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Empirical Article

Leaders' mental health and leader-member exchange: Exploring relations on different levels of analysis

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Introduction

Research on leader-member exchange (LMX) has shown that the relation between leaders and followers may be considered from different angles. Leaders may form individual relationships with followers (LMX quality), may agree with their followers on these relationships (LMX agreement), and may form different relationships within their work group (LMX variability). We posit that leaders' mental health may function as an antecedent for these different forms of LMX. We use conservation-of-resources theory as a theoretical model to describe how leaders' mental health may interact with relationship quality with followers on different levels.

Methods

We operationalized leaders' mental health using depressive symptoms, anxiety, and stress reactivity. Our sample consisted of 322 followers of 75 leaders. Followers rated the LMX quality with their respective leader. Leaders rated depressive symptoms, anxiety, levels of stress reactivity, and LMX quality with their followers.

Results

Results of multilevel modeling showed that stress reactivity was negatively related to LMX quality and anxiety was positively linked to LMX agreement. Depressive symptoms were not related to aspects of LMX.

Conclusion

By using multisource data on different analysis levels, we are able to include different perspectives on antecedents of LMX relationship quality. Implications for LMX at different levels of analysis as well as future research are discussed.

Key words: LMX quality, LMX variability, LMX agreement, mental health, depression, anxiety, stress reactivity, leadership.

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INTRODUCTION

Although maintaining and improving mental health in the workplace has been identified as a serious challenge for organizations (Follmer & Jones, 2018), the mental health of leaders at work has been largely ignored in current research practice (Barling & Cloutier, 2017). Several questions remain unanswered that deal with the relation between leaders' experiences and behaviors and their mental well-being. For instance, the relation between leaders' mental health and the quality of relations leaders have with their employees has only been partially considered so far (Bernerth & Hirschfeld, 2016). Recent research has revealed that when leaders are mentally depleted, their managerial quality suffers, which prevents them from being excellent in their leadership role (Parent-Lamarche & Biron, 2022). Excellence in the context of leader-member exchange (LMX) is thought to consist of three aspects (Schyns & Day, 2010): (a) a high-quality exchange relationship (LMX quality), (b) a leader-follower agreement on this relationship (LMX agreement), and (c) a consensus among followers in a

work group regarding their respective relationships with the leader (LMX variability). It has been shown that LMX relationship quality influences the job performance, organizational commitment, and job satisfaction of followers (Martin, Guillaume, Thomas, Lee & Epitropaki, 2016). The vast majority of empirical studies that address these issues have relied on individual followers' perspectives and evaluations of LMX quality with their leaders. More recently, research has begun to focus on a greater holistic view on LMX relationships at work by extending the individual perspective of LMX with a dyad as well as group-level perspective in order to point out the multilevel nature of the LMX model (Goody & Yammarino, 2016). On a dyadic level, it has been shown that important follower work outcomes (i.e., work engagement or organizational citizenship behavior) profit when followers and their leaders agree on the quality of their LMX relationship whereas those outcomes suffer as perceptions diverge (Matta, Scott, Koopman & Conlon, 2015). The degree to which followers' LMX quality ratings match with ratings of their leaders is labeled as LMX agreement. On a group level, the LMX

literature proposes that leaders tend to differentiate the quality of relationships among their followers. Due to limited resources, leaders are assumed to develop differentiated relationships with their followers ranging from high-quality relationships to low-quality relationships (Yu, Matta & Cornfield, 2018). This variability of LMX quality within a work group has been labeled as LMX variability.¹ It has been shown that high LMX variability may be dysfunctional for individual as well as group performance (Yu, Matta & Cornfield, 2018).

However, to advance LMX theory and to link leaders' mental health with LMX excellence, studying LMX through a resource-based lens should be a priority. Previously, antecedents of LMX excellence have been identified focusing on organizational- and societal-level cultures, or individual-level characteristics and behaviors of leaders (e.g., leadership style or leadership behavior of own supervisors; cf. Dulebohn, Bommer, Liden, Brouer & Ferris, 2012). Although mental health is a main issue for leaders themselves, relations between leaders' mental health and LMX excellence remain undisclosed (Byrne, Dionisi, Barling, *et al.*, 2014). Moreover, antecedents of LMX excellence have been considered only in isolation with a focus either on group-level elements or on individual-level elements. We aim to close this research gap by exploring the role of leaders' mental health for LMX excellence within a holistic approach accounting for the multilevel nature of LMX. We use the conservation-of-resources theory (COR; Hobfoll, 2001) as a theoretical model to describe relations between leaders' mental health aspects and their relationship quality with followers on different levels. Figure 1 shows the overall conceptual model of our study. We operationalize leaders' mental health using depressive symptoms, anxiety, and stress reactivity. Within previous work, depressive symptoms and anxiety have already been identified as important antecedents of leader behaviors (Byrne, Dionisi, Barling, *et al.*, 2014). It has been shown that subclinical levels of depressive symptoms and anxiety may interfere with social and interpersonal functioning (Barling & Cloutier, 2017). We aim to test whether the same pattern of results also occurs for relationship quality as a measure of leadership. Furthermore, we introduce the concept of stress reactivity as an antecedent for

LMX excellence that accounts for individual differences in the association between stress and disease. The concepts of stress reactivity assumes that an individual's high stress reactivity increases the risk for ill health under repeated exposure to stress. Stress reactivity may, therefore, function as an indicator of resource loss in the COR framework as it describes how intense individuals respond to stressful conditions. Our approach aims to test how clinical aspects of leaders' mental health that represent a disease endpoint (depressive symptoms and anxiety) as well as subclinical aspects that explain why certain psychological stressors may manifest in strains are related to relationships of leaders within their organizations.

