



Received: 10 March 2019
Accepted: 30 April 2019
First Published: 05 May 2019

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APPLIED PSYCHOLOGY | RESEARCH ARTICLE

LMX differentiation is good for some and bad for others: A multilevel analysis of effects of LMX differentiation in innovation teams

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Abstract: Based on economizing resources (e.g., time, energy), leaders tend to develop different quality dyadic relationships (i.e., LMX, leader-member exchange differentiation) with different team members, which has several divergent consequences for team effectiveness and team performance. While initial findings indicate that LMX differentiation divides the team, where the high-quality relationship group (in-group) benefits from receiving the resources of the leader while the lower-quality relationship group (out-group) suffers from the resource constraints, this study focuses on how LMX differentiation is related to personal initiative, helpfulness, and proactive meeting interaction depending on group membership. According to a sample of 50 videotaped innovation team meetings (273 members, 50 leaders), the multilevel results supported the moderating role of group membership on the relationship between LMX differentiation and proactive behavior—whereas this relationship is negative for the out-group (apart from personal initiative, which was non-significantly related to LMX differentiation for the out-group), in-groups' proactive behavior increases as LMX differentiation increases.

ABOUT THE AUTHOR

Vivien Estel and Eva-Maria Schulte are research associates at the Department of Industrial/Organizational and Social Psychology at the TU Braunschweig (Germany). Vivien's research interests focus on the analysis of leadership behavior in teams and meetings using both behavioral and survey data. Eva's main research interests include teams, leadership, well-being, and coaching. The current article relates to a project funded by the Federal Ministry of Education and Research (BMBF, Germany) analyzing teams in academic career context. The project is led by Daniel Spurk (Department of Psychology, University of Bern), who conducts research on individual and organizational career management as well as leader-member-exchange, and Simone Kauffeld (Department of Industrial/Organizational and Social Psychology, TU Braunschweig), who focuses on various aspects concerning competencies, team interaction, consulting, and leadership.

PUBLIC INTEREST STATEMENT

How can leadership promote proactive behavior while protecting leaders' resources? Proactive behavior of team members promotes changes early that make the most valuable contributions to teams and organizations. Such behavior is facilitated by a high-quality relationship between the leader and team members. However, leaders tend to develop different relationships with team members in order to use their resources efficiently. Thus, we investigated how differences in leader-member-exchange (LMX) relationships within teams relate to individual, social, and organizational factors depending on whether team members have a high versus low exchange relationship with their leader. This article is thus interesting for both leaders who, despite resource scarcity (experience, time, etc.), seek to build relationships with their team members that best promote positive employee behavior and, ultimately, organizational success as well as researchers who aim to further explore the impact of differentiated leadership—especially in meetings, where different relationships become observable and comparable.

Subjects: Work & Organizational Psychology; Introductory Work/Organizational Psychology; Leadership; Personality and Identity at Work

Keywords: LMX differentiation; proactive behavior; team meetings; in-/out-group; multilevel analysis

The importance of high-quality exchange relationships between followers and their leaders (i.e., leader–member exchange, or LMX; Graen & Uhl-Bien, 1995) for the success of the team, and the organization as a whole, is well established (e.g., Sonnentag & Pundt, 2016). However, due to resource constraints (e.g., time, energy, competencies), it is difficult or even impossible for leaders to establish good exchange relationships with all team members (Anand, Vidyarthi, & Park, 2016). Indeed, according to the conservation of resources theory (Hobfoll, 1989), leaders tend to save their resources to protect themselves from stress and scarcity. Since high-quality relationship management is resource-intensive for leaders, various LMX quality relationships within the same team usually emerge, which is referred to as *LMX differentiation* (e.g., Chen, He, & Weng, 2015).

Empirical findings on the consequences of LMX differentiation within teams are rare and show divergent results. On the one hand, LMX differentiation within teams is positively related to team performance (Naidoo, Scherbaum, Goldstein, & Graen, 2011) and is beneficial when high mean LMX within teams occurs (Boies & Howell, 2006; Li & Liao, 2014). On the other hand, studies have shown that LMX differentiation is related to lower levels of employee organizational commitment and satisfaction with co-worker relationships (Erdogan & Bauer, 2014); it is also associated with low job satisfaction, high group conflict (Hooper & Martin, 2008), and high group turnover (Nishii & Mayer, 2009). To help adding clarity to such conflicting findings, we will examine the moderating influence of individual LMX relationships with regard to the effect of LMX differentiation on group-related outcomes.

Based on their LMX relationship with the respective leaders, team members can be classified into (1) the in-group, which includes favored team members with higher-quality LMX relationships (i.e., trusting, faithful, and respectful exchanges that extend beyond contractual agreements), and (2) the out-group consisting of team members with lower-quality LMX relationships (i.e., impersonal and formal contractually agreed-upon exchanges; Martin, Guillaume, Thomas, Lee, & Epitropaki, 2016). Drawing from the social exchange theory and the social comparison theory, we argue that belonging to the in-group or out-group moderates the relationship between LMX differentiation and outcomes. That is, due to the greater confidence and more challenging tasks assigned to the in-group in contrast to the more mundane tasks assigned to the out-group, we assume positive consequences of LMX differentiation for the former and negative consequences for the latter (Anand et al., 2016).

