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Leadership in a different light: understanding co-worker exchange in a triad

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Abstract

This work analyses the relationship between Leader and Member Exchange (LMX) and Co-worker Exchanges in a triad. Using a large sample of 1579 observations, our work provides theoretical and empirical support to the idea that the quality of the relationship between two co-workers, rather than being an objective characteristic of the dyad, is in fact an individual variable affected by the perception that each co-worker has of the relationship each member of the same dyad holds with their common leader. Our results, based on 1580 observations, offer some new insights and extend the well-known *Balance Theory* demonstrating that it is not only the similarity and dissimilarity in their LMX, what determines co-workers' relationships but also the individual perception of own's LMX. Furthermore, we also point at the relevance of the contingent effect played by the average LMX at the team level and the level of differentiation that the leader holds at the team level.

Keywords LMX · CWX · Balance theory · Co-worker exchange · Leader–member exchange

JEL Classification M10

1 Introduction

The quality of the relationships between leader and followers and the quality of the relationships between co-workers (co-workers under the same leader) have been shown to be critical in defining social relations at work (Bornay-Barrachina

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and Herrero 2017; Sherony and Green 2002). The social work environment is defined by leaders and co-workers and by the relationship established between them (Clay and Olitt 2012; Omilion-Hodges et al. 2016; Wang et al. 2019). Sherony and Green (2002) published a highly influential paper based on the Balance Theory (Heider 1958) to explain leader and co-workers' relationships in a triad. Leader–member exchange (LMX) theory supports the idea that when leaders are able to establish high-quality relationships with their subordinates there is an increase in terms of benefits for the organization (Omilion-Hodges et al. 2016; Terpstra-Tong et al. 2020; Wang et al. 2014). This theory gives the leaders the main role in building high-quality relationships with their subordinates. Essentially, Balance theory is a framework for the explanation of consequences of attitudinal dissimilarities. Balance Theory suggests that co-workers who experience similar quality leader–member exchange (LMX) with their leader (either high-quality or low-quality) are likely to share high-quality co-worker exchange (CWX) relationships, and vice-versa: if they hold the opposite type of relations with the leader (high/low LMX, low/high LMX), then they most likely show a low-quality CWX (Sherony and Green 2002).

Balance Theory is based under the assumption that quality in CWX is perceived in the same way by both members of the dyad, and therefore can be averaged. However, empirical research shows that CWX is not always perceived in the same way by both parties. It depends not only on the similarity of the relation he/she and the other co-worker holds with the leader, but also on each co-worker's own LMX quality, which leads them to perceive the work atmosphere from a different perspective. Although this approach has been suggested by certain authors (Bakar and Sheer 2013; Tse and Dasborough 2008), it has never been studied for CWX. Effectively, in the few empirical analyses on CWX, the correlation between the perspectives of the two co-workers within the same dyad regarding their CWX quality has proven to be low. As an example, in the well-known Sherony and Green paper (2002), this correlation was very low and statistically non-significantly different from zero. A similar result can be found in Omilion-Hodges and Baker (2013).

At work, social environments are defined not only by leaders but also by the co-workers (Clay and Olitt 2012; Omilion-Hodges et al. 2016; Wang et al. 2019) and relationships between co-workers are key for some specific behaviours (Banks et al. 2014). Co-workers are members working under the same leader (Sherony and Green 2002). The literature on the quality of dyadic relationships (Olsson et al. 2012; Omilion-Hodges and Baker 2013) has shown that relations at the dyad level affect the individual perception of the work environment. In this context, co-worker support and influence within dyads have been shown to be critical in obtaining citizenship behaviour, job satisfaction, organizational commitment, and effectiveness (Chiaburu and Harrison 2008; Raabe and Beehr 2003; Vidyarthi et al. 2010). Analogously as occurs with LMX, high co-worker exchanges can be translated into high dyadic levels of trust, mutual obligation, and reciprocity (Omilion-Hodges and Baker 2013; Raabe and Beehr 2003; Wikaningrum 2007), and variations in quality may affect peers' perceptions of their environment (Bommer et al. 2003; Jordan et al. 2002). These points are relevant to understand the dyad relations between co-workers in a triad, where a low quality relation between co-workers (low levels of

trust, mutual obligation and reciprocity) would lead to more conflict and low level of performance.

Almost 20 years have passed since the influential paper of Sherony and Green (2002) was first published and the need to corroborate and enter into greater depth with the Balance Theory model to explain leader-co-worker relationships at work still remains. In fact, no other paper has empirically demonstrated Balance Theory by analysing the relationship between LMX and CWX in a triadic relationship between the leader and co-workers (Tse et al. 2012, 2013). To the best of our knowledge, only two studies exist that have extended Balance Theory within a LMX framework (Omilion-Hodges and Baker 2013; Tse et al. 2013). Tse and colleagues (2013) specifically draw on Balance Theory to explain the effects of similarity and dissimilarity of LMX on CWXs. They used Social Comparison Theory to support the idea that high-quality CWX results when both subordinates maintain low-quality LMX. Their findings showed that LMX dissimilarity is likely to induce hostile interpersonal emotions between co-workers, and it may have a negative impact on their perceptions of the help received from each other. Omilion-Hodges and Baker (2013) extended Balance Theory by analysing the moderating effect of distributive justice. Specifically, these authors found a model where justice moderated the causal relationship between LMX similarity and CWX. And Reid et al. (2017) also extended Balance Theory in a recent study, although it was not carried out in the context of LMXs nor CWXs, but instead with regard to job tension and ethical similarity in the consideration of relationship-issue-relevance. These studies are an attempt to refine and extend Balance Theory, giving support to the idea that Balance Theory does not hold in all cases.