In sum, our study makes important contributions to the LMX literature by testing relationships between leaders' mental health and LMX excellence on different levels of analysis. We extend previous research by focusing on three different aspects of LMX at work that display individual, dyadic, and group perspectives of followers and leaders by using multisource data. While antecedents of different aspects of LMX have been presented in isolation, the present study helps us to gain knowledge to better understand in what way leaders' mental health is related to their relationships at work among different levels. This knowledge is crucial to understanding which aspects of leaders' mental health may downsize LMX relationships with their followers, which aspects of LMX excellence are involved, and in what way leaders' mental health and relationship quality are related. By focusing on different mental health aspects of leaders (depressive symptoms, anxiety, and stress reactivity), we are able to describe which aspects are important for building relationships at work.

Antecedents of LMX

The LMX theory describes exchange relationships that can emerge between leaders and their followers. These relationships may have higher and lower quality. High-quality exchange is characterized by loyalty, trust, and respect between leader and follower and has been shown to be associated with a wide range of outcomes beneficial to the working environment (Dulebohn, Bommer, Liden, Brouer & Ferris, 2012). In these high-quality exchange relationships, leaders may offer mentoring or empowerment (Liden, Wayne & Sparrowe, 2000) in exchange for higher levels of followers' task performance. Low-quality exchange is rather formal and impersonal and may correspond to a transactional quid-pro-quo relation between leader and follower. In these low-quality relationships, interpersonal interaction is assumed to be restricted to fulfilling contractual obligations. It has also been suggested that leaders and followers do not usually evaluate their relationship quality in the same way (Sin, Nahrgang & Morgeson, 2009). The concept of LMX agreement has been shown to explain incremental variance in important organizational outcome variables above the effects of LMX quality (Yuan, Sun, Effinger & Zhang, 2023). It has also been shown that even low-quality exchange relations may be associated with higher work engagement when both – the leader and the follower – agree on that low quality of relationship (Matta, Scott, Koopman & Conlon, 2015). The leader-follower exchange relationship, however, should not be considered independently of its larger system such as the broader work team. The main premise of

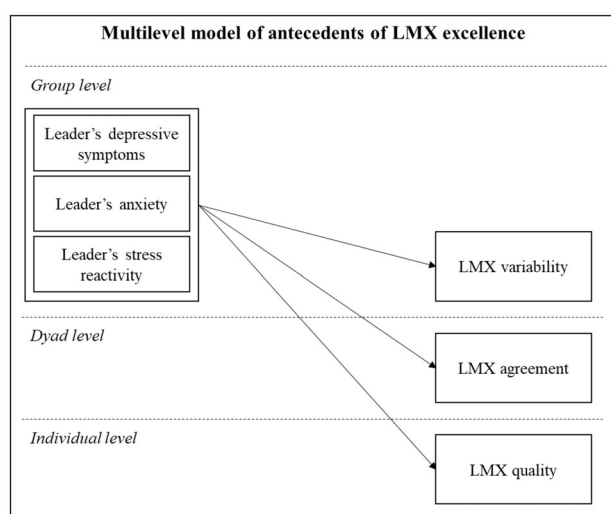


Fig. 1. Conceptual model.

LMX theory is that leaders develop differential relationships among followers of their work groups (Liden, Erdogan, Wayne & Sparrowe, 2006). This variability in LMX interactions results in forming different quality exchange relationships (ranging from low to high) so that relationships may differ across dyads within a work group. The extent to which relationships between leaders and followers differ within the work group may have a negative impact of its own. As followers within one work group may compare their LMX quality with other followers, this social comparison may affect the internal structure of the group (Liden, Erdogan, Wayne & Sparrowe, 2006). It has been shown that LMX variability is detrimental to collective harmony and solidarity within work groups (Yu, Matta & Cornfield, 2018) and may weaken beneficial effects of LMX quality (Liang, Liu, Park & Wang, 2022).

Studies that have explored antecedents of LMX mainly focused on LMX quality on the individual level of analysis. Antecedents of LMX quality may be grouped into the following broader categories: leader characteristics, follower characteristics, and relationship characteristics (Dulebohn, Bommer, Liden, Brouer & Ferris, 2012). As leader characteristics, the personality variables extraversion and agreeableness have been identified to positively affect LMX quality. As follower characteristics, competence, personality (i.e., agreeableness, conscientiousness, and extraversion), locus of control, and positive as well as negative affect have been related to LMX quality. With regard to relationship characteristics, followers' perceptions of similarity, trust in the leader, affect, or liking were found to be positively related to LMX quality. Also, relationship tenure and span of control have been related to LMX quality (Schyns, Paul, Mohr & Blank, 2005). Specifically, for LMX agreement, it has been shown that LMX agreement increases as the length of relationship tenure and intensity of dyadic interactions increase. Congruence in LMX ratings are assumed to depend on the quality of leader-follower episodes and not simply on the quantity of exchange episodes (Sin, Nahrgang & Morgeson, 2009). Further, LMX agreement tends to be higher when leaders have strong relational identities or when leaders and followers have similar relational identity levels (Jackson & Johnson, 2012). For LMX variability, leader characteristics as well as leader behaviors, group size, group-level culture, and aspects of tasks have been related to variability in LMX ratings among group members (Henderson, Liden, Glibkowski & Chaudhry, 2009). Also, leaders with universalistic values seem to be less likely to differentiate among their followers (Ma & Qu, 2010). In sum, antecedents of LMX may be found in different aspects of leaders and followers that may be rooted in rather stable and consistent factors. However, dynamic LMX antecedents have been neglected in previous research.

