial resources—often on a day-to-day level (Ford & Randolph, 1992; Galbraith, 2009; Knight, 1976). For example, in the case of a logistics company with a geographical matrix organization such as studied here, the regional leader aims to integrate several business units based within the same branch and to adapt their service to the customers' needs, while the business unit leader aims to make sure that prices, products, and processes of that same business unit are aligned between branches. Thus, both leaders have different and potentially conflicting priorities in how to react to eventual challenges —priorities that are inherent to the organization's innate goals, not only its contingent structure. Solving these differences allows to provide the best service for customers both with regard to local as well as global services. In such situations, dual leaders find themselves in a "shared role space" where the behavior of one leader considerably influences the other (Gronn & Hamilton, 2004). For example, one leader's behavior might narrow the options of the second leader, complement the other leader's behavior, or create a conflict that decreases dual leadership effectiveness—independent of whether each leader's behavior would be considered effective on its own (Alvarez & Svejenova, 2005; Stewart, 1991). Overall, their leadership becomes a "concerted" effort that is more than the sum of its parts (Gronn, 2002). As Denis et al. (2012) describe in their review of "leadership in the plural", dual leadership should not be examined as an individual's property, but rather as a collective phenomenon that is constructed via interaction, i.e. as a higher-level construct on the "team" level of both leaders (Dionne et al., 2014; Gooty et al., 2012; Markham, 2010; Yammarino & Dansereau, 2008; Yammarino et al., 2005). Correspondingly, we expect followers too to consider dual leadership not simply as the summation of individual leadership effectiveness, but as a distinct concept in and of itself. Thus, they apply both individualized and collective evaluations, assessing how well both leaders act alone and in unison, respectively. We define (perceived) dual leadership effectiveness as the latter assessment of dual leaders' collective effectiveness, encompassing the degree to which both leaders coordinate their influence attempts, i.e., dual leadership as a "pooled" team effort (Denis et al., 2012).

How Experienced Role Conflict Informs Dual Leadership Effectiveness Perceptions

Role conflict describes the degree to which followers experience tensions through incompatible role expectations. It is thus a response to the job situation as a whole and how well people feel they can execute the tasks assigned to them (House & Rizzo, 1972; Kahn et al., 1964). In the traditional perspective, discordance in role expectations usually involves one leader issuing incompatible objectives. Such discordance has been shown to be an important detriment to behavioral and affective outcomes, such as followers' performance and perceptions of leadership effectiveness (Jackson & Schuler, 1985; Schaubroeck et al., 1989). Here, role expectations not only pertain to *what* aspects of the job need to be tackled, but also *how* they should be tackled. Such issues may encompass the level of job autonomy, decision authority, participation, granularity of

reporting, etc. As the leaders' expectations for the role become less internally discordant, followers experience less conflict. With a low level of role conflict, both parties can concentrate on executing their jobs and performing more effectively. In contrast, internally misaligned and conflicting role expectations may leave followers feeling ambiguous and reluctant to perform. Consequently, leaders may struggle to mobilize and guide followers towards the intended goal.

We extend this logic to the dual leader context, where the role expectations need to be aligned across both leaders. Unsurprisingly, this is not an easy feat: Conflicting expectations are common and often structurally inevitable in a matrix organization (Galbraith, 2009; Joyce, 1986). Importantly, followers have to resolve conflicting role expectations with both leaders, again not only with regard to content (i.e., what to tackle in their job)—which often may be resolved as part of the job description—but also to the operational aspects (i.e., how to tackle their job). Followers who do not succeed in resolving conflicting expectations will ultimately experience the remaining tensions as role conflict. In turn, followers who perceive their leaders as less aligned should also evaluate them as collectively less effective—even when accounting for the leaders' individual effectiveness. Formally:

> **H_1:** Followers' experience of role conflict relates negatively to followers' assessment of dual leadership effectiveness (beyond followers' perceptions of individual leadership effectiveness).

How LMX with Two Leaders Informs Follower Experience of Role Conflict and Leadership Effectiveness

In the classic leadership setting, LMX describes the relationship quality that followers build with their leader through a mutual role-making process (Dansereau et al., 1975). Here, low-quality LMX describes a relationship that is based on the formal job description and the leader's use of formal authority, whereas high-quality LMX is characterized by mutual liking, professional respect, and higher degrees of participation in decision-making, not to mention gradual increases in commitment, trust, and loyalty between the parties (Gerstner & Day, 1997; Graen & Uhl-Bien, 1995; Liden & Maslyn, 1998). Followers with higher LMX are able to participate more in decision-making (Dansereau et al., 1975; Scandura et al., 1986) and use upward influence tactics that are more open and transparent (Deluga & Perry, 1991; Krone, 1991). In turn, they can take more ownership vis-à-vis their leader to negotiate their role—and by extension, discuss and resolve role conflict (Fisher & Gitelson, 1983; Jackson & Schuler, 1985; Muldoon et al., 2012; Nelson et al., 1998). Unsurprisingly, role conflict has meta-analytically been shown to be negatively related to LMX (with a corrected r of $-.31$, Gerstner & Day, 1997). Likewise, other meta-analyzes show that followers with higher levels of LMX also perceive their (individual) leader as more effective (Dulebohn et al., 2012), partly because followers can more effectively negotiate their role (Deluga & Perry, 1991; Rockstuhl et al., 2012).

We believe this same logic for a single leader can be extended to working with two leaders. In that case, higher LMX with each of the two leaders should be independently instrumental in helping followers better negotiate their role—and in turn address any conflict that may reside in the expectations on what to do on the job and how to execute it. Because this reasoning is not novel, even when it entails two leaders, we do not formulate separate hypotheses for it.

LMX Similarity, Role Conflict, and Dual Leadership Effectiveness

Despite our adherence to the general logic of LMX (i.e., higher LMX entails less role conflict and higher leadership effectiveness perceptions), we additionally argue that it is the way both leaders collectively lead that influences role conflict and leadership effectiveness. Specifically, dissimilarity in the follower's LMX relationships with his/her two leaders will in general increase role conflict and decrease dual leadership effectiveness perceptions. Dissimilarity in follower's perception of LMX likely implies that s/he is executing his/her role with different levels of participation and discretion for each leader. This should result in having to operate very differently for both leaders, which should entail a good amount of mental and operational conflict in the role. In an extreme case, a follower might be closely monitored by one leader while enjoying substantial decision autonomy and trust with the other leader (Scandura et al., 1986). Additionally, because followers of dual leaders are often managers themselves in matrix organizations, they need to extend the misaligned demands of how to take decisions and how to operate towards their own team (which they lead in a traditional fashion). This likely compounds the experienced role conflict. Overall, LMX dissimilarity (independent of the overall level of LMX) should accord with increased role conflict and, by extension, lowered perceptions of dual leadership effectiveness. Because we studied a matrix organization where followers work under a regional leader ($_{region}$) and a business unit ($_{bu}$) leader—relationships we capture as LMX_{region} and LMX_{bu}—we formally express the above as following:

H_{2a}: Dissimilarity of LMX_{region} and LMX_{bu} is positively related to follower's role conflict.
H_{2b}: Dissimilarity of LMX_{region} and LMX_{bu} is negatively related to follower's assessment of dual leadership effectiveness (beyond perceptions of both leaders' individual leadership effectiveness).

Obviously, considering the general relationship between LMX and role conflict and in extension leadership effectiveness, not all levels of LMX-similarity result in similar role conflict and leadership effectiveness. Specifically, as both LMXs are independently related to role conflict and dual leadership effectiveness, we expect that outcomes are more positive when LMXs are similarly high rather than similarly low:

$H_{2c,2d}$: Similar LMX relationships on higher rather than lower levels are (c) negatively related to follower's role conflict and (d) positively related to follower's assessment of dual leadership effectiveness.
H_{2e}: Role conflict mediates the relationship between followers' assessment of dual leadership effectiveness and the similarity of LMX_{region} and LMX_{bu}.

Dual-Leader Exchange (DLX), Role Conflict, and Dual Leadership Effectiveness

Last, the nature of the triad entails that followers not only assess their relationship quality with both of their leaders but also between their leaders, and are influenced by this perception even though they are not part of the relationship (also referred to as "network cognitions" in network analysis research, see e.g. Balkundi & Kilduff, 2005). Followers will be aware of the fact that the expectations for their work are shaped by both leaders, as well as that both leaders will be in contact with each other (Carter et al., 2015; Denis et al., 2012). Consequently, in extension of LMX theorizing, we introduce DLX, defined as the quality of the exchange-relationship between their two leaders. Similar to the lateral exchange relationship described by TLX (Seers, 1989), DLX describes the perceived reciprocity between leaders, including their willingness to help each other, trust each other's assessment, and share ideas and information. Note that as with LMX, while DLX is essentially a dyadic construct (Kim et al., 2020), we are in this study concerned only with followers' perceptions thereof, which is conceptualized on the individual level.

In the dynamics of dual leadership, we argue that followers' perception of DLX moderates the effects of LMX dissimilarity. As followers grapple with having to operate differently with their leaders due to their different relationship qualities (LMX dissimilarity), DLX can help overcome the experienced role conflict (and by extension, lead to more collective leadership effectiveness). In other words, when DLX is higher (rather than lower), followers have a better chance to leverage their good relationship with one leader to get more sway with the other leader. Followers who perceive that their leaders have a higher-DLX relationship (e.g., they see that information "makes the round", both leaders speak favorable of each other and solve problems directly) will also likely see DLX as an important channel for information, influence, and conflict resolution for the difficulties they perceive in their role (Henderson et al., 2006). This allows followers to address both leaders together via their good relationship with one leader, instead of sharing only information that concerns one of the leaders directly.