Weiner's (1985, 1986) Attribution Theory of emotions provides the fundamentals for the relationship between exchange processes and affective responses and can help us to deepen and extend Balance Theory. People involved in exchange relations can feel good or not, as a result of that exchange. Along the same lines, the social exchange paradigm (Graen and Uhl-Bien 1995; Liden et al. 2006), the norm of reciprocity (Blau 1964), and fairness perceptions (Chiaburu and Harrison 2008; Uhl-Bien et al. 2000), enable us to affirm that subordinates, when maintaining low LMX relationships, feel a lower tendency to reciprocate and they show citizenship behaviours of a lower organizational nature regarding their peers (Tse et al. 2013). In contrast, when employees perceive high levels of support from their organization (such as high-quality LMXs), they reciprocate with greater performance, citizenship behaviours and commitment (Eisenberger et al. 1986; Graen and Uhl-Bien 1995; Liden et al. 2006; Uhl-Bien and Maslyn 2003). These behaviours arise because high-LMX employees feel that help will be available to them when needed while performing their jobs while the opposite occurs for low-LMX employees (Rhoades and Eisenberger 2002). Following this logic: Can we assume that similarities in LMXs always bring positive CWXs? Can we assume that dissimilarities in LMXs always influence subordinate perception in the same way? It could well happen that when both subordinates in a triad experience low LMXs, they perceive cues from their leaders that helping behaviours or citizenship behaviours to their peers are not needed, thereby influencing their perceptions of work atmosphere and their perceptions

of CWXs in a negative way. Consequently, would it be reasonable to think that high-quality LMX subordinates manifest a more positive attitude towards work and other co-workers than low-quality LMX subordinates do? If so, the CWX perception of two dissimilar LMX co-workers in a triad would differ to a great extent. Since perceptions matter when building interpersonal relationships, we pose the research question: can we assume that CWX perceptions within a dyad can be averaged? Or should we consider that each co-worker within a dyad may have a different CWX perception?

In sum, we argue that CWX relationships are not black and white in their classification but that they depend on the perception of each team member in the dyad. Extending what is suggested by Balance Theory, we posit that the quality of the workplace exchange relationship among co-workers of a dyad, rather than a dyad characteristic, should be considered as a unique individual perception of each co-worker influenced by individual, dyadic and team characteristics (Bakar and Sheer 2013; Lee 2005; Rapp and Mathieu 2019; Tse and Dasborough 2008). Additionally, with the purpose to better explain the relationships in a triad, we extend the study analysing the moderating role played by within-team average LMX and LMX differentiation.

In our work, we analyse the relationships between LMX and CWX in a triad, making several contributions to the literature. First, we contribute to the CWX literature by arguing that CWX is not always perceived in the same way by both parties, but that it depends not only on the similarity of the relation he/she and the other co-worker hold with the leader, but also on each co-worker's own LMX quality, which leads them to perceive the work atmosphere in a different light. We therefore suggest that studies on CWX should focus on *perspectives* rather than on average values across dyads, in order to fully understand the link between CWX relationships and other variables, such as individual performance and behaviour. Second, we contribute to the LMX literature by providing arguments that supports that the perceptions of high-quality LMX members and of low-quality LMX members differ to a great extent. We argue that high-quality LMX members tend to see the workplace through rose-tinted glasses and that the opposite occurs with low-quality LMX members. While LMX literature has widely studied the consequences of high-quality LMX, the consequences for the focal team member that experiences a low-quality LMX relation remains largely disregarded (Bolino and Turnley 2009) and the relation of these members to their co-workers has been assumed to be based only on the similarity-dissimilarity paradigm. Third, we also contribute to the social relations at work´s literature through the consideration of LMX and CWX together in a triad into a teamwork context by reconciling the LMX Theory and the Balance Theory. Specifically, we maintain that low-quality LMX co-workers perceives only drawbacks and imperfections at work and, consequently, these members present different social and attitudinal behaviours towards work, and the resulting CWX quality differs, on certain occasions, from that which has traditionally been assumed in the literature. A final contribution, but not less relevant, consists on the further extension of the Balance Theory based on the contingency effect that within-team

average LMX and LMX differentiation exert on the relationship between CWX and LMX.

2 Theoretical background

2.1 Balance theory revisited

The Balance Theory (Heider 1958; Sherony and Green 2002) provides a framework for the explanation of consequences of attitudinal dissimilarities. According to (Heider 1958), there can be either balance or imbalance situations. Balance situations are given when two individuals coincide with their likes or dislikes. The theory maintains that a balance situation occurs when triadic relations among an individual (p), another person (o), and an attitude object (x) are harmonious (Heider 1958). Imbalance situations are given when "p" and "o" disagree in relation to "x".

The literature supports the idea that perceptions matter when building a relationship. There is a vast amount of literature supporting the idea that the perception of the followers by their supervisor is determinant in building high- or low-quality LMX relationships. Leaders choose their subordinates for high- and/or low-quality LMXs by drawing on their performance expectations (Deluga and Perry 1994; Dockery and Steiner 1990; Graen and Uhl-Bien 1995; Liden and Wayne 1993). Dockery and Steiner (1990) found a relationship between the supervisor's perception of the ability of the subordinate to perform tasks and the quality of LMX. The success of a relationship is based on the exchange of benefits, either intrinsic or extrinsic, as well as on normative obligations. The literature states that high-quality LMX requires mutual beneficial perceptions and behaviours between the supervisor and the subordinate within a dyad (Yukl and Michel 2006). Both agents should perceive that beneficial advantages can be achieved. Specifically, interpersonal trust between supervisors and subordinates (Dienesch and Liden 1986) has been pointed out to be critical based on the expectations supervisors have of their subordinates (Mayer et al. 1995). Co-worker Exchange Relationships (CWX) are defined along the same lines. Co-workers are workers under the same leader and they are as interdependent as leader and co-workers are from each other. From this point of view, and using these ideas into the context of co-workers relationship, high levels of trust, mutual obligation and reciprocity are needed to build high-quality CWXs (Omilion-Hodges and Baker 2013; Raabe and Beehr 2003; Wikaningrum 2007). However, Lau and Liden (2008) demonstrated that if the leader holds a low-quality LMX relationship with a subordinate, it implies that the leader fails to regard that subordinate as a trustworthy person and hence the rest of the co-workers may not see such a subordinate as a reliable individual in whom they can trust either. Consequently, low-quality LMX members would tend to keep low-quality CWX relationships with other co-workers as they will not be regarded as trustworthy members, which leads us to think that *in a dyad where two co-workers hold low-quality LMX, the CWX relation between*
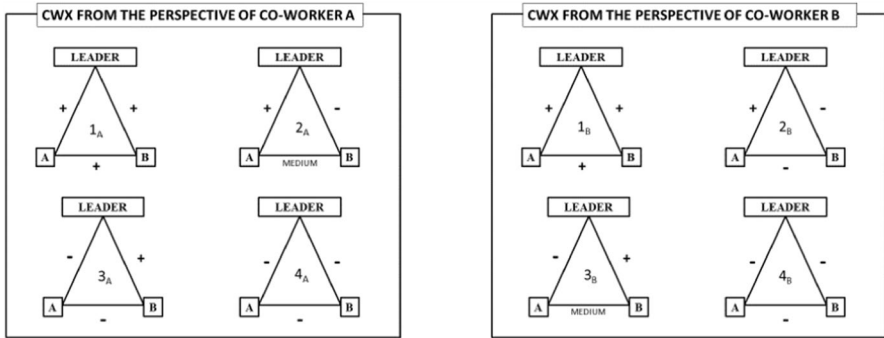
Fig. 1 a and b Our model using the perspectives of co-workers A and B. LMX–CWX triads. "A" and "B" refer to different co-workers. The + sign refers to positive relationships, and the—sign, to negative relationships. A medium-level quality of CWX is indicated as "MEDIUM" (*). (*) 1,2,3, and 4 stands for four possible situations. The sub-indexes indicate which co-worker perspective we are analysing in each case (A in Fig. 1a or B in Fig. 1b)