There is one noteworthy example of studies that have linked aspects of LMX to rather dynamic aspects of leaders: Bernerth and Hirschfeld (2016) have shown that leaders' positive affect and job stress were uniquely related to LMX variability. They further showed that group-mean LMX was correlated with both forms of leader well-being, but they did not explain variance above LMX variability. Concerning job stress, they found an interaction between group-mean LMX and LMX variability: Thus, the positive relationship of LMX variability with leader job stress was stronger at low group-mean LMX than at high group-mean LMX. Also, meta-analytical findings have related

constructive leadership to leader's well-being, which also included studies of relational-oriented leadership such as LMX (Kaluza, Boer, Buengeler & van Dick, 2019). These results showed a positive relation between relational-oriented leadership and well-being, as well as a negative relation with negative well-being. We aim to extend these previous studies on dynamic antecedents of LMX by further setting the focusing on different levels of analysis in our study.

Conservation of resources and leadership

Conservation of resources (COR) theory helps us to describe relations among variables in our study. COR is a general stress theory that explains resource loss as the mechanism driving stress reactions. It is assumed that individuals who lack personal resources will experience stress and will be prone to further resource loss (Hobfoll, Halbesleben, Neveu & Westman, 2018). The main premise of COR theory is that individuals, therefore, strive to retain, protect, and build resources that they value. These resources may appear in a variety of forms, such as conditions, energies, psychological characteristics, and objects. If now an individual's resources are depleted, they tend to adopt a defensive posture to protect and conserve what they have left to restock their resource reservoirs (Hobfoll, 2001). This leads to a shift of their focus of attention away from the needs of others toward solely personal needs. Along with this self-focus, leaders may care more about themselves and not focus on others to protect their own resources, and they tend to behave in a passive, destructive manner (Tafvelin, Lundmark, von Thiele Schwarz & Stenling, 2023).

It has been shown that resources can play an important role in predicting effective leadership such as transformational (Diebig, Poethke & Rowold, 2017) or differentiated transformational leadership (Bormann & Diebig, 2021). Thus, it is assumed that leaders will reduce their effort in activities that are highly resource demanding due to diminished resources (Oreg & Berson, 2015). Accordingly, it has been shown that individuals with depleted resources are more likely to reduce job performance (Wright & Cropanzano, 2000), i.e., leaders are thought to experience work-related impairments as well as limitations in their functioning as effective leaders.

Building on assumptions of COR, we assume that leaders' depressive symptoms, anxiety, and high levels of stress reactivity are incompatible with effective leadership behavior in the face of LMX. It has been shown that enacting in high-quality leadership requires the investment of considerable personal resources (Byrne, Dionisi, Barling, *et al.*, 2014). If leaders are in a state of resource depletion, whether through depressive symptoms, anxiety, or high levels of stress reactivity, they might be unable to expend the required personal resources for realizing high levels of LMX excellence.

Depressive symptoms and relational leadership

Depressive symptoms may include changes in mood, interest, appetite, sleep, body activity, energy, feelings of worthlessness, indecisiveness, confusion, concentration, or suicidal ideation (American Psychiatric Association, 2022). Suffering from

depressive symptoms not only impairs individuals' basic life activities but also influences their cognitive and behavioral capabilities. Particularly in the working context, depressive symptoms may be negatively related to job performance and productivity (Follmer & Jones, 2018). It has been shown that individuals diagnosed with depression reported having problems engaging in effective decision-making (Haslam, Atkinson, Brown & Haslam, 2005). Individuals with depression have also been perceived as low in competence and warmth (Follmer & Jones, 2017). These aspects may inhibit leaders' effectiveness in building close relationships with their followers. More generally, individuals who experience depressive symptoms tend to withdraw from social situations (Bieling & Alden, 2001), which may cause negative reactions from significant others. It has also been shown that depressed individuals put a substantial amount of their attention on themselves. When depressed individuals are absorbed with their own problems, they may be less able to notice the needs of others. With this, attention toward problems of others and prosocial behaviors are less likely (Tse & Bond, 2004). It has also been shown that individuals who experience depressive symptoms have problems building and maintaining high-quality relationships outside the work environment (Oppenheimer & Hankin, 2011; Zlotnick, Kohn, Keitner & Della Grotta, 2000). In sum, depressive symptoms may not be compatible with building high-quality relationships at work.