If DLX is perceived to be lower, however (e.g., as leaders have not shared important information, do not speak favorably, or do hesitate to include the other leader in communication), the follower will increasingly feel expectations to deliver for both leaders without much hope that one leader is inclined to or could even persuade the other into different ways of operating. This might prevent followers to address problems openly or to share information with both leaders fully. Without good DLX (i.e., leaders not sharing relevant information, not respecting each other, not fully considering the needs of the other, etc.), both leaders themselves will likely also be disinterested in negotiating the follower's modus operandi outside of transactional gains; they will persist in their own approach and expectations. In summary, we hypothesize (see Figure 1):

H_{3a}: The effect of dissimilarity between LMX_{region} and LMX_{bu} on followers' experience of role conflict (as described in H_{2a}) is moderated by DLX such that for higher levels of DLX, the positive effects of LMX dissimilarity are weakened.
H_{3b}: The effect of dissimilarity between LMX_{region} and LMX_{bu} on followers' assessment of dual leadership effectiveness (as described in H_{2b}) is moderated by DLX such that for higher levels of DLX, the negative effects of LMX dissimilarity are weakened.
H_{3c}: Role conflict mediates the interactive effect of LMX similarity and DLX on dual leadership effectiveness.

Method

Sample

For our study, we partnered with the German subsidiary of a global logistics company that offers logistics solutions for the business units of airfreight, sea freight, rail & roads, and contract logistics. The organization has a matrix structure where some high-ranking employees who head functional and business units at local branches report to both a functional leader (who represents the business unit or business function and is responsible for setting cross-regional

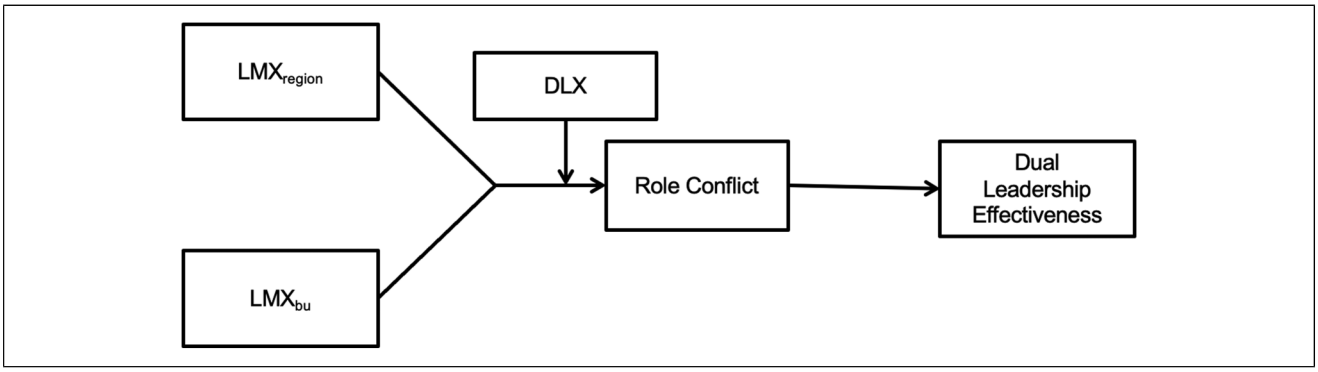


Figure 1. Full proposed model (assessments of individual leadership effectiveness for both leaders are controlled for but not displayed here).

Table 1. Correlation Table.

	M	*SD*	1	2	3	4	5	6	7
1. LMX_{region}	5.35	1.04	(.92)						
2. LMX_{bu}	5.36	1.14	.21*	(.94)					
3. DLX	4.40	1.21	.47***	.45***	(.96)				
4. Role Conflict	2.16	1.23	−.51***	−.25**	−.52***	(.88)			
5. Dual leadership effectiveness	5.54	.98	.62***	.31***	.57***	−.68***	(.93)		
6. Regional leader's individual leadership	5.50	1.47	.68***	−.02	.40***	−.47***	.65***		
7. Business unit leader's individual leadership	5.58	1.25	.10	.53***	.36***	−.38***	.51***	.17	
8. Co-location	.14	.34	−.01	.03	.32***	−.09	.01	.01	.10
Additional control variables (which ultimately did not enter the model)									
Follower age	45.44	7.90	.15	.03	.00	−.02	.12	.13	.06
Follower educational background	.50	.50	.02	−.03	−.12	.15	−.05	.03	−.17
Follower tenure (position)	6.89	5.36	−.03	−.13	−.09	.02	−.06	.00	−.07
Follower tenure (organization)	15.15	9.48	.05	−.09	−.18	.01	.07	.17	.00
Follower gender	.13	.34	.02	.17	−.02	−.08	.15	−.03	.16

Note. *$p < .05$; **$p < .01$; ***$p < .001$ M: Mean, SD: Standard deviation, Cronbach alphas are shown on the diagonal; Location is coded 1, if both leaders are at the same branch as the follower, and 0 otherwise; Age and tenure are given in years; Education is coded 1 for a university degree; Gender is coded 1 for female and 0 for male.

standards) and a disciplinary leader (who represents the geographical region and is responsible for aligning several business units within a region). The matrix is structured in such a way that different managers might report to the same regional *or* business unit manager, but never share both. In total, we managed to survey 111 managers who reported to two supervisors. We refer to these managers as followers here because our theoretical framework emphasizes their hierarchical position as followers of dual leaders. Of our participants, 13% were women. The mean age was 45.44 ($SD = 7.90$) and the mean organizational tenure was 15.15 years ($SD = 9.48$).

Procedure

The HR department of the partnering company identified all managers based in Germany who officially reported to two different superiors. These employees were then sent an email in which they were asked to support a research project on "dual leadership in matrix organizations". The email contained the link to the survey. Several actions were taken to motivate managers to take part in the study: First, the head of HR sent the invitation and stressed the importance of the research project. Second, participants were assured of their confidentiality. To this end, we anonymized participant data by separating survey data from personal identification data, and only identified participants through an ID. We also adhered to the workers council's request to refrain from asking participants about structural information (e.g., exact branch and business unit) that could uniquely identify them. Third, we offered participants a report of the research findings, as well as optional individualized feedback to their answers. To ensure anonymity, participants had to access this feedback via a project

website through a self-chosen password. Fourth, we sent a reminder email to non-respondents two weeks after the first email. In order to do so, we provided HR with a list of participating employees' IDs. According to our partnering company, these measures produced a response rate of about 50% of all managers who reported to dual leaders. Because of the anonymity survey restrictions set by the workers council, we are unable to analyze whether those who partook in the study are different from those who did not.

Measures

Unless specified differently, we asked participants to rate, using 7-point Likert scales ("I strongly disagree", "I strongly agree"), the extent to which they agreed with the presented statements. Table 1 presents the means, standard deviations, correlations, and reliability coefficients of all variables.

Leader-member Exchange. We used the 12-item measure by (Liden & Maslyn, 1998) to measure LMX. Example items are "I like my supervisor very much as a person" and "I respect my supervisor's knowledge of and competence on the job".

Dual-leader Exchange. In order to assess how participants perceive the exchange relationship between both leaders, we adapted the aforementioned scale from (Liden & Maslyn, 1998), such that it referred to the undirected relationship between both leaders. Sample items are "My supervisors like each other very much as a person" and "My supervisors respect each other's knowledge of and competence on the job".[1]

Role Conflict. To assess role ambiguity, we adapted five items from the stress diagnostic survey by (Ivancevich & Matteson, 1980). Sample items are "I receive conflicting requests from both supervisors" and "I do things on the job that are accepted by one supervisor and not by the other." We again used a 7-point Likert scale ("never", "always").

Dual Leaders' Dual Leadership Effectiveness. Following our line of argumentation above, we asked managers to evaluate leadership not as individual properties of each of their leaders, but rather as an overall assessment of dual leadership. To this end, we adopted five items from Van Knippenberg and van Knippenberg (2005), altering the wording so as to refer to both leaders at the same time. A sample item is "My supervisors are effective as supervisors."

Individual Leaders' Leadership Effectiveness. In order to control for the dual leaders' individual leadership effectiveness, we asked followers to evaluate each leader's leadership through the single item measure "My business leader (regional leader) is an effective leader". This item was the highest-loading item from Van Knippenberg and van Knippenberg's (2005) study in a preliminary online-study to test items.

Control Variables. We included the *co-location of both supervisors* (coded 1 if both leaders were based at the same branch as the follower and 0 otherwise) in order to control whether alignment effects are related to the possibility for frequent personal communication more so than relationship quality. Additionally, and consistent with earlier papers within the LMX literature such as Vidyarthi et al. (2014), we measured other variables that might alternatively explain differential perceptions of role conflict and leadership effectiveness. Specifically, we measured employee's *age*, *gender*, and *educational background*, which have all been related to role conflict; indeed, employees' experience in dealing with tension could explain a reduction of role conflict independently from relational dynamics (Jackson & Schuler, 1985). For the same reason, we measured *positional tenure* and *organizational tenure*. Even though these were not directly connected to role conflict, they could explain employees' experience in dealing with tensions arising from dual leadership better than age or educational background alone. With the exception of co-location, none of these variables correlated significantly with any of the independent variables (LMX_{region} and LMX_{bu}, and DLX) or dependent variables (role conflict and leadership effectiveness). Thus, we only added the *co-location* of both supervisors to the final models (Bernerth & Aguinis, 2016; Tabachnick et al., 2007).