the two would also be likely to be of low quality (Fig. 1a, situation 4_A; Fig. 1b, situation 4_B).

In contrast, high-quality LMX relationships are characterised by trust and commitment and enhance strong affective bonding to the workplace. As Morrison (1994) noted, differences in role perceptions are important because they help us to understand whether an employee engages in a specific organizational behaviour, whether he or she makes extra efforts, and whether he or she deems such efforts as part of their work (Kamdar et al. 2006; Lam et al. 1999; Tepper and Taylor 2003). In consequence, high-quality LMX members are more motivated to develop relationships at work and they often try to communicate identity and values to others through these relationships (Cogliser and Schriesheim 2000; Tse and Dasborough 2008). They are also more likely to perceive these relationships as friendship regardless of the expected reciprocity from other co-workers (Tse and Dasborough 2008). High-quality LMX members, also by a norm of reciprocity with the leader, tend to present more support to co-workers and more organizational citizenship behaviour (OCB) (Vidyarthi et al. 2010), understood as those extra-helping activities that benefit specific individuals and contribute towards the organization (Kim et al. 2010).

When co-workers receive different treatment from the leader, those that think that it is due to distributive justice perceive more harmonious relationships among co-workers and they perceive the workplace more positively (Erdogan and Bauer 2010). The perception of equity means that employees usually appreciate what they receive from the organization and their contribution to it (Adams 1965), and consider it a "fair exchange". When employees perceive that the organization should give them more than what they actually receive from it, there is a sense of inequity or injustice that causes a state of tension or imbalance, which motivates changes in behavior (Adams 1963; 1965). In general terms, when a fair exchange is perceived, the employee´s emotional involvement might be higher than when the exchange is perceived as unfair, and favours positive behaviours such as affective organizational

commitment (Cohen-Charash et al. 2001; Tsai 2019). However, Sias and Jablin (1995) demonstrated that high-quality LMX members perceive that their high-quality LMX and the benefits associated are deserved and see the differential treatment as fair. In contrast, low-quality LMX members tend to think that they are undeserving of such treatment (Omilion-Hodges and Baker 2013; Sias and Jablin 1995), and that the situation is unfair and political, with those close to the leader receiving better treatment and, as a result, low-quality LMX members feel less satisfied with co-worker relations (Martin et al. 2018). They may also experience jealousy and envy. Consequently, according to Erdogan and Bauer (2010), high-quality LMX members perceive their relation towards co-workers as more harmonious than do low-quality LMX co-workers. In this regard, Equity Theory has been criticised for being overly rational (Sias and Jablin 1995) as jealousy frequently does not depend on equitable exchanges but on discontent for not possessing the same as others, with unfairness serving as an excuse to justify jealousy (Kim et al. 2010). In addition, certain authors (Kim et al. 2010) posit that the jealousy and unfairness perceptions motivated by low-quality LMX, inhibit OCB behaviours, particularly those behaviours that they perceive as extra-role activities (Van Dyne et al. 2008). While low-quality LMX members will withdraw additionally helpful behaviour mainly towards envied co-workers (those enjoying high-quality LMX) (Kim et al. 2010), they are not expected to show cooperative behaviour towards any co-worker in the organization (Van Dyne et al. 2008) because all these feelings lead them to perceive the workplace negatively, to become less pro-social and less cooperative (Boies and Howell 2006; Cogliser and Schriesheim 2000; Tse and Dasborough 2008), driving to conflict (Boies and Howell 2006) and to low satisfaction with co-workers (Erdogan and Bauer 2010) and, in consequence, to lower-quality CWX perceptions.

These reasons lead us to two significant insights that contradict the original statements of Balance Theory. The first one appears when two co-workers in a dyad experience a relationship of a different quality with the leader such as in Fig. 1a, situation 2_A. In this case, co-worker A maintains a high-quality LMX and the other, co-worker B, has a low-quality LMX. Then we argue that both co-workers would perceive the relationship between them differently. On the one hand, co-worker A would be affected by (1) the fact that they hold dissimilar LMX, which would lead them to perceive CWX negatively, but this would be nuanced by (2) the fact that co-worker A holds a high LMX and hence regards work relationships positively and in a friendly way. The effect of (1) and (2) would balance, leading to a medium level perspective of A on the CWX relationship with co-worker B. On the other hand, in a situation such as in Fig. 1b, situation 2_B, (same as the previous one but from the perspective of co-worker B), co-worker B (the low-quality LMX member), will be affected by (1) negative feelings (unfairness, jealousy…) due to their LMX dissimilarity, as explained above, and (2) a low LMX relation to the leader. In this case, both, (1) and (2) would make this co-worker present a very negative view of the CWX relationship.

The second significant insight that contradicts the original statements of Balance Theory appears when both co-workers experience low LMX quality (situation 4_A in Fig. 1a and situation 4_B in Fig. 1b). In this case, both of them would have negative feelings towards the workplace, and, as a consequence, would tend to perceive

CWX negatively. Additionally, even if they may feel commiserate with each other, most likely they will see each other as nonreliable individuals, leading to both perceiving a low-quality CWX between one another (thereby contradicting the Balance Theory).