Anxiety and relational leadership

Clinical characteristics of anxiety are described by anxiety and worry about a variety of topics, events, or activities that may be associated with symptoms of restlessness, fatigue, concentration difficulties, irritability, muscle tension, and sleep disturbances (American Psychiatric Association, 2022). Although a certain base level of anxiety actually may help individuals to perform, individuals with a clinical level of anxiety show low work performance in comparison with individuals with only minimal levels of anxiety (Erickson, Guthrie, Vanetten-Lee, *et al.*, 2009). Individuals with anxiety also have a greater risk for long-term absence from work (Kessler & Frank, 1997). This poor work functioning also holds when individuals recover from anxiety disorders (Plaisier, Beekman, de Graaf, Smit, van Dyck & Penninx, 2010). Findings that highlight social aspects of anxiety have revealed that high anxiety levels may interfere with close social interpersonal relationships in the family domain (Darcy, Davila & Beck, 2005). It has been shown that anxious individuals have problems in close interpersonal relationships (Hoehn-Saric, Hazlett & McLeod, 1993). This social part of anxiety has also been shown to be associated with a relationship style that is characterized by less assertion and greater conflict avoidance (Davila & Beck, 2002). Taken together, these attributes accompanying anxiety all collide with effective relational-oriented leadership.

Stress reactivity and relational leadership

Negative effects that stress can have on health are well documented. These include effects on depression, cardiovascular health, and cancer (Cohen, Janicki-Deverts & Miller, 2007). However, not all individuals react the same way to stress. There

are differences in individual stress reactivity (Schlotz, 2013). Stress reactivity is a disposition that describes individual differences in reactivity to stressors that is rather stable over situations and time (Schlotz, Yim, Zoccola, Jansen & Schulz, 2011). Stress reactivity focuses on an individual's experience within stressful situations. It has been shown that high levels of stress reactivity are associated with high levels of depression (Kelly, Fenwick, Brekke & Novaco, 2016), mental and physical exhaustion, and lower self-concept of one's own abilities (Schulz, Jansen & Schlotz, 2005). As individuals with high levels of stress reactivity experience high levels of stress, we assume that the negative impact of stress on these individuals will be particularly strong. Thus, we assume that relationships between stressors and stress with aspects of LMX will be intensified for these individuals, leading to greater constraints on their functioning as good leaders. Linking stress and stress reactivity to relationship quality, research from the family domain indicates that stress can be a potential threat to the functioning of intimate relationships (Randall & Bodenmann, 2009). Accordingly, stress is negatively associated with relationship satisfaction as well as quality and negatively affects the development of close relationships (Bodenmann, Pihet & Kayser, 2006). It has also been shown that external stressors may indirectly affect relationship quality by triggering arguments and conflicts (Story & Repetti, 2006). Generally, and due to high stress reactivity, coping with greater levels of external stress may deplete the resources necessary for positive relationship functioning. When individuals have to cope with greater levels of stress, they are more prone to experiencing negativity in relationships (Neff & Karney, 2009). We assume that these negative effects of stress on relationship quality may be particularly strong when individuals have high levels of stress reactivity. In this case, individuals experience negative consequences of stress more intensely, so that stress may have a higher impact on their relationships. At the same time, due to their subjective assessment of their higher vulnerability to stressors, they anticipate a greater loss of resources in the future, which leads them to be more conservative with their resources and to invest them less in relationships.

Resources and leader-member exchange

Results of previous research presented in the sections above imply that a leader's depressive symptoms, anxiety, and stress reactivity may collide with a high relationship quality between the leader and followers at work. Furthermore, consistent with the COR framework, all three variables may be regarded as resource-demanding aspects that may inhibit leaders in building high-quality relationships at work. Building on the seminal work of Byrne, Dionisi, Barling, *et al.* (2014), we assume that enacting in high-quality leadership requires the investment of considerable personal resources. Leaders who are in a state of diminished resources may be hesitant to expend the required personal resources for building and retaining high-quality LMX relationships. Instead, these leaders may take a less effortful and more resource-defensive route in order to avoid further resource loss and, therefore, will engage in less demanding leadership activities.

Hypothesis 1a–c: Leaders' (a) depressive symptoms, (b) anxiety, and (c) stress reactivity will be negatively associated with LMX quality.

LMX agreement is assumed to be derived from two main aspects: leader self-awareness and leader effectiveness (Fleenor, Smither, Atwater, Braddy & Sturm, 2010). First, self-awareness may be understood as an understanding of leaders' self-resources and an understanding of how the leader is seen by others (Taylor, 2010). Low levels of leader self-awareness may be, therefore, present in leaders who are unaware of their strengths and weaknesses and who have no clear impression of how others see them (McKee, Lee, Atwater & Antonakis, 2018). This may particularly hold for leaders with depleted resources who currently only have a few resources available and whose attentional focus is centered only on themselves. Second, concerning leader effectiveness, previous studies have shown that effective leader behaviors are limited due to diminished resources of the leaders (Kaluza, Boer, Buengeler & van Dick, 2019). Therefore, we assume that leaders with only a few available resources may have lower self-awareness and may be less effective and thus meet the two preconditions of low self-other agreements. Additionally, disagreement between a leader and a follower's LMX ratings have been shown to be a function of both individuals' perceptions of the ratio of the rewards and costs in their relationship as well as the amount of resources they have already invested (Loignon, Gooty, Rogelberg & Lucianetti, 2019). As leaders with depressive symptoms, anxiety, and stress reactivity are thought to have only a few resources, which they aim to protect, we expect that these leaders will have a negative balance in comparison with their followers. This would further increase the level of disagreement in LMX ratings. Therefore, we posit the following hypothesis:

Hypothesis 2a–c: Leaders' (a) depressive symptoms, (b) anxiety, and (c) stress reactivity will be negatively associated with LMX agreement.