Results

In order to ensure that followers distinguished between the measured constructs, we conducted a confirmatory factor analysis (CFA). Usually, scientists suggest an item-to-data ratio of 1:5 (liberally) to 1:20 (see Kenny & McCoach, 2003), which lies beyond the size of our sample (and probably the population of managers in most multinational matrix organizations). Thus, we chose to test a reduced core measurement model for DLX, role conflict and leadership effectiveness, thereby focusing on those outcomes that describe followers' perceptions in relation to the matrix. The CFA of this model meets accepted standards, $\chi^2(227) = 717.65$, $p < .01$, $SRMR = .076$, $CFI = .93$, $IFI = .94$; (Hu & Bentler, 1999). Similarly, a reduced model for the relationship

Table 2. Polynomial Regression Results for Dual Leadership Effectiveness.

	Dual leadership effectiveness			
	Null model	Linear model	Polynomial model	Mod. pol. model
Intercept	1.59*** (.43)	2.46*** (.49)	3.10*** (.45)	3.13*** (.48)
Co-location	−.10 (.23)	−.08 (.21)	−.19 (.17)	−.24 (.15)
Lshp $efct_{region}$	.39*** (.05)	.24*** (.07)	.22*** (.06)	.20*** (.06)
Lshp $efct_{bu}$	.33*** (.07)	.32*** (.08)	.21*** (.07)	.20** (.07)
LMX_{region}		.31*** (.10)	.39*** (.08)	.72* (.36)
LMX_{bu}		.03 (.09)	.16* (.07)	−.26 (.27)
LMX^2_{region}			.05 (.04)	.27* (.12)
LMX^2_{bu}			−.03 (.05)	−.37 (.15)
$LMX_{region} \times LMX_{bu}$			.19*** (.05)	.71*** (.17)
DLX				.03 (.06)
$LMX_{region} \times DLX$				−.06 (.08)
$LMX_{bu} \times DLX$				.09 (.06)
$LMX^2_{region} \times DLX$				−.04 (.03)
$LMX^2_{bu} \times DLX$				.09** (.03)
$LMX_{region} \times LMX_{bu} \times DLX$				−.14*** (.04)
Observations	111	111	111	111
R^2	.590	.653	.723	.751
ΔR^2		.063***	.070***	$.028^{+}$
Model fit	.00 (df = 4; 106)	18.78*** (df = 7; 103)	43.78*** (df = 10; 100)	55.45*** (df = 16, 94)

Note. *$p < .05$; **$p < .01$; ***$p < .001$; $^{+}p < .05$ only if using a one-sided test (difference in Chi-square is significant for two-sided test when control variables removed); LMX_{region} and LMX_{bu} have been centered via a common value midway between their means following (Lambert et al., 2003); Robust standard errors are reported in parentheses (based on the Huber-White estimator of variance to correct for the non-independence of observations across branches); model fit is estimated by comparing the model to the null model through a chi-square statistic.

Table 3. Polynomial Regression Results for Role Conflict.

	Role conflict			
	Null model	Linear model	Polynomial model	Moderated pol. model
Intercept	2.21*** (.13)	2.11*** (.13)	2.10*** (.15)	2.11*** (.15)
Co-location	−.32 (.25)	−.32 (.27)	−.16 (.23)	.07 (.24)
LMX_{region}		−.56*** (.15)	−.53*** (.13)	−.62*** (.13)
LMX_{bu}		−.16 (.11)	$-.18^{+}$ (.10)	−.11 (.11)
LMX^2_{region}			.01 (.07)	−.12* (.06)
LMX^2_{bu}			.12 (.08)	.03 (.06)
$LMX_{region} \times LMX_{bu}$			−.28** (.11)	−.02 (.07)
DLX				−.17 (.13)
$LMX_{region} \times DLX$				.16 (.10)
$LMX_{bu} \times DLX$				−.16* (.07)
$LMX^2_{region} \times DLX$				.10** (.04)
$LMX^2_{bu} \times DLX$				−.19*** (.04)
$LMX_{region} \times LMX_{bu} \times DLX$				.36*** (.04)
Observations	111	111	111	111
R^2	.008	.289	.366	.504
ΔR^2		.291***	.077***	.138***
Model fit	.00 (df = 2; 108)	37.83*** (df = 4; 106)	50.54*** (df = 6; 104)	77.73*** (df = 12; 98)

*$p < .05$; **$p < .01$; ***$p < .001$.

Note. LMX_{region} and LMX_{bu} have been centered via a common value midway between their means following (Lambert et al., 2003); Robust standard errors are reported in parentheses (based on the Huber-White estimator of variance to correct for the non-independence of observations across branches); model fit is estimated by comparing the model to the null model through a chi-square statistic.

measures LMX_{region}, LMX_{bu}, and DLX (Liden & Maslyn, 1998) shows acceptable fit, even though the number of items (36) extends required limits, $\chi^2(579) = 1{,}183.15$, $p < .01$, $SRMR = .095$, $CFI = .94$, $IFI = .94$. The results support that followers distinguish between their individual leader relationships, their amount of role conflict, and the leaders' dual leadership effectiveness.[2]

We tested Hypothesis 1 by regressing followers' perception of dual leadership on role conflict, controlling for perceptions of each leader's individual leadership effectiveness. Here, dual leadership was not only related to both leaders' individual leadership effectiveness, $\gamma_{region} = .29$, $p < .001$, $\gamma_{bu} = .24$, $p < .001$, but also role conflict, $\gamma_{role\ conflict} = -.29$, $p < .001$, thereby supporting Hypothesis 1.

To test the other hypotheses regarding the nonlinear effects of LMX_{region} and LMX_{bu}, we conducted polynomial regression and response surface analyzes (Edwards, 1994a, 1994b; Edwards & Parry, 1993). Following the recommendations of (Lambert et al., 2003), we first prepared the data by centering LMX_{region} and LMX_{bu} via a common value midway between their means. This allowed us to avoid potential multicollinearity between the component measures and their associated higher-order terms. We then regressed role conflict (dual leadership effectiveness) on the location control variable (and also both leaders' individual leadership effectiveness) for the Null Models. As a second step, we added LMX_{region} and LMX_{bu} to the Linear Models, before finally adding three second-order terms to the Polynomial Models: LMX^2_{region}, $LMX_{region} \times LMX_{bu}$, and LMX^2_{bu}. Tables 2 and 3 present the results.

To test Hypotheses 2a to 2d (i.e., the effects of the dissimilarity of LMX_{region} and LMX_{bu} on role conflict and dual leadership effectiveness, respectively), we used a response surface analysis approach to estimate the slope and curvature of the response surface along the lines of alignment, $LMX_{region} = LMX_{bu}$, as well as along the line of dissimilarity, $LMX_{region} = -LMX_{bu}$. Following the process used by Edwards (2002), we first tested whether the Polynomial Model improved fit beyond the Linear Model by comparing the scaled chi-squares with an ANOVA. This is the case for role conflict, $\Delta\chi^2 = 12.71$, $p < .001$, $\Delta AIC = 6.8$, as well as dual leadership effectiveness, $\Delta\chi^2 = 25.00$, $p < .001$, $\Delta AIC = 19.0$. Figures 2a and 3a depict the resulting response surfaces for role conflict and dual leadership effectiveness, respectively. As shown in Table 4, there was a significantly positive curvature along the line of LMX dissimilarity for role conflict ($p = .04$), thus supporting Hypothesis 2a. For dual leadership effectiveness, the curvature along the line of dissimilarity was negative, but only significant on the.1-level ($p = .07$). Given the sample size, and the fact that Hypothesis 2b is a theoretically supported directed hypothesis, we consider this result to be supportive.[3]

Hypothesis 2c (resp. 2d) states that the effect of both LMXs on role conflict (dual leadership effectiveness) will be more negative (more positive) when they are aligned on a higher rather than lower level. To test these hypotheses, we calculated the shape of the response surface along the line of alignment, $LMX_{region} = LMX_{bu}$ (illustrated in Figures 2a and 3a). As Table 4 shows, the slope of the response surface is negative and significant for role conflict, and positive and significant for leadership effectiveness. Hence, Hypotheses 2c and 2d are supported (in both cases, this effect is strengthened by a significant curvature in the same direction).

Hypothesis 2e states that role conflict mediates the polynomial interaction of LMX_{region} and LMX_{bu} on dual leadership effectiveness. To test this hypothesis, we used the block variable approach (see Edwards & Cable, 2009; Zhang et al., 2012) with 10,000 bootstrapping iterations to assess the significance of the direct and indirect effects. Table 5 summarizes the results. Because the confidence interval of the indirect effect of the block variable (which combines all exchange relationships on dual leadership effectiveness through role conflict) excluded 0, we consider Hypothesis 2e to be supported.

To test Hypothesis 3a to 3c (i.e., the moderating effects of DLX), we conducted a moderated polynomial regression analysis. Thus, we mean-centered DLX and created the Moderated Polynomial Models by adding five moderation terms to the respective Polynomial Models: $LMX_{region} \times DLX$, $LMX_{bu} \times DLX$, $LMX^2_{region} \times DLX$, $LMX^2_{bu} \times DLX$, and $LMX_{region} \times LMX_{bu} \times DLX$ (see Tables 2 and 3). Using an ANOVA to test for a significant increase in Chi-square, we found that the Moderated Polynomial Model explains role conflict better than the Polynomial Model, $\Delta\chi^2 = 27.19$, $p < .001$, $\Delta AIC = 15.1$. For dual leadership, there was a significant increase in Chi-square only when conducting a one-sided ANOVA, $\Delta\chi^2 = 11.67$, $p < .05$, $\Delta AIC = .3$. However, because the two-sided ANOVA was significant when not controlling for individual leadership effectiveness, $\Delta\chi^2 = 14.66$, $p < .05$, $\Delta AIC = 2.6$, we believe the addition of DLX explains dual leadership well enough to warrant further analyzes using response surfaces. Figures 2b, c and 3b, c also depict the shape of the response surfaces for the moderated polynomial regression for role conflict and dual leadership effectiveness, respectively.