Furthermore, even if it could be thought that the organizational citizenship behaviour of high-quality LMX members should be welcomed by low-quality LMX members, thereby pressing them to reciprocate, authors such as Bowler et al. (2010), using Attribution Theory, suggest that low-quality LMX members, make a negative attribution of OCB of high-quality LMX members. These scholars argue that observers not directly involved in behavioural interactions perceive them more negatively. From the co-worker perspective, the good behaviour of a high-quality LMX member is internally-driven, based on creating a good impression and often due to sycophantism (Bowler et al. 2010).

Based on our previous arguments, we cannot expect two co-workers with different levels of LMX to perceive the relationship between them (CWX) in the same way. Additionally, the Balance Theory assumption with regard to the high-quality CWX relationship among two low-quality LMX members cannot be expected to hold.

In sum, we argue that the perception of a co-worker regarding the CWX depends on two key facts. Firstly, *as maintained by Balance Theory*, it depends on the similarity of the relationship between the leader and the other co-worker in the same triad. Secondly, *as maintained by LMX Theory*, the co-workers' perception of their CWX within the triad also depends on the quality of their own LMX (their own relationship with their leader). Indeed, based on LMX Theory, several scholars (Lee 2001; Sias and Jablin 1995; Vecchio et al. 1986) posit that employees of low-quality LMX tend to see the workplace as less fair than those who maintain high-quality relationships with their supervisors. This fact causes these employees to perceive their relations with co-workers as more negative (Tse and Dasborough 2008) than their counterpart co-workers with high-quality LMX (Mueller and Lee 2002). Employees with high-quality LMX are more likely to be keen to develop friendships at work, since they have affective bonds in their relations and because they are aware of the benefits they receive (Cogliser and Schriesheim 2000; Tse and Dasborough 2008). They are also said to be more cooperative in attaining goals, and to exchange more information and share ideas and resources (Lee 2001). On the other hand, co-workers that experience low-quality LMX will be less pro-social (Bowler et al. 2010) and will identify themselves less with the team (Tse et al. 2012).

The ideas above can be summarised in Fig. 1a, b, where the quality of relationships of triads (1 leader, 2 co-workers) can be seen from each co-worker's perspective. We assume that co-workers perceive their own relationships differently (Fig. 1a vs Fig. 1b).

The main differences between our theory and that of Sherony and Green can be compared by observing Figs. 1a, b and 2, where we have outlined a summary of our theory and of the Sherony and Green model. The quality of each co-worker relationship with the leader will influence the co-worker perceptions regarding the relations he/she holds with co-workers in such a way that when co-workers experience a low-quality relationship with their leader, then they
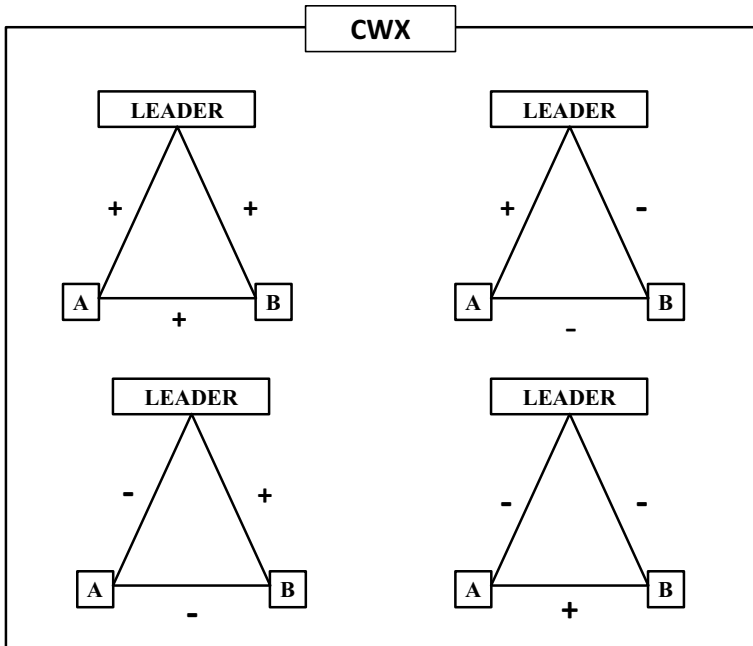
Fig. 2 Balance Theory. LMX–CWX triads. "A" and "B" refer to different co-workers. The + sign refers to positive relationships, and the—sign, to negative relationships

will be more likely to perceive their relation with their co-workers to be of low quality in addition to the effect of the similarity/dissimilarity of the quality of their own and their co-worker's relationship with their leader. In contrast, when co-workers experience a high-level relationship with their leader, then they perceive their relationships to their co-workers to be of higher quality: the higher this quality becomes, the higher the quality of the relationship of each co-worker with their leader, and when two co-workers experience a low-quality LMX then they will most likely show a low-quality CWX (Fig. 1a, b), which contradicts the assumptions of the Balance Theory (Fig. 2).

Our reasoning leads us to infer the following hypotheses:

H1 LMX quality perceptions of employees within a dyad interact to form co-workers´ perceptions of the CWX quality.

H1a When LMX quality of employees within a dyad is high for both subordinates, co-workers' perception of CWX quality is also high.

H1b When LMX quality of employees within a dyad is different, co-workers' perception of CWX quality is affected by the quality of LMX they experience, and

hence the high-quality LMX member would perceive the CWX with the other co-worker more positively than the low-quality LMX member.

H1c When LMX quality of employees within a dyad is low for both subordinates, co-workers' perception of CWX quality is also low.

2.2 Extending balance theory: analysing the moderating effect of within-team average LMX and LMX differentiation

As Equity Theory (Adams 1963) states, the perception of inequity brings negative feelings and changes employee's behaviors. In a similar line, and according to Relative Deprivation Theory, individuals experience negative feelings when they compare the rewards they receive with those received by their peers, and they perceive that they have received less than others (Adams 1965; Crosby 1976). Frequently, given the absence of objective standards for evaluating relationship quality, others' relationships are used as a benchmark for comparison (Martin et al. 2018). Relative deprivation has been proven to be inversely related to LMX quality (Bolino and Turnley 2009), and hence the lower the quality, the stronger the feelings of relative deprivation. This theory posits that relative deprivation is also stronger when the amount of subordinates that possess the desired outcome is higher. Based on these ideas, Bolino and Turnley (2009) propose that the relationship between subordinate perceptions of LMX quality and feelings of relative deprivation is moderated by the proportion of employees with high-quality versus low-quality LMX. Given that we have theorised before that feelings of relative deprivation are associated to low-quality CWX, the relation between LMX and CWX is also expected to be moderated by the relative number of employees with high-quality versus low-quality LMX.