It has been demonstrated that within-group variability of leadership behavior may be explained by the availability of a leader's resources (Bormann & Diebig, 2021). The fewer the resources that are available, the more leaders differentiate their actions toward their followers. If leaders have only a few resources left – because their resources have been depleted due to depressive symptoms, anxiety, and high stress reactivity – the leaders may invest in only several followers. These leaders do not have enough resources to satisfy the needs of all their followers, which leads to a high degree of variability within their group. Therefore, we posit the following hypothesis:

Hypothesis 3a–c: Leaders' (a) depressive symptoms, (b) anxiety, and (c) stress reactivity will be positively associated with LMX variability.

METHOD

Sample and procedure

Data collection for this study was part of a larger research project. Within this project, data from leaders and their followers were collected in

Lehmann et al., 2021. Data was matched using code variables to assign followers to their leaders. To recruit leaders for the larger research project, leaders were systematically approached in three regions in the southwest of Germany from the study team in cooperation with several local multipliers (e.g., local health insurance company, chamber of commerce). Information material was sent via email through suitable channels and presented at different events. Participating leaders had to be aged between 18 and 64 years. Participating leaders gave informed consent to participate in the study. They received an email with an invitation link to an online survey (leader survey; administered via unipark). A second informed consent was collected from leaders to obtain agreement to also include their followers in the study. If the leaders agreed to include their followers, we sent them an email with a link to an online survey (follower survey; administered with unipark) which the leaders needed to forward to their followers. The project had been approved by the ethics committee at the Medical Faculty of Heinrich Heine University Düsseldorf (No. 5684). All participants gave their informed consent to participate. Participation in the study was voluntary, and data was saved and processed anonymously.

However, not all leaders in the larger research project agreed to include their followers in the survey (75% agreed to involve followers in the research project), and thus no followers of these leaders participated in the survey. Of the 174 leaders and 339 followers who participated in the survey, we could use data from only 75 leaders in our analysis, who had agreed to include their followers in the study and of whom followers actually participated. Of the 339 followers, we could match only 322 with their respective leaders using the code variable. Fourteen followers could not be matched to their leaders, because their leaders did not participate in the survey. Three followers participated twice in the survey, so we removed duplicates. The final sample of the present study consists of $N = 75$ leaders with their $N = 322$ followers ($M = 4.29$ followers per leader; $SD = 2.66$).

Leaders were on average $M = 44.61$ years old ($SD = 8.86$; min = 26; max = 61). Most leaders were male (71%). Of the leaders, 55% had a university degree, 15% had completed a technical college, and 9% had completed vocational training. Leaders stem from various companies and worked in various industry sectors. Followers were on average $M = 40.57$ years old ($SD = 12.12$; min = 18; max = 63) and mostly female (53%). With regard to educational background, 37% of followers had completed vocational training, 22% technical college, 17% had a polytechnic degree, and 17% had a university degree.

Measures

Leaders and their followers both participated in an online survey. The leader survey asked about LMX, leaders' anxiety, depressive symptoms, and stress reactivity. The follower survey asked about followers' perceptions of LMX with their leaders.

Leader anxiety and depressive symptoms. We used the Hospital Anxiety and Depression Scale (HADS; Herrmann, 1997) to screen for leaders' anxiety and depressive symptoms. The HADS consists of 14 items with seven items each measuring anxiety and depressive symptoms. A sample item for the self-assessment of depressive symptoms is "I still enjoy the things I used to enjoy." Participants can choose from four answers ranging from 0 (*Definitely as much*), 1 (*Not quite so much*), 2 (*Only a little*), to 3 (*Hardly at all*). A sample item for anxiety is "Worrying thoughts go through my mind," with answers 0 (*A great deal of the time*), 1 (*A lot of the time*), 2 (*From time to time, but not too often*), to 3 (*Only occasionally*). Items were recoded and summed up to build a general score for each of the two scales so that a high value indicates the presence of severe symptoms. Scale values may range from 0 to 21. Cronbach's alpha was acceptable, with $\alpha = 0.70$ for anxiety and $\alpha = 0.79$ for depressive symptoms.

Stress reactivity. To measure leaders' stress reactivity, we used the Perceived Stress-Reactivity Scale (PSRS; Schlotz, Yim, Zoccola, Jansen & Schulz, 2011). The PSRS consists of 23 items that are averaged into one overall mean score. Participants are asked about their reactions to situations, which they may have experienced in the past. A sample item is

"When I have little time for a job to be done ..." Participants can choose from three answers for each item ranging from 0 (*I usually stay calm*), 1 (*I usually feel uneasy*), to 2 (*I usually get quite agitated*). An overall mean score is computed ranging from 0 to 2, with a higher mean score indicating a higher stress reactivity. Scale reliability was sufficiently high for the total score with Cronbach's alpha (α) = 0.86.