Because organizations benefit from a wide range of proactive behaviors from employees (Crant, 2000), this study focuses on how LMX differentiation is related to groups' proactive behavior (i.e., personal initiative, helpfulness, and proactive meeting interaction). Following the literature (Grant, Parker, & Collins, 2009), proactive behavior within teams can occur in many forms—for example, presenting rational arguments, taking charge, helping, and voicing opinions. Because this study is specifically designed for the meeting context within organizations, we focus on the behavior that team members most likely demonstrate spontaneously and which is attributable to one's own behavior in a group setting—due to interactions with the team during meetings. Also, especially in the organizational context, we focus on the employees' strength or ability, which has the potential to generate sustainable long-term company success. We therefore, concentrate primarily on personal initiative, helpfulness, and proactive meeting interactions, as this represents observable behavior (self-assessment and observation of behavior in meetings). First, proactive behavior may involve personal initiative (e.g., presenting rational arguments, taking charge; Sonnentag, 2003)

that occurs when individuals take “an active and self-starting approach to work”, “go beyond what is formally required in a given job” (Frese, Kring, Soose, & Zempel, 1996, p. 38), and exercise “initiative to improve work structures, practices, and routines” (Grant et al., 2009, p. 33). Second, proactive behavior includes positive engagement and providing assistance and aid to others (Grant et al., 2009). We focus on helpfulness, which is an important dimension of organizational citizenship behavior within teams (Li, Liang, & Crant, 2010). Third, proactive behavior can also be shown in terms of active participation as well as voicing and identifying important issues (Baran, Shanock, Rogelberg, & Scott, 2012), for example, visible in meetings. Meetings increasingly represent critical situations for organizations in which team members’ functional behavior is particularly important for success (Lehmann-Willenbrock, Allen, & Belyeu, 2016).

In summary, this study aims to deepen the understanding of the effect of leader–exchange relationships by simultaneously examining the consequences of individual LMX quality and team LMX differentiation with regard to the proactive behavior of team members. More specifically, we will use multilevel analyses to highlight and analyze the moderating role of in-group vs. out-group membership as a reason for divergent effects of LMX differentiation on individual proactive behavior (i.e., personal initiative, helpfulness, and proactive behavior within meetings) during team meetings. To do so, we will examine not only self-ratings of personal initiative and helpfulness but also observational data regarding proactive behavior in videotaped meetings to analyze interactions between leaders and team members. Finally, by focusing on meetings of innovation teams in a field setting, this study aims to provide valuable insights that are highly applicable to real-world work settings.

1. The meaning of social exchange and social comparison in the context of LMX differentiation

Leader-member exchange theory addresses social exchange relationships between leaders and their team members. The intensity of social exchange represents the quality of the LMX relationship (Dansereau, Graen, & Haga, 1975). Higher social exchange quality describes high levels of mutual trust, respect, and esteem (Anand et al., 2016). Employees with higher-quality LMX relationships are members of the in-group and receive more information, functions, and responsibilities (Graen & Uhl-Bien, 1995). Furthermore, they are more satisfied with their jobs (Gerstner & Day, 1997), show more organizational citizenship behavior (Graen & Scandura, 1987), and achieve superior job performance (Breevaart, Bakker, Demerouti, & van Den Heuvel, 2015).

Such findings could be explained by means of the social exchange theory (Blau, 1964), which refers “to voluntary actions of individuals that are motivated by the returns they are expected to bring and typically do in fact bring to others” (p. 91). Applying this theory to the exchange relationship between leaders and their in-group members, the in-group experiences a reciprocal relationship with their leader and should thus be more willing to demonstrate proactive behavior. In contrast, members with lower quality LMX relationships (i.e., out-group members) receive less respect and trust from their respective leaders and have less influence on others (e.g., Erdogan & Bauer, 2016). In such cases, the LMX relationship is limited to the terms of the employment contract (Anand et al., 2016; Gerstner & Day, 1997). Accordingly, in line with assumptions of the social exchange theory (Blau, 1964), the out-group shows lower levels of job performance, takes on fewer responsibilities, and provides less support (Gerstner & Day, 1997) because they do not expect to receive similar resources from their respective leaders as in-group members do.

Although the effects of LMX relationship quality on numerous outcome variables are well established (for an overview see Bauer & Erdogan, 2016), differentiation of the leader between individuals with high vs. low LMX relationships have been largely ignored (Li & Liao, 2014). The social comparison theory posits that individuals are motivated to evaluate their own opinions and abilities in comparison to others, often their peers (e.g., fellow team members; Rybnikova, 2014).

When LMX differentiation is present, which is presumably the case in most teams (Henderson, Liden, Glibkowski, & Chaudhry, 2009), team members become very sensitive to differences in LMX relationships and the distribution of leader resources (e.g., information and support). As a result, meaningful work-related inputs such as individual job performance may be withheld by team members who feel that they are receiving comparatively fewer resources (Festinger, 1954). We would thus expect to observe less proactive behavior on the part of out-group members within teams with high LMX differentiation. In addition, we would expect in-group members to increase their proactive behavior because social comparisons reveal their superior status with regard to receiving leader resources. In summary, social exchange theory and social comparison theory provide a theoretical explanation for the different ways in which LMX differentiation is related to proactive behavior. In the following, we will discuss in more detail empirical evidence of the presumed moderating effect of group membership with regard to the relationship between LMX differentiation and different forms of proactive behavior (i.e., personal initiative, helpfulness, and proactive meeting behavior).