Boies and Howell (2006) analysed, at the team level, the relationship between within-team average LMX, LMX differentiation and conflict among subordinates at the team level. These authors demonstrated that LMX is negatively related to team conflict. Therefore, in line with the results of certain previous studies (Boies and Howell 2006; Bolino and Turnley 2009), we expect that a low-quality LMX subordinate would perceive the CWX relation with a specific co-worker as being more negative and conflicting the greater the comparative difference, not only with such a specific team mate, but also with the rest of the team. Our argument is based on the idea that he/she would experience (1) stronger feelings of relative deprivation (Bolino and Turnley 2009), (2) more conflict at team level (Boies and Howell 2006) and, in consequence, (3) less pro-social behaviour and lower quality of CWX (Martin et al. 2018). Consequently, for a low-quality LMX subordinate, the relationship between LMX and the perception of CWX quality would be more negative the higher the average within-team LMX (he/she would feel more relatively deprived) and the lower the LMX differentiation.

The opposite occurs for high-quality LMX members. High-quality LMX subordinates tend to see the workplace through rose-tinted glasses. A high-quality LMX subordinate does not suffer from relative deprivation and therefore the higher the similarity of his/her LMX quality with his/her co-worker and with the rest of the

team, the higher the quality he/she will perceive with respect to the relation with his/her co-worker. However, if his/her co-worker holds a low-quality LMX, then a high LMX differentiation would add extra deprivation feelings to his/her co-worker, and he/she would show antagonism towards the peer subordinate, thereby worsening the relationship between them.

Special attention is deserved to what in education are known as the Teacher's Pet Phenomenon and the Teacher's Victim Phenomenon (Sias and Jablin 1995). The teacher's pet refers to a particular student experiencing very differential (positive) treatment from the part of the teacher. The literature on education suggests that the relation between the teacher and the teacher's pet have strong consequences on the relationship among the rest of the students, with the teacher's pet being looked upon negatively and being rejected by the other students (Martin 1984). Similarly, in the organizational context, those subordinates with extremely high-quality LMX are not well accepted by the rest of the co-workers, especially by those co-workers that experience low LMX quality (Sias and Jablin 1995). In contrast, the Teacher's Victim refers to a particular student who is neglected or mistreated by the teacher (Martin 1984). Interestingly, the education literature posits that whereas the teacher's pet is rejected by most classmates, the teacher's pet tends to sympathise with the teacher's victim. Analogously, if we translate these phenomena to the organizational context, we expect low-quality members not perceiving a high-quality CWX regarding their relationship to the leader's favourite worker, who is the co-worker (if there is any) that holds a very high LMX quality and receives very differential treatment from all the rest (Sias and Jablin 1995). We also expect the leader's pet to sympathise with the leader's victim (if there is any).

Summarizing, we argue that when, in a dyad, both high-quality LMX exists, and the average team LMX is high, with low differentiated LMX, then the atmosphere at work will be very positive, thereby enhancing the already high-quality CWX between the members of the dyad. In contrast, in a situation in which both members of a dyad hold low-quality LMX, and the average team LMX is low, then the atmosphere at work will be very negative (Boies and Howell 2006), which will be further emphasised if the LMX differentiation is high.

When the focal co-worker maintains a low-quality LMX while the other member of the dyad shows a high-quality LMX in a team where the average LMX is high, we would be in a situation at which the focal co-worker would be, or would be close to be, the leader's victim, and, consequently, he/she would perceive the relation towards his/her high-LMX co-worker very negatively. On the opposite situation, we expect that when the focal co-worker is the leader's favourite worker (high LMX with low within-team average LMX), he/she would present medium-level relationships towards the other co-worker in the dyad if that member holds a low-quality LMX, as a joint effect of him/her feeling pro-social and collaborative towards others while being negative as a consequence of the dissimilarity. This focal team member would perceive a higher quality CWX if the other member holds a high-quality LMX, as both would be (or would be close to being) the leader's favourite worker.

The highest perception of CWX is expected to happen in the case of both co-workers holding high-quality LMX in a positive atmosphere (high within-team

average LMX and low differentiation), whereas we expect the lowest perception of CWX, for the case of the focal co-worker being the leader's victim in his/her relation to a high-quality LMX co-worker with a high average LMX and high LMX differentiation.

H2a Average within-team LMX moderates the relationship between co-workers' LMX and co-workers' perception of CWX.

H2b Within-team LMX differentiation moderates the relationship between co-workers' LMX and co-workers' perception of CWX.

3 Methods

3.1 Sample and procedure

The study was conducted using a sample of R&D teams who form part of a consortium of research organizations that operate in one European country (for anonymity reasons the country will not be disclosed until the paper is accepted for publication). The mission of this consortium is to promote, coordinate, develop and disseminate multidisciplinary scientific and technological research in order to contribute towards economic, social and cultural development and the advancement of knowledge. We began by meeting the leaders of several of these teams in order to better understand how these teams function. Phone interviews were then conducted with each team leader in order to establish the team's willingness to participate in this study.

The questionnaire asked each team member about the quality of his/her leader–member exchange, the co-worker exchange of all team members, and other information related to team and individual issues. We received 1873 observations on subordinates' perceptions of their dyadic relationships with their co-workers. For each observation, the data on the co-worker was matched within the same dyad. Observations with missing dyad data were removed, resulting in a final number of 1,580 observations. These observations corresponded to co-workers' dyads within 98 teams, corresponding of a total of 36.4% of rate response. The team size was, on average, 8.5 members with a standard deviation = 3.62 (Table 1). The average amount of time within the team under the same leader was 43.18 months (standard deviation = 38.40), and the within-team average LMX was approximately 3.72. In translating the questionnaire items, the method of back translation was followed, which has been widely used in cross-cultural leadership studies (Ensari and Murphy 2003; Zagorsek et al. 2004).

A hierarchical multi-level regression analysis was performed. We worked at the individual level, whereby the dependent variable was the perception of CWX by one of the co-workers in the dyad (whom we call co-worker A).