LMX. Leaders and followers each answered seven questions to assess leader-member exchange (Scandura & Graen, 1984). The LMX-7 questionnaire consists of seven items assessing the relationship between leaders and employees (follower version: "How well does your immediate supervisor understand your work-related problems and needs?"; leader version: "How well do you understand the work-related problems and needs of your employees") on a five-point Likert scale (1 = *not at all* to 5 = *very well*). Cronbach's alphas were 0.59 for the leader sample and 0.89 for the follower sample. *LMX quality* is represented by what followers answer about their leader and calculated as the mean score of the seven items with a high value representing a high-quality LMX relationship. *LMX agreement* was operationalized as the standardized mean difference (d) in LMX ratings between leaders and followers. The d statistics were computed such that higher values indicate that the leader rated the quality of relationship higher than the follower. Across the 322 dyads, d ranged from -2.29 to 5.34 . Leaders assessed their LMX relationship with reference to their employees in general and not with reference to each single follower. LMX agreement, therefore, represents the agreement between the individual follower's LMX quality assessment and the mean self-assessment of leaders' LMX quality. *LMX variability* was calculated as within-group standard deviation of LMX ratings. As in prior LMX variability research (cf. Gooty & Yammarino, 2016), we computed LMX variability scores at the group level as the standard deviation of LMX scores drawn separately from follower ratings. A high value represents a high variability of LMX ratings among followers of a single leader.

Analytical approach

We used multilevel regression analysis with MPLUS Version 8 (Muthén & Muthén, 1998–2017) to test hypotheses within one statistical model. The structure of the data is characterized by followers nested within leaders. This leads to a two-level model with followers at the first level (Level 1; $N = 322$) nested within leaders at the second level (Level 2; $N = 75$). Level 2 variables are LMX variability, leader depressive symptoms, leader anxiety, and leader stress reactivity. Level 2 predictor variables were centered on the grand mean. Level 1 variables are LMX quality and LMX agreement. Level 1 variables are dependent variables, included on both levels of analysis, and were not centered. We used a maximum likelihood estimation with robust standard errors to calculate the model. The sample size of 322 followers nested in 75 leaders is sufficient to detect medium-sized effects (Scherbaum & Pesner, 2019). We also tested for assumptions of the multilevel model by focusing on model specification and distribution, as well as independency of Level 1 and Level 2 residuals. Results of testing assumption did not show significant violations of our specified model, so we concluded that using multilevel regression analysis with a maximum likelihood estimation with robust standard errors was adequate for testing study results.

Intra-class coefficients (ICCs) were estimated using the unconditional random coefficient model. For LMX quality, ICC was 0.29, and for LMX agreement, ICC was 0.29. In sum, results of ICCs indicate that the multilevel structure of the data should be taken into account while testing hypotheses.

Hypotheses were tested within one model that treated LMX quality, LMX agreement, and LMX variability as dependent variables and leader's depressive symptoms, leader's anxiety, and leader's stress reactivity as independent variables.

RESULTS

Table 1 presents descriptive statistics and zero-order correlations at the individual, dyad, and team levels. Table 2 summarizes the

Table 1. Means, standard deviations, reliabilities, and correlations of study variables

			Intercorrelations			
	<i>M</i>	<i>SD</i>	1	2	3	4
Individual level						
1. Follower-rated LMX quality	3.69	0.72	(0.89)			
2. Leader-rated LMX quality	4.07	0.32	0.23**	(0.59)		
Dyad level						
3. LMX agreement	0.68	1.27	−0.90**	0.21**	–	
Group level						
1. LMX variability	0.49	0.24	–			
2. Leader depressive symptoms	4.38	3.36	−0.02	(0.79)		
3. Leader anxiety	6.12	3.11	−0.04	0.44**	(0.70)	
4. Leader stress reactivity	0.93	0.31	0.07	0.46**	0.55**	(0.86)

Note: Internal consistency coefficients (Cronbach's alphas) are reported in the parentheses on the diagonal. $N = 75$ for all variables at the group level. $N = 322$ for all variables at the individual and dyadic level.

** $p < 0.01$.

results for the direct relations between measures of LMX excellence and their health-related antecedents.

Results of multilevel regression analysis for LMX quality as dependent variable show non-significant relations with either leader depressive symptoms ($\gamma = 0.18$, $SE = 0.17$, 95% CI $[-0.10, 0.46]$) or leader anxiety ($\gamma = 0.08$, $SE = 0.17$, 95% CI $[-0.19, 0.36]$), giving no support for Hypotheses 1a and 1b. However, leader stress reactivity was significantly related to LMX quality ($\gamma = -0.41$, $SE = 0.18$, 95% CI $[-0.70, -0.12]$), thus supporting Hypothesis 1c.

Hypotheses 2a and 2c had to be rejected as LMX agreement was neither linked to leader depressive symptoms ($\gamma = -0.05$, $SE = 0.17$, 95% CI $[-0.32, 0.22]$) nor leader stress reactivity ($\gamma = 0.29$, $SE = 0.17$, 95% CI $[0.00, 0.58]$). However, there was a negative link between leader anxiety ($\gamma = -0.32$, $SE = 0.16$, 95% CI $[-0.58, -0.07]$) and LMX agreement; thus Hypothesis 2b was supported.