To test Hypotheses 3a and 3b (i.e., the direction of the moderating effect), we conducted response surface analyzes for higher and lower values of DLX (i.e., one standard deviation above and below the mean of 0). Specifically, we tested whether the slope and curvature of the response surface along the lines of alignment, $LMX_{region} = LMX_{bu}$, and dissimilarity, $LMX_{region} = -LMX_{bu}$, are significantly different from 0 (see e.g. Patel, 2011). Table 4 also summarizes the findings for the moderated polynomial regressions.

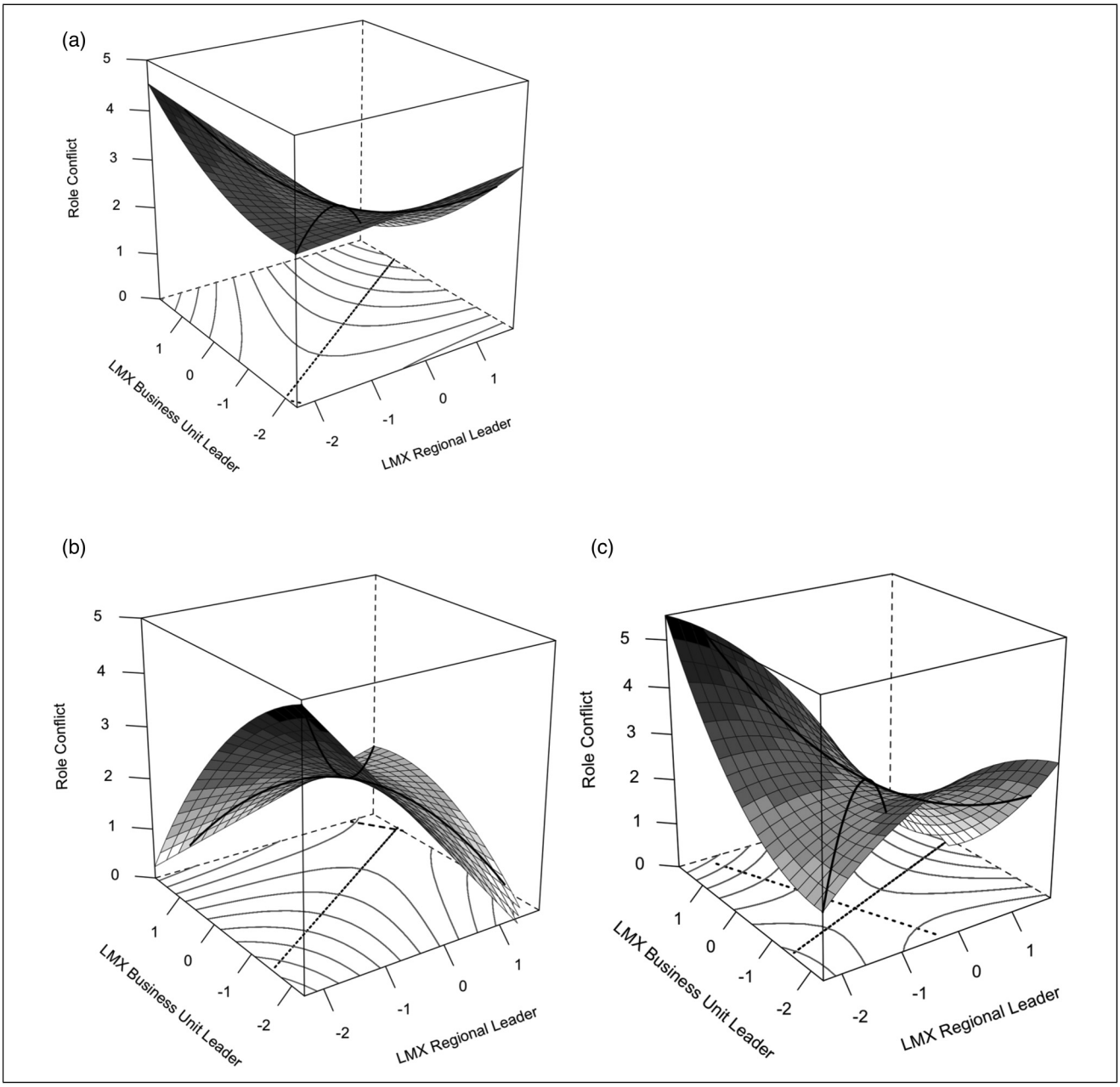


Figure 2. Response surfaces for polynomial regressions for role conflict for different levels of DLX. (a) Un-moderated polynomial regression. (b) Moderated polynomial regression (DLX high). (c) Moderated polynomial regression (DLX low). *Note*. Limits of the axes reflect that LMX_{region} and LMX_{bu} have been centered around a common value midway between their means following (Lambert et al., 2003) and are restricted within 2 standard deviations around the mean of LMX_{region} and LMX_{bu} as well as their min and max.

For role conflict, the curvature along the line of dissimilarity was significantly positive for lower values of DLX and significantly negative for higher values of DLX; the difference between both was also significant ($p < .001$). Thus, higher DLX can indeed compensate for LMX dissimilarity with both leaders for role conflict, supporting Hypothesis 4a. For dual leadership effectiveness, the curvature along the line of dissimilarity was significantly negative for lower levels of DLX ($p = .006$), but not significantly different from 0 for higher levels of DLX ($p = .24$). However, because the values for higher and lower DLX are significantly different from each other, $p = .01$, Hypothesis 3b is supported.

Hypothesis 3c states that role conflict also (partly) mediates the full moderated polynomial effect of DLX, LMX_{region} and LMX_{bu}, on dual leadership effectiveness.

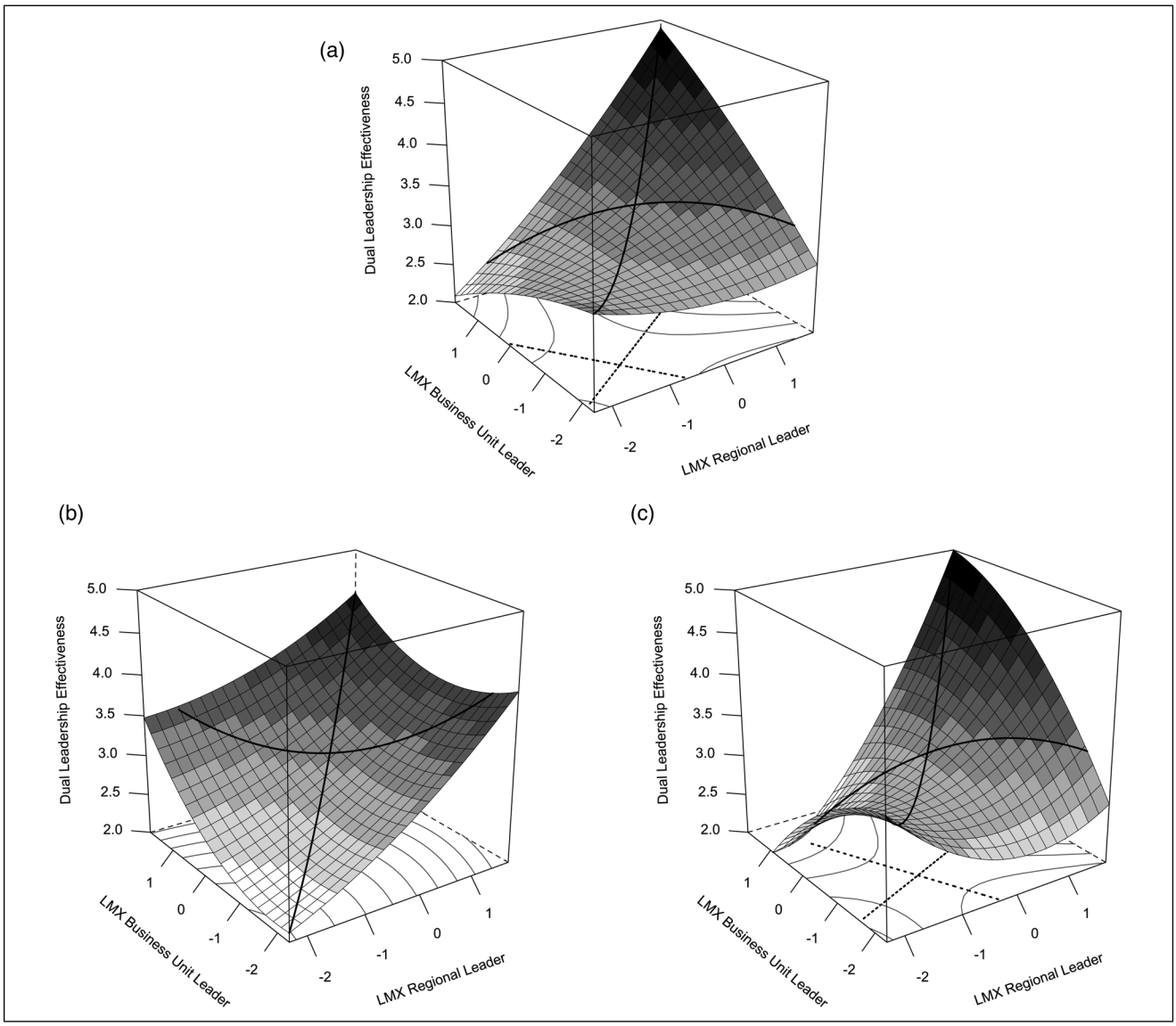


Figure 3. Response surfaces for polynomial regressions for dual leadership effectiveness for different levels of DLX. (a) Un-moderated polynomial regression. (b) Moderated polynomial regression (DLX high). (c) Moderated polynomial regression (DLX low). *Note*. Limits of the axes reflect that LMX_{region} and LMX_{bu} have been centered around a common value midway between their means following (Lambert et al., 2003) and are restricted within 2 standard deviations around the mean of LMX_{region} and LMX_{bu} as well as their min and max.