2. LMX differentiation and personal initiative

Personal initiative actions such as submitting suggestions for improvement, engaging in active and self-starting approaches to work, developing ideas, and independently solving problems are cited as instances of proactive behavior (Frese & Fay, 2001). Personal initiative is promoted when team members (1) have the scope for decision-making and (2) are supported and promoted by their leaders (Frese et al., 1996). Demonstrating trust, confidence, and support requires a high degree of personal willingness and initiative (Harris, Li, & Kirkman, 2014). It is already known that leadership style can encourage voluntary work collaboration and personal initiative, especially in the case of high exchange-oriented leadership behavior (i.e., LMX; Bierhoff & Müller, 2005; Li et al., 2010). Thus, team members show personal initiative and act independently to a particularly great degree when they are confident that their leaders will recognize instances of good performance and willingness to work (Hu & Liden, 2013).

However, previous research has only just begun to examine the relationship of LMX differentiation on personal initiative. One rare example is the study by Williams, Scandura, and Gavin (2009), which indicates a non-significant team-level relationship between LMX differentiation and proactive behavior. Still, a non-significant effect could potentially result in teams with high LMX differentiation if in-group team members show more and out-group team members less personal initiative. Such patterns of behavior could be caused by LMX relationships—for instance if the proactive behavior of in-group team members receives more recognition and appreciation by the leader than that of out-group team members (Anand et al., 2016), the former may feel a need to reciprocate through proactive behavior and initiative (Ilies, Nahrgang, & Morgeson, 2007). Based on these considerations, we assume a positive relationship between LMX differentiation and personal initiative for the in-group. Team members in the out-group, however, experience a lower exchange relationship, expect less appreciation for performance and ideas, and do not benefit from interpersonal support and responsibility by their leaders. In addition, the out-group is assigned more routine tasks and does not feel obligated to reciprocate to their leaders through proactive behavior. Within LMX-differentiated teams, out-group members observe the effects of comparison and tend to expend less energy in the initiative because their own interests will likely not be recognized. Accordingly, we assume a negative relationship between LMX differentiation and personal initiative for the out-group. Thus, we predict:

Hypothesis 1: Group membership (in-group vs. out-group) moderates the relationship between LMX differentiation and personal initiative. The relationship between LMX differentiation and personal initiative is positive for the in-group and negative for the out-group.

3. LMX differentiation and helpfulness

Studies have shown that organizational citizenship behavior (OCB), particularly helpfulness and altruism, contributes to organizational performance (Ilies et al., 2007). OCB refers to behavior “that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization” (Organ, Podsakoff, & MacKenzie, 2006, p. 8). In particular, helpfulness—i.e., cooperative support to other team members in a work context without expectations of tangible rewards—has advantages not only for the organization but also for leaders and other team members (Ibid.).

The positive relationship of a high-LMX relationship on OCB and helpfulness is well established (e.g., Sun, Chow, Chiu, & Pan, 2013) and can be explained in terms of social exchange theory (Blau, 1964). That is, if team members feel that they receive more than they give to their leader, they are likely to restore equity by engaging in OCB (Zhong, Lam, & Chen, 2011). Previous research results concerning LMX differentiation’s direct effects on OCB are somewhat contradictory. Harris et al. (2014) did not find a direct significant relationship between LMX differentiation and OCB; however, they did find evidence that LMX differentiation attenuates the relationship between LMX and OCB. Erdogan and Bauer (2010) observed a significant positive relationship between LMX differentiation and helping behaviors. In addition, triadic relational comparisons of two team members and their respective leaders indicate that a dissimilarity in the LMX relationships between the two team members decreases the perception of received help by other team members (Tse, Lam, Lawrence, & Huang, 2013). We assume that group membership can explain such diverse findings. Following the argumentation for personal initiative above, consequences of high LMX differentiation for helpfulness should also be ambivalent. On the one hand, in-group members benefit from social exchanges and the belief that the leader will reciprocate their acts of goodwill. Thus, the in-group will be willing to give extraordinary assistance to others and focus on taking actions that benefit team members (Grant & Ashford, 2008), resulting in a positive relationship between LMX differentiation and helpfulness for the in-group. On the other hand, the out-group perceives less support and less help from their leader—especially in comparison with the in-group. Thus, high LMX differentiation should reduce extraordinary assistance and effective help for out-group members. We, therefore, assume the following:

Hypothesis 2: Group membership (in-group vs. out-group) moderates the relationship between LMX differentiation and helpfulness. The relationship between LMX differentiation and helpfulness is positive for the in-group and negative for the out-group.

4. LMX differentiation and proactive meeting behavior

Team meetings represent an important work setting in which team members can promote the success of the team and the organization as a whole through their initiative and active participation (Baran et al., 2012). Studies have already shown that functional meeting behaviors such as socio-emotional statements (e.g., providing support, encouraging participation, or expressing feelings) and action-oriented statements (e.g., taking personal responsibility or planning action) during meetings are favorable for both team and organizational success (Meinecke & Lehmann-Willenbrock, 2015). Proactive meeting behavior can be influenced by leaders’ behavior and positively relates to higher-quality LMX (Baran et al., 2012).