LMX variability was not related to leader depressive symptoms ($\gamma = -0.11$, $SE = 0.17$, 95% CI $[-0.39, 0.17]$), leader anxiety ($\gamma = -0.08$, $SE = 0.16$, 95% CI $[-0.34, 0.19]$), or leader stress reactivity ($\gamma = 0.15$, $SE = 0.15$, 95% CI $[-0.10, 0.41]$), giving no support for Hypotheses 3a, 3b, or 3c.

DISCUSSION

The aim of the study was to explore antecedents of LMX excellence using data from leaders and their followers. We tested whether leaders' depressive symptoms, anxiety, and level of stress reactivity were linked to their relation with their individual followers (LMX quality), the agreement between their self-perception of LMX quality and perceptions of their followers (LMX agreement), or the level of variance of LMX perceptions within their working group (LMX variability). Results showed that leaders' level of stress reactivity was related to follower perceptions of LMX quality (Hypothesis 1c) and leaders' anxiety

Table 2. Multilevel regression results predicting LMX excellence

	LMX quality			LMX agreement			LMX variability		
	γ	SE	95% CI	γ	SE	95% CI	γ	SE	95% CI
Intercept	9.72**	1.21	[7.72, 11.71]	0.67	0.46	[−0.89, 1.44]	−0.17	0.35	[−0.73, 0.40]
Leader depressive symptoms	0.18	0.17	[−0.10, 0.46]	−0.05	0.17	[−0.32, 0.22]	−0.11	0.17	[−0.39, 0.17]
Leader anxiety	0.08	0.17	[−0.19, 0.36]	−0.32*	0.16	[−0.58, −0.07]	−0.08	0.16	[−0.34, 0.19]
Leader stress reactivity	−0.41*	0.18	[−0.70, −0.12]	0.29	0.17	[0.01, 0.58]	0.15	0.15	[−0.10, 0.41]
Residual variance	0.88**	0.09	[0.73, 1.03]	0.91**	0.08	[0.78, 1.04]	0.98**	0.04	[0.92, 1.04]
Within-level variance	0.34**	0.04	[0.27, 0.41]	1.09**	0.14	[0.87, 1.32]			
R ²	0.12	0.09		0.09	0.07		0.02	0.04	

Note: $N = 75$ for all variables at the group level. $N = 322$ for all variables at the individual and dyadic level. Reported coefficients are standardized. Within-level variances for within-level variables LMX quality and LMX agreement are unstandardized values.

* $p < 0.05$;

** $p < 0.01$.

was related to perceptions of LMX agreement. Leaders' depressive symptoms did not explain elements of LMX excellence in our study.

Theoretical implications

In this study, leaders' stress reactivity has been identified as an antecedent of LMX quality. It seems that the way a leader responds to stressful situations is related to the quality of relations he or she pursues with his or her followers. Stress reactivity, therefore, seems to function as a suitable trigger of diminished resources with regard to COR theory. If stress reactivity is high, there seems to be a constant threat to an individual's resources. This threat of resource loss is assumed to lead to stress (Hobfoll, Halbesleben, Neveu & Westman, 2018), which boosts an individual's effort to protect his or her resources. As a consequence, activities to build close relationships at work are slowed down, so that LMX quality between leaders and followers suffers. Our study is – to the best of our knowledge – the first to introduce the concept of stress reactivity as an operationalization of resources and as an antecedent of relational leadership within a group setting. The concept of stress reactivity may be linked to the concept of neuroticism as both variables describe how individuals respond to stressful situations (Schlotz, 2013). Previous research that dealt with the closely related construct of the broader personality factor neuroticism has shown that leaders' neuroticism was not related to followers' perceptions of LMX (Bernierth, Armenakis, Feild, Giles & Walker, 2007). It may be that the concept of stress reactivity may better represent immediate consequences of stressful situations at work than the concept of neuroticism. Therefore, it may be more suitable to display leaders' depleted resources in contrast to the broader personality concept of neuroticism. Future research should apply the concept of stress reactivity to leadership research and should also include the role of potential stressors or stressful situations while exploring antecedents of LMX.

Leaders' anxiety was related to LMX agreement, with high levels of anxiety being related to low levels of agreement. Results indicate that anxiety may interfere with the process of agreement in the way that leaders may have problems evaluating their relationship with their followers in a realistic way. As with the concept of stress reactivity, anxiety seems to display a state of

high resource depletion of leaders. Leaders with high levels of anxiety seem to have a negative balance in comparison with their followers, which increases the level of disagreement in LMX ratings.

Leaders' depressive symptoms were not related to LMX in our study. It may be that the clinical symptom of depression does not seem to be related to aspects of LMX. However, values of depressive symptoms reported in our sample are comparable to values reported in the general population and fall below the suggested cut-off values that imply clinical values (Hinz & Brähler, 2011). Therefore, we assume that leaders in our sample may be regarded as healthy while displaying only low to modest symptoms of depression. This potential restriction in range of clinical symptoms may narrow conclusions we are able to draw about the relation of depressive symptoms and relational leadership. In addition, the concept of stress reactivity may be more persistent in comparison with the concept of depression (Schlotz, Yim, Zoccola, Jansen & Schulz, 2011). While symptoms of mental health disorders may fluctuate over time and situations, the concept of stress reactivity is assumed to be rather stable. As relationships are developed over time, more stable antecedents may have a greater impact on LMX quality. Future studies should address this issue and include time as an important factor while exploring antecedents of LMX.