In this way, it explains the nonlinear relationship between followers' perception of the relational context in the triad and their interpretation of dual leaders' dual leadership effectiveness. To test this hypothesis, we built on the block variable approach of the non-moderated polynomial regression (see Hypothesis 2e), but also included all five moderation terms including DLX into the block variable. We used 10,000 bootstrapping iterations to assess the significance of the direct and indirect effects, which are summarized in Table 5. Because the confidence interval of the indirect effect of the block variable excluded 0, Hypothesis 3c is supported.

Discussion

With the present paper, we aimed to integrate LMX theory and research on plural leadership. Our goal was to better understand the leadership realities in matrix structures where some employees report to two leaders. To this end, we introduced the concepts of DLX and dual leadership effectiveness as key to understanding the effectiveness of dual leaders. Using data from 111 managers in a multinational matrix organization who report to two leaders, we showed that followers differentiate between their interpretation of dual leaders' individual and dual leadership effectiveness. While LMXs are

Table 4. Results of Shape Estimations Along the $LMX_{region} = LMX_{bu}$ and $LMX_{region} = -LMX_{bu}$ Line for Polynomial Regression and Moderated Polynomial Regression.

		$LMX_{region} = LMX_{bu}$		$LMX_{region} = -LMX_{bu}$	
	Model	Slope	Curvature	Slope	Curvature
Role Conflict	Unmoderated Model	−.70***	−.15*	−.35*	.40*
	High DLX	−.73***	.22***	−.12	−.61***
	Low DLX	−.73***	−.44***	−.90***	.48***
Dual Leadership Effectiveness (controlling for individual leadership effectiveness)	Unmoderated Model	.55***	.21***	.23*	−.17+
	High DLX	.63***	.09*	.12*	.21
	Low DLX	.56**	.31***	.49*	−.23**

Note. $^{+}p < .1$, $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 5. Results from Tests of Direct and Indirect Effects of Polynomial Interaction of LMX_{region} and LMX_{bu} on Dual Leadership Effectiveness (Unmoderated Model) and the Direct and Indirect Effects of Moderated Polynomial Interaction of DLX, LMX_{region}, and LMX_{bu} on Dual Leadership Effectiveness.

	Unmoderated polynomial model		Moderated polynomial model	
Variables	Role conflict	Dual leadership effectiveness	Role conflict	Dual leadership effectiveness
Coefficient of the block variable (i.e., direct effect of interaction of exchange relationships, γ_{bv})	.74***	.40***	.87***	.42***
Coefficient of role conflict (γ_{rc})		−.25***		−.16***
Indirect effect of interaction of exchange relationships via role conflict ($\gamma_{rc} \times \gamma_{bv}$)		−.19		−.14
99% bootstrapped confidence intervals for the indirect effect		[−.35, −.09]		[−.36, −.01]

linearly related to individual leadership effectiveness, we correspondingly found a linear relationship between LMXs and dual leadership relationship. Moreover, we could explain variance in dual leadership by the nonlinear (moderated polynomial) interaction of followers' individual LMXs and the leaders' DLX; further, this relationship was mediated by followers' experience of role conflict. We found that similar LMX relationships with dual leaders are beneficial, relating to lower levels of role conflict and higher levels of perceived dual leadership. Meanwhile, DLX moderates the (polynomial) relationship between both LMXs and dual leadership effectiveness, with higher levels of DLX compensating for dissimilarity in LMX.

The current study makes three contributions to the leadership literature. First, there are few empirical investigations of dual leadership; most accounts are anecdotal or qualitative (Alvarez & Svejenova, 2005; Denis et al., 2012; Ford & Randolph, 1992; O'Toole et al., 2002). Vidyarthi and colleagues (2014) provide the lone exception, but their study only investigated a very particular form of dual leadership: one where followers are subjected to an internal organizational leader and an external client leader. Thus, their outcomes of interest were not internal to the organization, but more focused on job satisfaction and turnover intentions. In contrast, we investigated dynamics within a matrix organization in order to understand how followers negotiate interdependent role expectations. Notably, we were also able to show that the dual leaders' dual leadership effectiveness is more than just the aggregation of followers' perceptions of each leader's effectiveness.

Second, by having had the opportunity to study actual managers in a matrix organization, we were able to introduce and investigate the concept of DLX. We specifically found that DLX can help solve role conflicts within dual leadership structures. Thus, DLX seems to be an important element of balanced relationships, allowing the triad to reduce the negative effects of dissimilar LMXs. In sum, our results highlight the importance of considering how followers perceive the whole system of relationships within the triad to be able to fully understand the dynamics. As such, our study may pave the way for new systemic research approaches to more complex organizational-internal leadership.

Finally, by using mediated moderated polynomial regression and response surface analyzes to explain how LMXs and DLX are related to dual leadership effectiveness through role conflict, we explain the underlying psychological effects. With this more nuanced perspective, we were

able to shed light on what it means to be caught between two leaders.

Implications for Practice

Matrix structures have been discussed as a possible (if only partial) solution for navigating the paradoxes organizations increasingly face (Putnam et al., 2016; Wolf & Egelhoff, 2012). As one of the first empirical studies of leadership in this setting, our findings indicate how managers should build their relationships both as a leader and a follower. For followers who report to dual leaders, our research highlights the importance of building balanced relationships with both leaders. For dual leaders, our research underlines the importance of investing in lateral relationships with their counterpart. This way, leaders might be able to substitute for a lower LMX relationship between one of the leaders and the follower. Our study also indicates that dual leaders should be open about their good working relationship towards their followers because this may directly lower followers' experienced role conflict but also indirectly because it may allow followers to see ways how to more openly address problems that otherwise would result in role conflict. Our analyzes align with other practitioner-aimed literature on co-leadership, which has argued that a good leader-leader relationship can be an important channel for defining interdependent roles, aligning expectations, and solving conflicts (Alvarez & Svejenova, 2005; Galbraith, 2009; O'Toole et al., 2002).

For matrix organizations, our research offers a general message: Focus not only on designing the right structure, but also supporting the right relationships. This might entail developing appropriate HR or informal practices that foster a positive lateral relationship between dual leaders in the matrix.

Limitations and Future Research

Organizational researchers do not have easy access to dual leadership in matrix organizations—reaching a meaningful sample size requires to survey a big share of managers in the higher levels of the organization about strategically delicate topics. As a result, it was virtually impossible to avoid some study limitations, which we want to address here. A first set of limitations concerns the size and structure of our sample. To control structural settings of the matrix like leaders' roles and relative power, we decided to recruit participants from a single organization. While we took several efforts to maximize participants' response rate, the overall size of the sample was still restricted by the number of matrixed managers in our partner organization. A second and connected limitation concerns the partial non-independence in our data due to unexplained nested variance. Unfortunately, due to privacy restrictions introduced by the work council, we were unable to control for this interdependence directly, as managers would be uniquely identifiable through their two leaders, and we could not draw that data from the central HR database. We tried to compensate for this by asking managers for their business unit on a voluntary basis, which 56% of participants did. While we did not find multilevel effects in our data using this subsample, we cannot fully rule out non-independence on a methodological level. However, compared with typical multilevel-leadership settings, we still expect the shared variance to be small: (a) In the surveyed organization, no leader was shared by more than six followers; (b) LMX inherently theorizes that leaders may develop very different relationships with different followers (Henderson et al., 2009); (c) there is less conceptual reason for interdependence, as our study focuses on followers' perceptions instead of actual leadership behavior; (d) the objects of participants' perceptions (e.g., LMX, DLX, and the dual leaders' leadership effectiveness) are dyadic constructs (Kim et al., 2020). As every manager had a unique pair of dual leaders, no two respondents actually rated the same dual relationship. Overall, we are confident that even for two managers who shared one leader, this explains only a small amount of shared variance. Future research might address issues of shared variance and improve reliability by surveying multiple matrix organizations, gathering more detailed data on followers' position, and using multilevel analysis, i.e., by triangulating followers' assessment of individual leadership effectiveness with that of others.

The biggest set of limitation stems from the fact that in accordance with our research focus, we gathered data from followers alone. Methodological, this introduces the risk of common-method bias. Yet, even though our dataset is too small to conduct a full CFA for the full measurement model due to the high total number of items (Kenny & McCoach, 2003), we showed that followers clearly differentiated between all measures connected to different aspects of the matrix (namely DLX, role conflict, and leadership effectiveness). Also, common method bias cannot account for interactions between managers' LMXs and DLX, which constituted our main research interests (Evans, 1985). Second, our approach does not allow to test whether followers' LMX relationships influence their perception of DLX. While we found no reason to theoretically expect that this biases our findings instead of just diminishing the value of DLX in our models, gathering data about DLX from leaders would allow to understand which factors influence how good followers can assess DLX. Most importantly, focusing on followers' perspective does not address LMX theory fully. Even though we expect follower perceptions of DLX to be a good measure of whether dual leaders are able and willing to use their relationship to solve conflict (an approach mirrored by other

research in social psychology, e.g. children assessing their parents' level of marital conflict, Harold et al., 1997; Lawrence, 2022), LMX and DLX are conceptualized on the dyadic level (Dionne et al., 2014; Gooty et al., 2012; Markham, 2010; Yammarino & Dansereau, 2008; Yammarino et al., 2005). Future research might be able to extend ours by triangulating follower ratings with those of their leaders. Similarly, dual leadership effectiveness too should be considered a collective effort at the team level (Denis et al., 2012; Friedrich et al., 2009) that may render itself not only for triangulation but also for further exploration in regard to a potential multifaceted nature and operationalization.