Although LMX differentiation’s relationship on proactive meeting behavior has not been studied thus far, we propose that LMX differentiation will have differential effects—as found for other proactive outcomes (i.e., positive effects for in-group and negative effects for out-group members). According to social exchange theory (Blau, 1964) and the social comparison theory (Festinger, 1954), meetings provide the opportunity not only to exchange information and ideas but also to exert their role (i.e., their represented position) in order to compare themselves in relation to other team members (Baran et al., 2012). Thus, team members can identify their own position in the team and compare the different LMX relationship intensities shown in the meeting (Rybnikova, 2014) to decide how actively they will participate with proactive behavior during the

meeting. Furthermore, Sias and Jablin (1995) have found that differential treatment also changes the communication among team members. Out-group members, who receive less attention, also tend to isolate themselves from team communication, whereas in-group members play a central role in the communication (Sias & Jablin, 1995). We expect the same effect to occur during team meetings. Team members with high-quality LMX relationships (the in-group) are likely more motivated to speak up in meetings and improve work methods, as they expect recognition in return. Transferring Blau (1964) argumentation to the context of team meetings, if individuals expect no returns for their activities during meetings, they are more likely to withhold positive statements and proactive interactions. Therefore, we assume a negative relationship between LMX differentiation and proactive meeting behavior for out-group members because they choose not to speak up and interact less within the meetings. For in-group members, we expect a positive relationship between LMX differentiation and proactive meeting behavior, as high-quality LMX is positively related to contingent rewards (Wayne, Shore, Bommer, & Tetrick, 2002) and participative communication (Yrle, Hartman, & Galle, 2002).

Hypothesis 3: Group membership (in-group vs. out-group) moderates the relationship between LMX differentiation and proactive meeting behavior. The relationship between LMX differentiation and proactive meeting behavior is positive for the in-group and negative for the out-group.

Figure 1 illustrates our hypotheses and the levels at which the variables examined in this study are located.

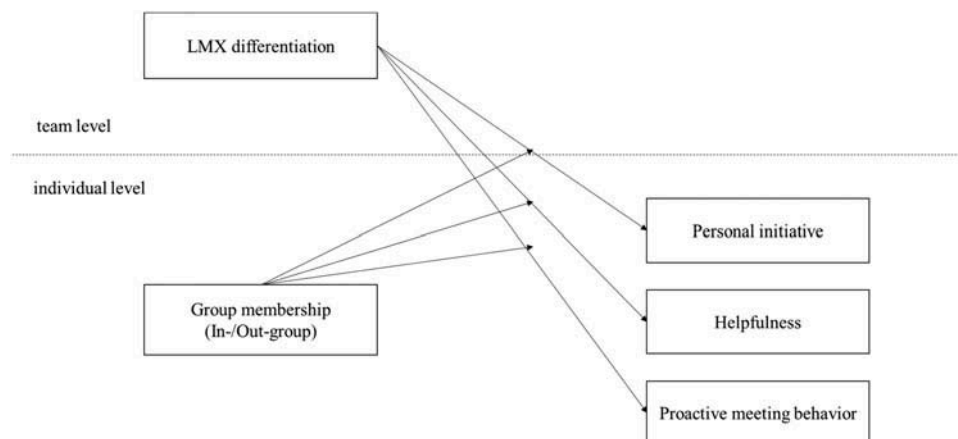
5. Method

5.1. Sample and procedure

This study was part of a larger project on innovation teams in an academic context. We collected data from 273 employees in 50 teams during regular team meetings. All teams worked in different disciplines at different German universities or other non-university research institutes. The goals and interests of all teams were to develop and discuss novel innovative research ideas and optimize institute-wide processes. Team members were doctoral students and research assistants. All teams reported to one leader. Team leaders were post-docs (79%) or assistant professors (21%). The average team size varied from 3 to 12 team members ($M = 5$, $SD = 2.11$). Mean working tenure of team members with the current team was 9.8 months ($SD = 9.4$). Respondents' average age was 29 years ($M = 29.05$; $SD = 5.35$). Fifty-five percent of the participants were male and 45% female.

Large-scale advertising for the project enabled the research team to apply for their video recorded team meeting with subsequent feedback on team role and meeting efficiency. Data

Figure 1. Hypothesized Multilevel Model.



collection was carried out by a research associate who visited the local team meeting on site. Before the meeting began, the research associate installed the camera and all team members signed the data protection form with a short introduction about the purpose of the study. One meeting of each team was then observed and video recorded in full length under normal work conditions. All teams discussed topics of innovative research and organizational matters. Directly after each meeting, all participants completed a paper-pencil questionnaire measuring LMX, personal initiative, and helpfulness. After the meeting, all team members stated that the videotaped meeting was typical compared to previous non-videotaped meetings. Average meeting duration was 71 minutes ($SD = .25$). Some team members left the meeting earlier and were unable to complete the questionnaire (8.4%). After completion of data collection, feedback was provided by the research associate to the team regarding team roles and meeting efficiency.

5.2. Measures

For all items, we used a 5-point Likert-scale ranging from 1 = *strongly disagree* to 5 = *strongly agree*.

5.2.1. LMX differentiation

Following previous research (e.g., Dansereau et al., 1975; Harris et al., 2014; Henderson et al., 2009), team-level LMX differentiation was calculated as the variance of all individual LMX values of team members within one team. At the individual level, LMX quality was measured using the German version of the LMX-7 scale (Schyns, 2002; original version: Graen & Uhl-Bien, 1995). Cronbach's alpha was $\alpha = .83$. A sample item is "I trust my leader enough to defend his/her decisions."