Table 1 Descriptive statistics of our data

	Variable	Mean	St. dev.	1	2	3	4	5	6	7	8	9
1	A CWX	3.586	0.819	1								
2	B CWX	3.586	0.819	0.360**	1							
3	Time in team under same leader	43.177	38.406	−0.015	0.043	1						
4	Team size	8.448	3.619	−0.047	−0.047	0.090**	1					
5	Same gender	0.524	0.500	0.016	0.016	0.025	−0.040	1				
6	A LMX	3.722	0.728	0.229**	0.142**	0.033	0.138**	−0.015	1			
7	B LMX	3.722	0.728	0.142**	0.229**	0.032	0.138**	−0.015	0.215**	1		
8	Within-team average LMX	3.722	0.441	0.176***	0.176***	0.053*	0.227**	−0.032	0.607***	0.607***	1	
9	Within-team LMX differentiation	0.551	0.231	−0.113**	−0.113**	−0.092***	−0.176***	0.023	−0.283**	−0.283**	−0.466**	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed); n=1579

3.2 Measures

3.2.1 Leader–member exchange (LMX)

We asked each team member about their relationship with their leader. The LMX was measured by applying the 7-item scale of Graen and Uhl-Bien (1995). This scale consists of seven items that characterise various aspects of the relationship between supervisor and subordinate, including trust, support, and mutual respect. Sample items include "How well does your leader understand your job problems and needs?" and "Regardless of how much formal authority he/she built into his/her position, what are the chances that your leader would use his/her power to help you solve problems in your work?".

3.2.2 Co-worker exchange (CWX)

Following Sherony and Green (2002), we adapted the 7-LMX scale (Graen and Uhl-Bien 1995) for co-workers. Each team member was asked to rate their relationship with each of their co-workers (all of whom reported to the same leader), and hence data was obtained on each of the co-workers' perspective with respect to the relation held by the two members of each dyad. The correlation coefficient between the two perspectives was found to be rather low and equal to 0.36.

3.2.3 Within-team average LMX

The average LMX value was calculated within each team.

3.2.4 Within-team LMX differentiation

Within-group standard deviation was employed to operationalise LMX differentiation for each team (cf. Roberson et al. 2007). Higher within-team standard deviation represents a greater variability in team members´ perceptions of LMX quality.

3.2.5 Team size

The number of team members within each team was taken into account.

3.2.6 Tenure with team leader

This parameter was measured as the amount of time an employee had been working in the team with the same team leader. The length of time has been demonstrated to be highly related to social exchanges.

3.2.7 Same gender

We consider a dummy variable indicating similar/dissimilar gender to control for demographic similarity as it may affect coworkers relationships.

4 Results and discussion

4.1 Analysis of the agreement between CWX perceptions

We started by validating the CWX measure. We carried out a principal factor analysis using varimax rotation which yielded high loadings (all higher than 0.7) and just one factor for CWX. Cronbach alpha was found to be equal to 0.89, suggesting a strong internal consistency.

CWX is a dyad-level variable, not a team level variable, so that there are no reasons to expect a very high agreement between the perspectives of all co-workers within a team as the quality of the relationships vary across dyads. Consequently, what we were interested in was in measuring the degree of agreement between the two members of the same dyad. To calculate the within-dyad agreement we started by calculating the interrater reliability. The mean inter-group agreement coefficient (r_{wg}) was 0.83 for the uniform distribution, 0.7 for a lightly skewed distribution, 0.56 for a moderate skewed distribution and 0.61 for the normal distribution. We calculated the interclass coefficients ICC(1) and ICC(2). The resulting value of ICC(1) was 0.37, suggesting that the ratings given by co-workers could hardly be used interchangeably with the average dyad score. We also calculated the reliability of the dyad-level CWX mean by using the ICC(2) (Biemann et al. 2012) which was found to be equal to 0.68. This index measures reliability in terms of group consistency but the value we obtained was just around the limit for being accepted, which suggest certain unreliability for the aggregation of CWX at the team level. While the calculated scores suggest the possibility of aggregating the perspective of both co-workers, they also point at some disagreement between them. Our results then pushed us to continue our analysis to find out the reasons for the divergence in CWX perspectives.

4.2 Hierarchical multi-level regression analysis

A hierarchical multi-level regression analysis was carried out. In the empirical analysis, each of the two co-workers in a dyad is considered. For the sake of clarity, our results focus on one of the co-workers, who will be referred to as "co-worker A". The other co-worker within the same dyad acts as a dependent variable and has been called "co-worker B". Our data shows that the correlation between CWX perceptions for the two members of a dyad is equal to 0.36 (Table 1), which presents a relative agreement between the two members of a dyad. In our case, this figure is higher than in most of the empirical studies appearing in the literature. For example, in the case of Sherony and Green, this correlation was equal to 0.18 and was therefore not statistically significant. Our results cannot be compared with other results in the literature because they lack specific descriptive statistics for the different perspectives of the two co-workers.

Interestingly, the correlation between LMX quality for a focal team member and how that member perceives his/her relation towards his/her co-worker is positive and highly significant and equal to 0.23 (Table 1), showing that those that keep a

high-quality relationship with their leader perceive their co-workers' relationships more positively than those that experience a low-quality LMX. This result is key in our research as it would contradict the Balance Theory assumption that two co-workers with low LMXs are expected to hold high CWX. However it is in line with other subsequent empirical work as the results of Sherony and Green (2002) whose data showed this correlation to be statistically significant and equal to 0.34, which is even higher than in our case. Omilion-Hodges and Baker (2013) also found that LMX quality enhances CWX.

The remaining descriptive statistics presented in Table 1 suggest that, although certain correlations differ significantly from zero, they do not represent problems of multicollinearity.

In Tables 2 and 3, the results of the multi-level hierarchical regression analysis are presented. The dependent variable used in this analysis was the perception of CWX from the point of view of one of the co-workers, whom we have called "co-worker A". The other co-worker in the same dyad has been called "co-worker B". Interestingly, demographic similarity with respect to gender does not seem to affect CWX relationships, nor the time spent working at the team under the same leader. This suggests that CWX relationships are more related to a good leadership than gender similarity or the time spend with the leader. Team size seems to negatively affect perceptions of CWXs from which we can deduce that smaller groups are more likely to become close-knits teams than bigger in size teams.