Overall, our research provides interesting initial findings on DLX that need to be theoretically extended and replicated with more advanced multi-source designs. Here, leaders' ratings of DLX would also allow to extend questions from LMX theory and dyad linkage to their horizontal relationship. For instance, what are antecedents or other consequences of DLX? How are relationships shaped and are there patterns in how different relationships change over time? Furthermore, DLX-agreement might be an interesting concept in itself, especially when extended to full triangulation: What are antecedents and consequences of leaders' agreement about their relationship? For the sake of better dual leadership effectiveness, should dual leaders' hide conflicts towards their followers? At the same time, future research on DLX will face various mathematical, conceptual, and logistical challenges. Logistically, quantitative research on dual leadership requires access to a large number of triads (usually situated at the highest organizational ranks) where each member would need to complete all assessments. Conceptually, the complexity of 3×2 relationship assessments introduces various hard questions. For example, extant research on LMX agreement suggests that there is little overlap between these perceptions at least between followers and their leaders (Gerstner & Day, 1997; Schyns & Day, 2010; Sin et al., 2009). Even questions whether there is such a thing as objective or actual relationship quality as relationship quality seems to be in the eye of the beholder (see for example van Gils et al., 2010). With regard to future research on collective leadership effectiveness, it is crucial to understand how followers' performance and dual leaders' performance rating are embedded in the organization's structure and how to conceptualize this on a theoretical, methodological and data level with respect to the level of analysis (see e.g. Markham et al., 2014, for challenges connected with the ratings of supervisory groups).

An important boundary of our research that future research might address is the specific form of matrix structure we studied. Many central attributes of the geographical matrix—like leaders' interdependence, relatively small differences in their overall levels of power, and frequent exchange with followers—played a crucial role in our arguments. At the same time, more nuanced features of that type of matrix likely influenced our results and warrant further study. In geographical matrices like the one studied, regional managers are often located at the same branch and have more disciplinary power over subordinates (Wolf & Egelhoff, 2012). In line with these structural choices, the effect of LMX_{region} was significantly stronger than that of LMX_{bu} in our linear regressions (see Tables 2 and 3). Also, when considering the interaction of LMX_{region} and LMX_{bu} in the polynomial regression (Table 4), the slope along the line of dissimilarity ($LMX_{region} = -LMX_{bu}$) was significantly different from 0 for both role conflict and leadership effectiveness. While these findings are in line with our hypotheses, this indicates that LMX with the regional leader is more strongly related to dual leadership effectiveness and followers' role conflict than LMX with the business unit leader. Overall, the regional leader in our sample was more important for reducing role conflict and increasing dual leadership effectiveness. As communication frequency can influence the relational dynamics in dual leadership triads (Vidyarthi et al., 2014), these differences might be rooted in the regional leaders' proximity (Antonakis & Atwater, 2002) and thus followers' perception of informal power. At the same time, as regional leaders are also the "solid-line" leader, these differences might also lay in differences in specific areas of formal power such as over allowances or amenities—even when both leaders usually collaborated on important decisions like promotions in our case. Future research should study how certain design features of the matrix influence different dimensions of power (French et al., 1959), the impact of the relational structure on perceptions and outcomes of dual leadership, and whether for example these effects are even stronger when the power differential between dual leaders is stronger. A second possible structural mediator might be the amount of (strategic) conflict between leaders, which is relatively high in a geographical matrix like studied here (Wolf & Egelhoff, 2012). Another interesting question for future research could focus on those triads in which relationship quality is mostly high. Point in case: The response surface for role conflict in the case of high DLX (Figure 2b) suggests that it is detrimental for followers to have strong relationships with both leaders instead of just one. While post-hoc interpretations of response surfaces should be taken with a grain of salt (Edwards, 2002), and direct point estimate comparisons show that this difference is not significant, it nonetheless relates to research on social networks arguing that being too strongly embedded might introduces role constraints (Krackhardt, 1999), and one can also imagine that alignment is more difficult if everyone has to talk with everyone (assuming general good will, as with two strong connections). Further research could help to close the missing

links and emerging questions when "pushing the frontier" of LMX research further towards the theory to social networks (Offstein et al., 2006).

Finally, while our research analyzed followers' cognitive representation of dual leadership, future research might study the behavioral side of our theorizing. For example, scholars might test whether the moderating effect of higher DLX can indeed be explained by the notion that followers delegate decisions to the leader with higher LMX and DLX in order for that leader to facilitate conflict resolution. Similarly, future research could test whether our findings on role conflict extend to behavioral outcomes such as follower performance. In this sense, the relational dynamics raised by our study might just be the tip of an iceberg. For instance, a stronger relationship between leaders might enable them to not only align roles in the triad, but even take over different roles—as in the case of lower and higher LMXs developing more trusting versus pragmatic relationships with the follower. Indeed, leadership theories have a long tradition of differentiating between distinct but complementary styles of leadership, such as between consideration versus structure or empowering versus directive leadership (Judge et al., 2004; Martin et al., 2013). Yet, empirical research has so far only attempted to study these styles within one person (Zhang et al., 2015). As recent research showed that dual leaders can indeed take over complementary roles on an organizational level (Pearce et al., 2019), and further anecdotes about complementary roles (such as a "soft" and "hard" leader, or an "emotional" and a "task" leader, O'Toole et al., 2002) indicate that complementary leadership roles are also relevant vis-à-vis an individual followers in situations of dual leadership, research are now challenged to find out empirically *whether*, *how,* and *when* such forms of dual leadership really work.

Conclusion

Overall, our research echoes the importance of taking a systemic perspective and considering the omnibus (e.g., matrix structures) and discrete (e.g., the relationship between leaders in a dual leadership setting) contexts when studying leadership (Johns, 2006). For a long time, scholars in leadership research have only studied followers vis-à-vis a single leader. However, in one recent survey we quoted in the introduction, 17% of managers stated that they formally report to more than one leader (Bazigos & Harter, 2016). Indeed, leadership duos are not that uncommon at work, whether arranged formally (via way of matrix structures) or informally (Denis et al., 2012). By showing that these leaders' dual effectiveness is more than the sum of its parts and that they are not independent in their leadership but interact in a non-linear way, our study underlines the importance of considering how followers perceive the full social context. It is time for leadership research to not only acknowledge this reality theoretically, but earnestly begin expanding its empirical approaches accordingly.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iDs

Ben Sahlmueller https://orcid.org/0000-0003-4353-403X
Steffen R. Giessner https://orcid.org/0000-0002-8035-5092

Notes

1. In exploratory interviews prior to the data gathering, followers reported that they communicated with each leader weekly via call and/or email. They also reported meeting both leaders together usually one or two times per year. The tenure data show that they had, on average, worked with both leaders for more than 3.5 years (standard deviation of 3 years). Thus, it seems likely that through networks and own observations, followers have spent enough time with each leader to perceive the relationship quality as captured in the degree of liking, loyalty, and respect between both leaders (Kenny et al., 1996).
2. To test whether differences in outcomes can be attributed to the follower's business unit, we built null models with a dummy variable for followers' business unit as the only predictor. ANOVA-based ICC(1) was −.02 for role conflict, $\chi^2(4) = 5.41$, n.s., and −.05 for dual leadership effectiveness, $\chi^2(4) = 1.41$, n.s., suggesting no multilevel clustering of the data. As mentioned in the measures section, privacy reasons prevented us from running these tests for the whole sample. We thus used robust Huber-White standard errors to allow error variances to vary, as might be the case for different business units (Huber, 1967; White, 1980). This estimator is able to account for eventual non-independence of observations due to cluster sampling and provides an unbiased and robust estimation of standard errors (see for example Becker et al., 2018; Liu et al., 2017).
3. Additionally, please note that when modeling dual leadership effectiveness without controlling for individual leadership effectiveness, the curvature along the line of dissimilarity is significantly negative, $\gamma = -.27$, $p = .03$.

References

Adžić, M. (2006). *Matrixstrukturen in multinationalen Unternehmen: Anwendungsfelder, Informationsfluss und Erfolgsfaktoren (1. Aufl)*. Dt. Univ.-Verl.

Alvarez, J. L., & Svejenova, S. (2005). *Sharing executive power: Roles and relationships at the top*. Cambridge University Press.

Antonakis, J., & Atwater, L. (2002). Leader distance: A review and a proposed theory. *Leadership Quarterly*, *13*(6), 673-704. https://doi.org/10.1016/S1048-9843(02)00155-8

Balkundi, P., & Kilduff, M. (2005). The ties that lead: A social network approach to leadership. *Leadership Quarterly*, *16*(4), 941-961. https://doi.org/10.1016/j.leaqua.2005.09.004

Bazigos, M., & Harter, J. (2016). Revisiting the matrix organization. https://www.mckinsey.com/business-functions/people-and-organizational-performance/our-insights/revisiting-the-matrix-organization.