5.2.2. In-group versus out-group

Leaders establish higher-quality relationships (in-group) with a small number of team members and lower-quality relationships (out-group) with the remaining team members (Anand et al., 2016). To determine whether team members belong to the in- or out-group, we followed the approach of Dansereau et al. (1975) and categorized the in-group as the upper 33% of the individual LMX relationships in each team (coded as 1; $N = 91$). The remaining team members (66%) were categorized as the out-group (coded as 0; $N = 159$). Team members who left the meeting earlier and were unable to complete the questionnaire were coded as missing (-99 ; $N = 23$).

5.2.3. Personal initiative

We measured personal initiative using seven German items developed by Frese, Fay, Hilburger, Leng, and Tag (1997). A sample item is "I actively attack problems." Cronbach's alpha was $\alpha = .73$.

5.2.4. Helpfulness

We assessed helpfulness using the five-item subscale of altruism/helpfulness from the German Organizational Citizenship Behavior scale (Staufenbiel & Hartz, 2000; original version: Podsakoff, MacKenzie, Moorman, & Fetter, 1990). A sample item is "I support new colleagues in their initiation phase." Cronbach's alpha was $\alpha = .74$.

5.2.5. Proactive meeting behavior

Trained raters used *interact* software (Mangold, 2014) to code prosocial and action-oriented statements in videotaped meetings according to the act4teams coding scheme (Kauffeld & Lehmann-Willenbrock, 2012, see Table 1). To ensure comparability of the sum of codes among different meetings, we standardized the frequency of statements and divided that by the length of the video multiplied by 60 minutes (see Kauffeld & Lehmann-Willenbrock, 2012). To ensure inter-rater reliability, a second trained coder double-coded seven randomly selected meetings ($\kappa = .71$, $p < .01$).

5.3. Analyses

We applied a multilevel model using maximum likelihood estimation with robust standard errors (MLR) and full-information maximum likelihood (FIML) using Mplus version 7.4 (Muthén & Muthén, 2010). Predictor and moderator variables were grand mean centered. At the team level, we

Table 1. Proactive meeting behavior coding scheme

Proactive meeting behavior	
Positive socioemotional statements	Positive, proactive statements
<i>Encouraging participation</i> e.g., addressing quiet participants <i>Providing support</i> i.e., agreeing to suggestions, ideas, and so no. <i>Active listening</i> i.e., signaling interest (“hmm,” “yes”) <i>Reasoned disagreement</i> contradiction based on facts <i>Giving feedback</i> e.g., whether something is new or already known <i>Lightening the atmosphere</i> e.g. jokes <i>Separating opinions from facts</i> i.e., marking one’s own opinion as such <i>Expressing feelings</i> i.e., mentioning feelings <i>Offering praise</i> e.g., positive remarks about other people	<i>Interest in change</i> i.e., signaling interest in ideas, options, etc. <i>Personal responsibility</i> i.e., taking on responsibility <i>Action planning</i> i.e., agreeing upon tasks to be carried out

Note. Individual coding categories are printed in bold italics. Excerpt from the act4teams coding scheme for team meeting interaction. For more details, see Kauffeld and Lehmann-Willenbrock (2012).

entered LMX differentiation as a predictor of team-level personal initiative, helpfulness, and proactive meeting behavior. At the individual level, we examined team members belonging to the in- or out-group as an individual-level moderator in the relationship between LMX differentiation and personal initiative, helpfulness, and proactive meeting behavior. We conducted post-hoc simple slopes analyses in Mplus. Results are presented as *b* values in Figure 2, 3, and 4.

6. Results

Correlations and descriptive statistics for all variables are presented in Table 2. All results of the multilevel moderation analysis are presented in Table 3.

In Hypothesis 1, we expected group membership (i.e., in-group vs. out-group) to moderate the relationship between LMX differentiation and personal initiative. The results showed a significant positive interaction ($\beta = .22, p = .003$) between LMX differentiation and group membership on the personal initiative (. As presented in Figure 2, we found support for the assumed positive relationship between LMX differentiation and personal initiative for in-group members. However, the relationship for the out-group was not negative, as we initially assumed. Therefore, Hypothesis 1 was only partially supported.

Figure 2. The relationship between LMX differentiation and personal initiative for in-group and out-group members.

* $p < .05$.

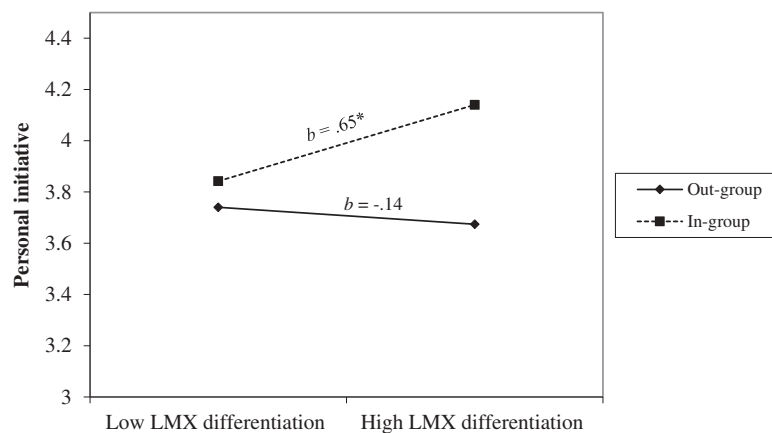


Figure 3. The relationship between LMX differentiation and helpfulness for in-group and out-group members.