In our study, LMX variability was not related to stress reactivity, depression, or anxiety. LMX variability does not seem to be related to health-related aspects of leaders in the study at hand. It may be that leaders with high levels of depression, anxiety, or stress reactivity decrease their effort in leadership activities for all followers in the same manner. Therefore, they do not seem to set their relational focus of attention on only a few members of their group. This general reduction of leadership actions would lead not to greater variability but only to a reduction of LMX quality. Leaders may tend to treat all followers in the same way when individual resources are threatened.

Practical implications

Beyond the theoretical implications, these findings have implications for managerial practice as well. Previous research has demonstrated the importance of LMX quality for organizational functioning (Martin, Guillaume, Thomas, Lee & Epitropaki, 2016).

As leaders' stress reactivity is related to LMX quality, organizations should help managers to develop a healthy reactivity to acute stress situations and buffer stress reactivity by introducing coping mechanisms (e.g., Limm, Gündel, Heinmüller, *et al.*, 2011). The same applies for leaders' anxiety that was related to LMX agreement. Organizations should not neglect the mental health status of their employees. Our results showed that symptoms of depression and anxiety are prevalent in our sample. Therefore, we suggest that organizations should also screen for mental health impairments of their employees and offer points of contact for their employees so that these employees can easily access information about offers of assistance. This could be realized by raising awareness for mental health topics within an organization and by offering support for individuals who are in need of help.

Furthermore, it seems worthwhile to complement training programs on relational leadership for leaders in order to build high-quality LMX relationships with their followers. Together, training programs should focus on stress reactions, stress management, and relational leadership.

Limitations

The study has certain strengths that mainly relate to the multilevel design of data collection including a large group of leaders and their matched followers. This multisource data helps us to integrate different perspectives considering perceptions of LMX quality on an individual, a dyad, and a group level. However, there are also some methodological limitations that should be mentioned. First, we applied a cross-sectional design that does not allow us to draw causal conclusions about the relationship between leader health and LMX. We have presented theoretical reasons to believe that leaders' health leads to LMX excellence. However, while previous studies have reported antecedents of LMX (Byrne, Dionisi, Barling, *et al.*, 2014), others have positioned leaders' well-being as a consequence of LMX (Bernerth & Hirschfeld, 2016). Future studies should set the focus on designs that allow for causal conclusions of relationships among study variables. Second, the measure of LMX agreement is based on a leader's evaluation of all of his or her followers. That is, we did not collect individual LMX evaluations of leaders for each single follower. Thus, LMX agreement represents agreement between the individual follower's LMX quality assessment and the mean self-assessment of leaders' LMX quality. Future research should aim to assess LMX agreement on a more detailed level. Yet, it should be noted that this procedure may result in a rising effort for leaders to fill in questionnaires and may threaten their compliance with the study. Third, Cronbach's alpha for the leader LMX scale was rather low. Therefore, findings utilizing the leader version of the LMX scale (e.g., leader-rated LMX quality and LMX agreement) need to be interpreted carefully and should be replicated in future studies. Fourth, as data collection was part of a larger research project in which leaders were assigned to a waiting control group and an intervention group, it might be that this randomization of leaders into the two groups might bias results of the present study. It is possible to assume that leaders who were assigned to the waiting list may be annoyed by the waiting time, and therefore, the results may be interpreted only to a limited extent.

Future studies should also set the focus on dynamic aspects of LMX by looking at changes in leader behavior in relation to their

health status over time (Poethke, Klasmeier & Diebig, 2022). It is important to explore whether changes in a leader's resources also lead to changes in their LMX relationships at work. Future studies may also focus more strongly on leader resources with a connection to aspects of the workplace (i.e., work intensity, time pressure, or perceived work stress) to also explore their relations to LMX quality besides rather clinical measures such as depressive symptoms or anxiety.

CONCLUSION

In sum, this study helps us to gain a better understanding of the relation between leaders' health and their functioning at work in face of LMX excellence. It shows that particularly leaders who intensely react to stressful situations have difficulties building high-quality relationships at work with their followers. Leaders who experience high levels of anxiety seem to have problems evaluating LMX relations with their followers. Future studies should investigate how leaders' mental health aspects relate to relations with or behaviors toward their followers. It should also be explored what causal conclusions may be drawn with regard to the relation between leaders' mental health and LMX relations at work.

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CONFLICT OF INTEREST

All authors declare that they have no conflict of interest in this work.

DATA AVAILABILITY STATEMENT

The original data are available from the corresponding author on reasonable request.

ETHICS APPROVAL

The project has been approved by the ethics committee at the Medical Faculty of Heinrich Heine University Düsseldorf (No. 5684). All participants gave informed consent to participate.

PERMISSION TO REPRODUCE MATERIAL FROM OTHER SOURCES

Not applicable.

ENDNOTE

¹ Variability in the quality of relationships between leaders and followers has been labeled differently in previous studies (LMX variability, LMX consensus, LMX differentiation). We use the term LMX variability

throughout the article as this term indicates that high values represent a high variability of LMX perceptions within a work group.

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