From the results, it can be observed that the coefficient associated to LMX as perceived by co-worker A (A LMX) is positive and highly significant, suggesting that the higher the LMX he/she holds with the leader, the higher the quality he/she perceives the CWX relationship to be with co-worker B (in agreement with the positive correlation between LMX and CWX that we mentioned in the previous paragraphs). Analogously, the direct effect of the relationship that the co-worker within the same

Table 2 Multi-level regression analysis (dependent variable: perception of CWX from the point of view of co-worker A)

	Model 1			Model 2		
	Estimate	t	Sig.	Estimate	t	Sig.
Intercept	−0.019	−0.531	0.595	−0.034	−0.970	0.332
Time in team under same leader	−0.018	−0.721	0.471	−0.021	−0.879	0.380
Team size	−0.089	−3.602	0.000	−0.095	−3.843	0.000
Same gender	0.036	0.733	0.463	0.027	0.564	0.573
A LMX	0.219	8.737	0.000	0.224	8.969	0.000
B LMX	0.108	4.303	0.000	0.113	4.523	0.000
A LMX * B LMX				0.093	3.800	0.000
-2 Restricted log likelihood	4397.35			4388.56		
Akaike's information criterion (AIC)	4399.35			4390.56		
Hurvich and Tsai's criterion (AICC)	4399.36			4390.56		
Bozdogan's criterion (CAIC)	4405.71			4396.92		
Schwarz's Bayesian criterion (BIC)	4404.71			4395.92		

Table 3 Multi-level regression analysis (dependent variable: perception of CWX from the point of view of co-worker A)

	Model 3			Model 4			Model 5			Model 6			Model 7		
	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig	Estimate	t	Sig.
Intercept	−0.019	−0.541	0.589	−0.022	−0.572	0.567	−0.029	−0.748	0.454	−0.038	−1.054	0.292	−0.047	−1.280	0.201
Time in team under same leader	−0.021	−0.847	0.397	−0.023	−0.936	0.349	−0.025	−1.031	0.303	−0.023	−0.960	0.337	−0.025	−1.023	0.307
Team size	−0.093	−3.686	0.000	−0.097	−3.855	0.000	−0.100	−3.958	0.000	−0.096	−3.834	0.000	−0.094	−3.740	0.000
Same gender	0.036	0.747	0.455	0.028	0.573	0.567	0.028	0.582	0.561	0.029	0.593	0.553	0.027	0.566	0.572
Within–team average LMX (avLMX)	−0.025	−0.609	0.542	−0.021	−0.521	0.603	−0.038	−0.896	0.371	−0.035	−0.732	0.464	−0.029	−0.624	0.533
LMX differentiation (LMXdiff)	−0.050	−1.826	0.068	−0.023	−0.818	0.414	−0.029	−1.002	0.317	−0.029	−0.932	0.352	−0.023	−0.746	0.456
A LMX	0.220	6.979	0.000	0.252	7.680	0.000	0.241	7.186	0.000	0.281	7.785	0.000	0.276	7.624	0.000
B LMX	0.109	3.456	0.001	0.091	2.779	0.006	0.081	2.406	0.016	0.079	2.193	0.028	0.074	2.050	0.040
A LMX * B LMX				0.104	2.984	0.003	0.119	3.263	0.001	0.084	3.237	0.001	0.102	3.587	0.000
avLMX * A LMX				0.055	1.930	0.054	0.058	2.037	0.042						
avLMX * B LMX				−0.079	−2.773	0.006	−0.076	−2.653	0.008						
avLMX * A LMX * B LMX							0.029	1.366	0.172						
LMXdiff * A LMX										−0.063	−2.709	0.007	−0.061	−2.615	0.009
LMXdiff * B LMX										0.045	1.928	0.054	0.047	2.017	0.044
LMXdiff * A LMX * B LMX													−0.028	−1.547	0.122
-2 Restricted log likelihood	4404.00			4398.94			4402.963			4397.918			4401.734		
Akaike's information criterion (AIC)	4406.00			4400.94			4404.963			4399.918			4403.734		

Table 3 (continued)

	Model 3			Model 4			Model 5			Model 6			Model 7		
	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig.	Estimate	t	Sig	Estimate	t	Sig.
Hurvich and Tsai's criterion(AICC)	4406.00			4400.95			4404.965			4399.921			4403.736		
Bozdogan's criterion (CAIC)	4412.36			4407.30			4411.320			4406.276			4410.090		
Schwarz's Bayesian criterion (BIC)	4411.36			4406.30			4410.320			4405.276			4409.090		
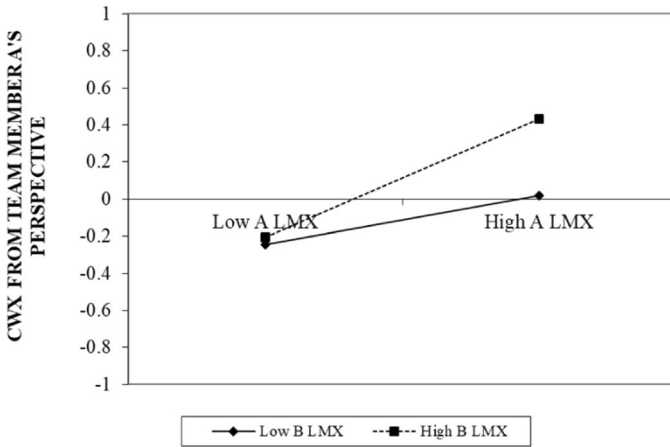
Fig. 3 Interaction effect between the LMX of each of the two members in a dyad on the quality of CWX from the perspective of team member A

dyad (co-worker B) holds with the team leader (B LMX), is positive and statistically significant (see Model 1, Table 2). Furthermore, as predicted in Hypothesis 1, the LMX held by each of the two dyad members interacts in their relation to the perception of the CWX from co-worker A (see Model 2, Table 2). This interaction is positive and highly significant (estimate = 0.093, p-value = 0.000), thereby providing support to Hypothesis 2. In Fig. 3, this interaction is analysed in greater depth, whereby the interaction effect has been presented for low and high values of the LMX held by co-worker A and co-worker B. A low value has been assumed to be the mean minus one standard deviation, and a high value to be the mean plus one standard deviation. From Fig. 3, we deduce that low-quality LMX members perceive CWX as low quality regardless of the quality of the relationship that the other co-worker holds with the leader, as hypothesised by H1b and H1c. In contrast, a high-quality LMX member (high A LMX) perceives his/her relationship to the other co-worker (co-worker B) in the same dyad differently depending on the quality of the relationship between co-worker B and the leader. If co-worker B also holds a good relationship with the leader, then A perceives a high-quality CWX with B, which provides support to H1a. If co-worker B holds a low-quality LMX with the leader, then A will perceive CWX as medium-quality, in agreement with H2b.