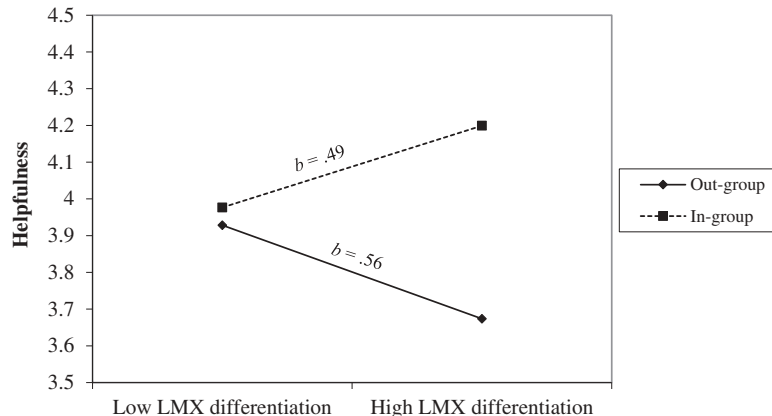
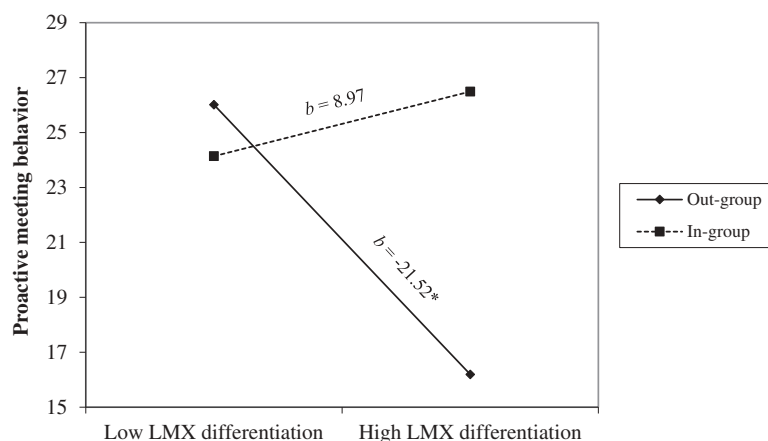


Figure 4. The relationship between LMX differentiation and proactive meeting behavior for in-group and out-group members. Note. Proactive meeting behavior represents the sum of utterances per 60-min period and ranges from zero to 170 utterances per 60 min.

* $p < .05$.



Hypothesis 2 predicted that group membership moderates the relationship between LMX differentiation and helpfulness. The results showed a significant positive interaction effect ($\beta = .23, p = .010$). For the in-group, LMX differentiation was positively related to helpfulness. For the out-group, the relationship between LMX differentiation and helpfulness was negative (see Figure 3). These results support Hypothesis 2.

Finally, in Hypothesis 3, we expected group membership to moderate the relationship between LMX differentiation and proactive meeting behavior. The results showed a marginally significant positive interaction ($\beta = .19, p = .072$). The interaction is displayed in Figure 4. For the in-group, LMX differentiation is positively related to proactive meeting behavior, whereas for the out-group, the relationship between LMX differentiation and proactive meeting behaviors is negative. Thus, results partially support Hypothesis 3.

7. Discussion

This study investigated the effects of LMX differentiation on proactive behavior (i.e., personal initiative, helpfulness, and proactive meeting behavior) dependent on team members' quality of LMX relationship with their respective leaders using a multilevel moderator analysis. Specifically, in this study, we focused on LMX differentiation and proactivity within meetings, an organizational setting in which social comparison (Festinger, 1954) and social exchange (Blau, 1964) processes occur. In doing so, we focus on a work situation for which the importance of individual LMX relationships has been already shown (Baran et al., 2012) but the role that LMX differentiation plays has not yet been investigated. Team meetings represent a central opportunity in which team

Table 2. Means, standard deviations, minimum, maximum, and intercorrelations of study variables

Variable	M	SD	MIN	MAX	1	2	3	4	5	6
1. LMX quality	4.01	.58	2.29	5.00	-	-.52**	-.14	.28*	.20	.21
2. LMX differentiation	.50	.19	.21	1.41	-.30**	-	-.22	.24	-.12	-.12
3. Group membership	.36	.23	.00	1.00	.60**	.02	-	-	-	-
4. Personal initiative	3.81	.48	2.29	5.00	.36**	.08	.30**	-	.38*	.04
5. Helpfulness	3.90	.611	1.8	5.00	.34**	-.04	.24**	.35**	-	.00
6. Proactive meeting behavior	20.36	22.3	.00	170	.17**	-.10	.09	.07	.09	-

Note. N= 273 (individual-level). N= 50 (team-level). Individual-level correlations are reported below the diagonal. Team-level correlations are reported above the diagonal. Group membership is a dichotomous variable on the individual-level and does not vary on the team-level (in-group = 1, out-group = 0). LMX differentiation is the standard deviation of individual LMX scores within each team and can range from zero to 1.58 (maximum standard deviation of 5-point Likert-type scale). Behavior is calculated as overall frequencies per 60-min period during the meeting.
 * $p < .05$; ** $p < .01$; *** $p < .001$ (two-tailed).