Becker, T. E., Robertson, M. M., & Vandenberg, R. J. (2018). Nonlinear transformations in organizational research: Possible problems and potential solutions. *Organizational Research Methods*, *22*(4), 831-866. https://doi.org/10.1177/1094428118775205

Bernerth, J. B., & Aguinis, H. (2016). A critical review and best-practice recommendations for control variable usage. *Personnel Psychology*, *69*(1), 229-283. https://doi.org/10.1111/peps.12103

Carter, D. R., DeChurch, L. A., Braun, M. T., & Contractor, N. S. (2015). Social network approaches to leadership: an integrative conceptual review. *Journal of Applied Psychology*, *100*(3), 597-622. https://doi.org/10.1037/a0038922

Chemers, M. M. (2001). Leadership effectiveness: An integrative review. In Michael A. Hogg & R. Scott Tindale (Eds), *Blackwell handbook of social psychology: Group processes* (pp. 376-399). Blackwell Publishers. https://doi.org/10.1002/9780470998458.ch16

Cullen-Lester, K. L., & Yammarino, F. J. (2016). Collective and network approaches to leadership: Special issue introduction. *Leadership Quarterly*, *27*(2), 173-180. https://doi.org/10.1016/j.leaqua.2016.02.001

Dansereau, F. J., Graen, G. B., & Haga, W. J. (1975). A vertical dyad linkage approach to leadership within formal organizations. *Organizational Behavior and Human Performance*, *13*(1), 46-78. https://doi.org/10.1016/0030-5073(75)90005-7

Davis, S. M., & Lawrence, P. R. (1977). *Matrix*. Addison-Wesley.

Deluga, R. J., & Perry, J. T. (1991). The relationship of subordinate upward influencing behavior, satisfaction, and perceived superior effectiveness with leader-member exchanges. *Journal of Occupational Psychology*, *64*(3), 239-252. https://doi.org/10.1111/j.2044-8325.1991.tb00557.x

Denis, J.-L., Langley, A., & Sergi, V. (2012). Leadership in the plural. *The Academy of Management Annals*, *6*(1), 211-283. https://doi.org/10.5465/19416520.2012.667612

Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *Leadership Quarterly*, *25*(1), 36-62. https://doi.org/10.1016/j.leaqua.2013.11.005

Dionne, S. D., Gupta, A., Sotak, K. L., Shirreffs, K. A., Serban, A., Hao, C., Kim, D. H., & Yammarino, F. J. (2014). A 25-year perspective on levels of analysis in leadership research. *The Leadership Quarterly*, *25*(1), 6-35. https://doi.org/10.1016/j.leaqua.2013.11.002

Dulebohn, J. H., Bommer, W. H., Liden, R. C., Brouer, R. L., & Ferris, G. R. (2012). A meta-analysis of antecedents and consequences of leader-member exchange: Integrating the past with an eye toward the future. *Journal of Management*, *38*(6), 1715-1759. https://doi.org/10.1177/0149206311415280

Edwards, J. R. (1994a). Regression analysis as an alternative to difference scores. *Journal of Management*, *20*(3), 683-689. https://doi.org/10.1177/014920639402000311

Edwards, J. R. (1994b). The study of congruence in organizational behavior research: Critique and a proposed alternative. *Organizational Behavior and Human Decision Processes*, *58*(1), 51-100. https://doi.org/10.1006/obhd.1994.1029

Edwards, J. R. (2002). Alternatives to difference scores: Polynomial regression analysis and response surface methodology. In F. Drasgow, & N. W. Schmitt (Eds.), *Advances in measurement and data analysis* (pp. 350-400). Jossey-Bass.

Edwards, J. R., & Cable, D. M. (2009). The value of value congruence. *Journal of Applied Psychology*, *94*(3), 654-677. https://doi.org/10.1037/a0014891

Edwards, J. R., & Parry, M. E. (1993). On the use of polynomial regression equations as an alternative to difference scores in organizational research. *Academy of Management Journal*, *36*(6), 1577-1613. https://doi.org/10.2307/256822

Egelhoff, W. G., Wolf, J., & Adzic, M. (2013). Designing matrix structures to fit MNC strategy: Designing matrix structures to fit MNC strategy. *Global Strategy Journal*, *3*(3), 205-226. https://doi.org/10.1111/j.2042-5805.2013.01059.x

Evans, M. G. (1985). A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes*, *36*(3), 305-323. https://doi.org/10.1016/0749-5978(85)90002-0

Fisher, C. D., & Gitelson, R. (1983). A meta-analysis of the correlates of role conflict and ambiguity. *Journal of Applied Psychology*, *68*(2), 320-333. https://doi.org/10.1037/0021-9010.68.2.320

Ford, R. C., & Randolph, W. A. (1992). Cross-functional structures: A review and integration of matrix organization and project management. *Journal of Management*, *18*(2), 267-294. https://doi.org/10.1177/014920639201800204

Friedrich, T. L., Vessey, W. B., Schuelke, M. J., Ruark, G. A., & Mumford, M. D. (2009). A framework for understanding collective leadership: The selective utilization of leader and team expertise within networks. *The Leadership Quarterly*, *20*(6), 933-958. https://doi.org/10.1016/j.leaqua.2009.09.008

French, J. R., Raven, B., & Cartwright, D. (1959). The bases of social power. *Classics of Organization Theory*, *7*, 311-320).

Galbraith, J. R. (2009). *Designing matrix organizations that work*. Jossey-Bass.

Galbraith, J. R., & Kazanjian, R. K. (1986). Organizing to implement strategies of diversity and globalization: The role of matrix designs. *Human Resource Management*, *25*(1), 37-54. https://doi.org/10.1002/hrm.3930250104

Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader-member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, *82*(6), 827-844. https://doi.org/10.1037/0021-9010.82.6.827

Goold, M., & Campbell, A. (2003). Making matrix structures work: Creating clarity on unit roles and responsibility. *European Management Journal*, *21*(3), 351-363. https://doi.org/10.1016/S0263-2373(03)00048-3

Gooty, J., Serban, A., Thomas, J. S., Gavin, M. B., & Yammarino, F. J. (2012). Use and misuse of levels of analysis in leadership research: An illustrative review of leader–member exchange. *The Leadership Quarterly*, *23*(6), 1080-1103. https://doi.org/10.1016/j.leaqua.2012.10.002

Gottfredson, R. K., & Aguinis, H. (2016). Leadership behaviors and follower performance: Deductive and inductive examination of theoretical rationales and underlying mechanisms. *Journal of Organizational Behavior*, *38*(4), 558-591. https://doi.org/10.1002/job.2152

Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level multi-domain perspective. *Leadership Quarterly*, *6*(2), 219-247. https://doi.org/10.1016/1048-9843(95)90036-5

Gronn, P. (2002). Distributed leadership as a unit of analysis. *Leadership Quarterly*, *13*(4), 423-451. https://doi.org/10.1016/S1048-9843(02)00120-0

Gronn, P., & Hamilton, A. (2004). A bit more life in the leadership: Co-principalship as distributed leadership practice. *Leadership and Policy in Schools*, *3*(1), 3-35. https://doi.org/10.1076/lpos.3.1.3.27842

Harold, G. T., Fincham, F. D., Osborne, L. N., & Conger, R. D. (1997). Mom and dad are at it again: Adolescent perceptions of marital conflict and adolescent psychological distress. *Developmental Psychology*, *33*(2), 333-350. https://doi.org/10.1037/0012-1649.33.2.333

Henderson, D. J., Dulac, T., & Liden, R. C. (2006). The role of LMX and communication in the goal setting process. In George B. Graen (Ed), *Sharing network leadership* (pp. 245-268). Information Age Publishing.

Henderson, D. J., Liden, R. C., Glibkowski, B. C., & Chaudhry, A. (2009). LMX Differentiation: A multilevel review and examination of its antecedents and outcomes. *Leadership Quarterly*, *20*(4), 517-534. https://doi.org/10.1016/j.leaqua.2009.04.003

House, R. J., & Rizzo, J. R. (1972). Role conflict and ambiguity as critical variables in a model of organizational behavior. *Organizational Behavior and Human Performance*, *7*(3), 467-505. https://doi.org/10.1016/0030-5073(72)90030-X

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Huber, P. J. (1967). The behavior of maximum likelihood estimates under nonstandard conditions. In *Proceedings of the fifth berkeley symposium on mathematical statistics and probability: Weather modification* (p. 221). University of California Press.

Ivancevich, J. M., & Matteson, M. T. (1980). *Stress and work: A managerial perspective*. Scott Foresman.

Jackson, S. E., & Schuler, R. S. (1985). A meta-analysis and conceptual critique of research on role ambiguity and role clarity in work settings. *Organizational Behavior and Human Decision Processes*, *36*(1), 16-78. https://doi.org/10.1016/0749-5978(85)90020-2

Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review*, *31*(2), 386-408. https://doi.org/10.5465/amr.2006.20208687

Joyce, W. F. (1986). Matrix organization: A social experiment. *Academy of Management Journal*, *29*(3), 536-561. https://doi.org/10.2307/256223

Judge, T. A., Piccolo, R. F., & Ilies, R. (2004). The forgotten ones? The validity of consideration and initiating structure in leadership research. *Journal of Applied Psychology*, *89*(1), 36-51. https://doi.org/10.1037/0021-9010.89.1.36

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). *Occupational stress: Studies in role conflict and ambiguity*. Wiley.