Table 3. Results of Multilevel Moderation Analysis.

	Personal initiative		Helpfulness		Proactive meeting behavior	
	Estimate	90% CI	Estimate	90% CI	Estimate	90% CI
<i>Individual-level</i>						
Group membership	.85** (.22**)	[.08, .34]	1.12** (.23**)	[.08, .37]	28.45† (.19†)	[.02, .36]
Moderator	.28** (.30**)	[.18, .41]	.28** (.23**)	[.12, .33]	4.21† (.11†)	[.01, .23]
<i>Team-level</i>						
LMX differentiation	-.15† (-.23†)	[-.74, .28]	-.60† (-.56†)	[-1.05, -.07]	-22.95* (-.31**)	[-.55, -.07]

Note. Individual-level N = 273; team-level N = 50. Group membership presents the dichotomous moderator (dichotomous variable (in-group = 1, out-group = 0) multiplied by centered LMX differentiation) on the individual level. Direct effect of group membership on outcomes in line one and moderator effect in line two. Team-level represents the direct effects of LMX differentiation on outcomes. Behavior is calculated as overall frequencies per 60-min period in the meeting. Standardized estimates in parentheses. Standardized estimates based on StdYX standardization in Mplus. CI = confidence interval.

† $p < .10$ * $p < .05$. ** $p < .01$ (two-tailed).

members can observe the LMX relationship of others and compare their individual relationship quality with that of their team members.

We found that LMX differentiation within teams has differential effects. On the one hand, the in-group (i.e., team members with high LMX relationships) benefits from higher LMX differentiation—results indicate that LMX differentiation is related to greater personal initiative, helpfulness, and proactive meeting behavior. On the other hand, the expected negative effects of LMX differentiation on proactive behavior for the out-group are only partially supported. As expected, with increasing LMX differentiation within teams, helpfulness and proactive meeting behavior decreases for the out-group. However, we unexpectedly found that higher LMX differentiation within teams does not change out-group members' personal initiative.

7.1. Theoretical implications

This study extends the theory related to LMX differentiation and proactive behavior with regard to group membership (in-group versus out-group) and contributes several implications to the leadership literature. For instance, previous research has indicated that high LMX differentiation is associated with greater team performance (Naidoo et al., 2011) but, at the same time, higher team conflict and lower job satisfaction (Hooper & Martin, 2008). Our findings support the idea from social exchange theory (Blau, 1964) that individuals in the in-group profit from LMX differentiation because they are more willing to reciprocate proactive behavior when they receive a comparatively large portion of leader resources. This also confirms the assumption that team members with higher-quality relationships respond more favorably to LMX differentiation (Henderson, Wayne, Shore, Bommer, & Tetrick, 2008). Moreover, our results support the notion that LMX differentiation is harmful to the out-group, thus helping to improve the understanding of possible detrimental effects for the out-group (cf. Bolino & Turnley, 2009).

The current study also provides additional support for current research on LMX differentiation in the form of behavioral data. Using a multisource approach as called for in previous research (e.g., Frese et al., 1996), we tested our theoretical assumptions with both self-reported and behavioral data. We assessed behavior that can be observed primarily outside of a meeting context (i.e., personal initiative and helpfulness) with self-report questionnaires. We measured behavior (i.e., proactive meeting behavior) that can be observed well within a meeting situation with behavioral data. Therefore, our study fills a repeatedly mentioned gap to focus more strongly on observable behavior (Erdogan & Bauer, 2016; Tse, Troth, & Ashkanasy, 2015) and objective data (Quera & Bakeman, 2000).

Our findings strengthen previous research by Tse et al. (2013) indicating that team member dyads with dissimilar LMX relationships report lower levels of perceived team members' helpfulness. They also provide additional support for studies showing that LMX differentiation is disadvantageous because out-group members retain proactive meeting behavior and helpfulness and therefore retain a number of proactive behaviors such as identifying new and innovative ideas for improving work processes (Seibert, Kraimer, & Crant, 2001). As a result, LMX differentiation may affect team meeting outcomes. Leach, Rogelberg, Warr, and Burnfield (2009), for instance, have shown that higher team member involvement predicts higher perceptions of meeting effectiveness. Other studies have shown that team members' active participation during meetings is positively expressed as increased team cohesion and continued cooperation and also leads to improved performance and qualified decisions (Kelly & Barsade, 2001; Miranda & Bostrom, 1999). Thus, our results expand previous findings indicating that leader behavior has a substantial influence on team members' proactive behavior and meeting participation.

7.2. Practical implications

Our findings suggest several practical implications for leaders and how they should interact with team members within innovation teams.

First, considering short-term effects from the leader's point of view, LMX differentiation can be especially beneficial within temporary, existing teamwork (e.g., project teams, innovation teams). Innovation teams have a high potential for personal initiative (Crant, 2000; Scott & Bruce, 1994), which can be strengthened for the in-group through LMX differentiation. Accordingly, this is neither advantageous nor disadvantageous to the out-group. For project leaders who seek to save resources (e.g., time and energy), LMX differentiation attains increased effectiveness in short-term cooperation within a team if the project manager develops higher-quality exchange relationships with only selected team members that are necessary for short-term career goals of the project leader such as the fulfillment of target agreements. Moreover, LMX differentiation could be a good option to avoid burnout and improve health, as it allows leaders to save resources, thus protecting themselves from additional stress.