Kenny, D. A., Bond, C. F., Mohr, C. D., & Horn, E. M. (1996). Do we know how much people like one another? *Journal of Personality and Social Psychology*, *71*(5), 928-936. https://doi.org/10.1037/0022-3514.71.5.928

Kenny, D. A., & McCoach, D. B. (2003). Effect of the number of variables on measures of fit in structural equation modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *10*(3), 333-351. https://doi.org/10.1207/S15328007SEM1003_1

Kim, J., Yammarino, F. J., Dionne, S. D., Eckardt, R., Cheong, M., Tsai, C.-Y., Guo, J., & Park, J. W. (2020). State-of-the-science review of leader-follower dyads research. *The Leadership Quarterly*, *31*(1), 101306. https://doi.org/10.1016/j.leaqua.2019.101306

Knight, K. (1976). Matrix organization: A review. *Journal of Management Studies*, *13*(10), 111-130. https://doi.org/10.1111/j.1467-6486.1976.tb00528.x

Krackhardt, D. (1999). The ties that torture: Simmelian tie analysis in organizations. *Research in the Sociology of Organizations*, *16*(16), 183-210. https://doi.org/10.1007/s00520-010-0949-z

Krone, K. J. (1991). Effects of leader-member exchange on subordinates' upward influence attempts. *Communication Research Reports*, *8*(1), 9-18. https://doi.org/10.1080/08824099109359870

Lambert, L. S., Edwards, J. R., & Cable, D. M. (2003). Breach and fulfillment of the psychological contract: A comparison of traditional and expanded views. *Personnel Psychology*, *56*(4), 895-934. https://doi.org/10.1111/j.1744-6570.2003.tb00244.x

Lawrence, T. I. (2022). Parental support, marital conflict, and stress as predictors of depressive symptoms among African American adolescents. *Clinical Child Psychology and Psychiatry*, 135910452110701. https://doi.org/10.1177/13591045211070163

Liden, R. C., & Maslyn, J. M. (1998). Multidimensionality of leader-member exchange: An empirical assessment through scale development. *Journal of Management*, *24*(1), 43-72. https://doi.org/10/dpftxr

Liu, W., Tangirala, S., & Ramanujam, R. (2013). The relational antecedents of voice targeted at different leaders. *Journal of Applied Psychology*, *98*(5), 841-851. https://doi.org/10.1037/a0032913

Liu, Y., Song, Y., Koopmann, J., Wang, M., Chang, C. H. D., & Shi, J. (2017). Eating your feelings? Testing a model of employees' work-related stressors, sleep quality, and unhealthy eating. *Journal of Applied Psychology*, *102*(8), 1237-1258. https://doi.org/10.1037/apl0000209

Markham, S. E. (2010). Leadership, levels of analysis, and déjà vu: Modest proposals for taxonomy and cladistics coupled with replication and visualization. *The Leadership Quarterly*, *21*(6), 1121-1143. https://doi.org/10.1016/j.leaqua.2010.10.011

Markham, S. E., Markham, I. S., & Braekkan, K. F. (2014). A visual illustration of induction in multilevel methods: The problem of leaders awarding countervailing merit components. *Journal of Business and Psychology*, *29*(4), 503-518. https://doi.org/10.1007/s10869-014-9352-y

Martin, S. L., Liao, H., & Campbell, E. M. (2013). Directive versus empowering leadership: A field experiment comparing impacts on task proficiency and proactivity. *Academy of Management Journal*, *56*(5), 1372-1395. https://doi.org/10.5465/amj.2011.0113

Muldoon, J., Matthews, R. A., & Foley, C. (2012). Mediated effects of physical risk factors, leader–member exchange and empowerment in predicting perceived injury risk. *Stress and Health*, *28*(2), 149-162. https://doi.org/10.1002/smi.1415

Nelson, D., Basu, R., & Purdie, R. (1998). An examination of exchange quality and work stressors in leader–follower dyads. *International Journal of Stress Management*, *5*(2), 103-112. https://doi.org/10.1023/A:1022907831243

Offstein, E., Madhavan, R. (Ravi), & Gnyawali, D. R. (2006). Pushing the frontier of LMX research: The contribution of triads. In *Sharing network leadership*, (pp. 95-118. Information Age Publishing.

O'Toole, J., Galbraith, J., & Lawler, E. E.III (2002). When two (or more) heads are better than one: The promise and pitfalls of shared leadership. *California Management Review*, *44*(4), 65-83. https://doi.org/10.2307/41166143

Patel, P. C. (2011). Role of manufacturing flexibility in managing duality of formalization and environmental uncertainty in emerging firms. *Journal of Operations Management*, *29*(1–2), 143-162. https://doi.org/10.1016/j.jom.2010.07.007

Pearce, C. L., Wassenaar, C. L., Berson, Y., & Tuval-Mashiach, R. (2019). Toward a theory of meta-paradoxical leadership. *Organizational Behavior and Human Decision Processes*, *155*, 31-41. https://doi.org/10.1016/j.obhdp.2019.03.003

Putnam, L. L., Fairhurst, G. T., & Banghart, S. (2016). Contradictions, dialectics, and paradoxes in organizations: A constitutive approach. *Academy of Management Annals*, *10*(1), 65-171. https://doi.org/10.5465/19416520.2016.1162421

Rockstuhl, T., Dulebohn, J. H., Ang, S., & Shore, L. M. (2012). Leader-member exchange (LMX) and culture: A meta-analysis of correlates of LMX across 23 countries. *Journal of Applied Psychology*, *97*(6), 1097-1130. https://doi.org/10.1037/a0029978

Scandura, T. A., Graen, G. B., & Noval, M. A. (1986). When managers decide not to decide autocratically: An investigation of leader-member exchange and decision influence. *Journal of Applied Psychology*, *71*(4), 579-584. https://doi.org/10.1037/0021-9010.71.4.579

Schaubroeck, J., Cotton, J. L., & Jennings, K. R. (1989). Antecedents and consequences of role stress: A covariance structure analysis. *Journal of Organizational Behavior*, *10*(1), 35-58. https://doi.org/10.1002/job.4030100104

Schyns, B., & Day, D. (2010). Critique and review of leader–member exchange theory: Issues of agreement, consensus, and excellence. *European Journal of Work and Organizational Psychology*, *19*(1), 1-29. https://doi.org/10/cgx2gb

Seers, A. (1989). Team-member exchange quality: A new construct for role-making research. *Organizational Behavior and Human Decision Processes*, *43*(1), 118-135. https://doi.org/10.1016/0749-5978(89)90060-5

Sin, H.-P., Nahrgang, J. D., & Morgeson, F. P. (2009). Understanding why they don't see eye to eye: An examination of leader-member exchange (LMX) agreement. *Journal of Applied Psychology*, *94*(4), 1048-1057. https://doi.org/10.1037/a0014827

Stewart, R. (1991). Chairmen and chief executives: An exploration of their relationship. *Journal of Management Studies*, *28*(5), 511-527. https://doi.org/10.1111/j.1467-6486.1991.tb00766.x

Tabachnick, B. G., Fidell, L. S., & Ullman, J. B. (2007). *Using multivariate statistics* (Vol. 5). Pearson.

Tangirala, S., Green, S. G., & Ramanujam, R. (2007). In the shadow of the boss's boss: Effects of supervisors' upward exchange relationships on employees. *Journal of Applied Psychology*, *92*(2), 309-320. https://doi.org/10.1037/0021-9010.92.2.309

van Gils, S., van Quaquebeke, N., & van Knippenberg, D. (2010). The X-Factor: On the relevance of implicit leadership and followership theories for leader-member exchange (LMX) agreement. *European Journal of Work and Organizational Psychology*, *19*(3), 333-363. https://doi.org/10.1080/13594320902978458

Van Knippenberg, B., & van Knippenberg, D. (2005). Leader self-sacrifice and leadership effectiveness: The moderating role of leader prototypicality. *Journal of Applied Psychology*, *90*(1), 25-37. https://doi.org/10.1037/0021-9010.90.1.25

Venkataramani, V., Green, S. G., & Schleicher, D. J. (2010). Well-connected leaders: The impact of leaders' social network ties on LMX and members' work attitudes. *Journal of Applied Psychology*, *95*(6), 1071-1084. https://doi.org/10.1037/a0020214

Vidyarthi, P. R., Erdogan, B., Anand, S., Liden, R. C., & Chaudhry, A. (2014). One member, two leaders: Extending leader-member exchange theory to a dual leadership context. *Journal of Applied Psychology*, *99*(3), 468-483. https://doi.org/10.1037/a0035466

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica*, *48*(4), 817-838. https://doi.org/10.2307/1912934

Wolf, J., & Egelhoff, W. G. (2001). Strategy and structure: Extending the theory and integrating the research on national and international firms. *Schmalenbach Business Review*, *53*(2), 117-139. https://doi.org/10.1007/BF03396631

Wolf, J., & Egelhoff, W. G. (2012). An empirical evaluation of conflict in MNC matrix structure firms. *International Business Review*, *22*(3), 591-601. https://doi.org/10.1016/j.ibusrev.2012.08.005

Yammarino, F. J., & Dansereau, F. (2008). Multi-level nature of and multi-level approaches to leadership. *The Leadership Quarterly*, *19*(2), 135-141. https://doi.org/10.1016/j.leaqua.2008.01.001

Yammarino, F. J., Dionne, S. D., Chun, J. U., & Dansereau, F. (2005). Leadership and levels of analysis: A state-of-the-science review. *The Leadership Quarterly*, *16*(6), 879-919. https://doi.org/10.1016/j.leaqua.2005.09.002

Yukl, G. (2002). *Leadership in organizations*. Pearson.

Zhang, Y., Waldman, D. A., Han, Y.-L., & Li, X.-B. (2015). Paradoxical leader behaviors in people management: Antecedents and consequences. *Academy of Management Journal*, *58*(2), 538-566. https://doi.org/10.5465/amj.2012.0995

Zhang, Z., Wang, M., & Shi, J. (2012). Leader-follower congruence in proactive personality and work outcomes: The mediating role of leader-member exchange. *Academy of Management Journal*, *55*(1), 111-130. https://doi.org/10.5465/amj.2009.0865

Zhou, L., Wang, M., Chen, G., & Shi, J. (2012). Supervisors' upward exchange relationships and subordinate outcomes: Testing the multilevel mediation role of empowerment. *Journal of Applied Psychology*, *97*(3), 668-680. https://doi.org/10.1037/a0026305