Second, we can show that leaders can encourage the in-group's proactive behavior via LMX differentiation. Group differences in proactive behavior are still unexplored, whereas individual differences are already known (Grant & Ashford, 2008). LMX differentiation can be effective for the leader if it only promotes the proactive behavior of those groups who would also receive higher performance reviews (Schuh, Zhang, Morgeson, Tian, & van Dick, 2018) and are perceived as the leader's own representatives or ambassadors. The in-group's proactive behavior is in the best interests of both the leader and the organization as a whole. Not every proactive contribution by an employee contributes to the company's success. Even with the best of intentions, employees' initiative and voice can have unanticipated (negative) consequences (Campbell, 2000). Thus, leaders can save resources and still achieve their goals by activating the right people.

However, although it appears that leaders profit in the short term from LMX differentiation, leaders should generally strive to counteract LMX differentiation in long-term teams. If leaders develop higher-quality LMX relationships with only the in-group, poorer communication in meetings and a lack of helpfulness has medium to long-term negative relationship on team and organizational success. Especially in the case of innovation teams and innovation meetings, proactive meeting behavior (see participation: Anderson & West, 1998; De Dreu & West, 2001) is important, and helpfulness plays a critical role (Naqshbandi & Kaur, 2013). For the out-group, in particular, LMX differentiation is harmful, as it could reduce team effectiveness if the majority of team members withhold ideas and helping behavior (Baran et al., 2012; Leach et al., 2009). Considering team leaders' limited resources, we recommend that leaders use meetings effectively and distribute resources equally in this central interaction situation. Leaders could utilize meetings to establish equal relationships with all team members without needing to invest additional time. Leaders should deliberately involve the out-group in meeting processes and interactions so that the out-group's innovative ideas are not lost. Supportive and corroborative leader behavior (medium-quality LMX relationships with all team members) encourage a meeting atmosphere in which members attempt to articulate innovative ideas and leaders recognize high performance and reward team members' participation during meetings, thus predicting various forms of proactive behavior (Wu & Parker, 2014). If leaders have difficulties in being supportive and corroborative, leadership development training or coaching could help them encourage team members' proactive behavior (Wu & Parker, 2014). It might also be valuable to encourage leaders to recognize the out-group among their team members "so that they can specifically direct their support efforts at those individuals" (Wu & Parker, 2014, p. 21).

7.3. Limitations and future research

This study has some limitations that should be noted as well as several implications for future research.

One limitation stems from the constraints of our German sample and research innovation meetings with postdoctoral leaders and doctoral students. LMX differentiation is potentially an effective strategy for postdoctoral leaders with fixed-term contracts and frequently changing employees. Positions with longer-term team affiliation may counteract this effect. Furthermore,

we did not find the expected negative relationship of LMX differentiation on personal initiatives for out-group members. A potential explanation could also be our sample, as doctoral students may be more intrinsically motivated and proactive than other individuals, which may have affected our results. Furthermore, innovation teams represent an exciting area of study that has received relatively little attention to date; they represent a highly specific population in which to examine short-term team cooperation. The specific type of meetings we examined, which may limit the generalizability of our findings to other settings. Therefore, future studies should examine other team settings (e.g., within industrial, production, or service sectors) and, moreover, different workplace norms (e.g., workplace's specific rules, values, and understanding), which may impact the dynamics of LMX differentiation and team-related outcomes. Comparative studies across different cultural backgrounds and international settings are also needed if we are to truly understand the effects of LMX differentiation on proactive behavior.

In addition, the overall observed behavior in our sample was particularly proactive; dysfunctional behavior was rare. This represents a strong contrast to previous studies in which dysfunctional behavior such as complaining occurred more often than proactive behavior (e.g., Kauffeld, 2006; Kauffeld & Lehmann-Willenbrock, 2012). Because dysfunctional meeting behavior is quite harmful (e.g., Schulte, Lehmann-Willenbrock, & Kauffeld, 2015; Schulte, Lehmann-Willenbrock, Kauffeld, & Hertel, Béatrice I.J.M. van der Hei, 2013), future research should also investigate the effect of LMX differentiation on dysfunctional behavior.

Finally, in our study, we showed that high LMX differentiation within a team is primarily advantageous for in-group members and disadvantageous for out-group members. Future research should examine factors that may reduce the negative effects for the out-group members in order to utilize the benefits of LMX differentiation (e.g., resource-saving relationship development, benefits for the in-group). In-group and out-group membership is also potentially dynamic. Future research should address how and when in-group members move to the out-group and vice versa with the help of longitudinal studies. Other possible avenues for future research include examinations of how LMX differentiation influences the meeting network within teams (Anand et al., 2016; Sauer & Kauffeld, 2013, 2016; Sauer, Meinecke, & Kauffeld, 2015; Sias & Jablin, 1995) as well as the communication behavior between and within the in-group and out-group.

Funding

This work was supported by the Bundesministerium für Bildung und Forschung [16FWN005].

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Citation information

Cite this article as: LMX differentiation is good for some and bad for others: A multilevel analysis of effects of LMX differentiation in innovation teams, Vivien Estel, Eva-Maria Schulte, Daniel Spurk & Simone Kauffeld, *Cogent Psychology* (2019), 6: 1614306.

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