While the three-way interaction between A LMX, BLMX and average within-team LMX was found to be not significant (Model 5, Table 3), the two-way interactions between these three variables were all significant (Model 4, Table 3), which provides support to Hypothesis H2a. We have analysed this interaction in greater depth by plotting the effect in Fig. 4. We found that the lower perception of A CWX is found for the case of low-quality A LMX, high-quality B LMX and high-quality average within-team LMX. This could be the case for when A is the leader's victim or simply one of the subordinates with a lower relationship to the leader while on average the team holds a high-quality relationship to the leader. In this case, A would perceive his/her relation to B (who experiences a high-quality LMX) to be of
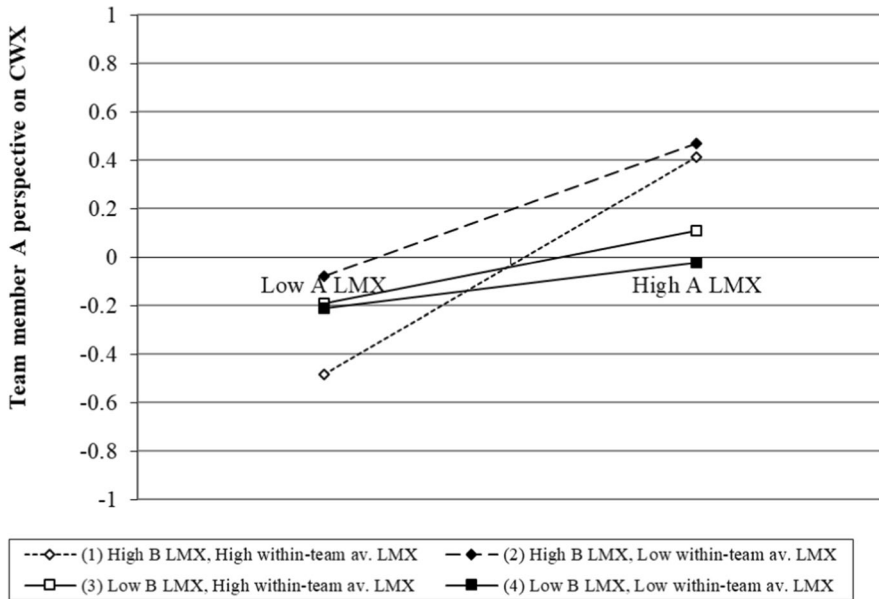
Fig. 4 Moderation effect of within-team average LMX on the relationship between individual LMX relationships in a dyad and CWX from team member A's perspective

a very low quality. As expected A would feel highly relatively deprived, emphasised by the high proportion of co-workers with high-quality LMX (since the team holds on average a high LMX). Perceptions of low-quality LMX members only slightly improve when either the other co-worker holds low-quality LMX or when the average within-team LMX is low, suggesting that they do not feel so relatively deprived when many other members of the team are in the same situation.

On the other hand, as expected, the highest co-worker relationship is perceived by high-quality LMX members with high-quality LMX co-workers (regardless of the average quality of the team LMX). In the case of the existence of a leader's favourite, that individual would be in this situation. Co-worker A seems to perceive a medium-quality CWX when co-worker B presents low LMX quality and A experiences a high-quality LMX.

Finally, it was also found that, while the two-way interactions between A LMX, B LMX and within-team LMX differentiation were all significant (Model 6, Table 3), which provides support to Hypothesis H2b, the three-way interaction between these three variables was not significant (Model 7, Table 3). This interaction has been outlined in Fig. 5. As before, A perceives the highest quality of co-worker relationships in the case that he/she presents a high-quality relationship with the leader and the other co-worker in the dyad also exhibits a high-quality LMX, while the quality is slightly lower if the other co-worker presents low-quality LMX. In both cases, if differentiation is lower, A's perception of CWX is higher, suggesting that lower differentiation promotes harmony and cooperation (Hooper and Martin 2008). If the co-worker in the same dyad exhibits low LMX,
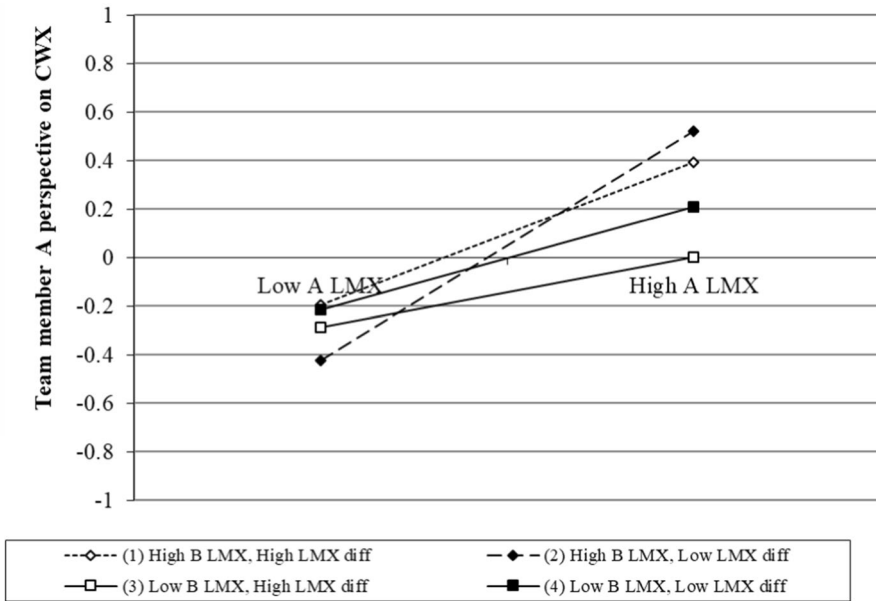
Fig. 5 Moderation effect of within-team LMX differentiation on the relationship between individual LMX relationships in a dyad and CWX from team member A's perspective

then the CWX quality perceived by A turns to medium level, and this is lower for the case where differentiation is high.

Again, the lowest perception of CWX from the point of view of A is for the case of low-quality A LMX and high-quality B LMX with low average LMX differentiation, or low-quality A LMX and low-quality B LMX with high average LMX differentiation. In the first case, A could be the leader's victim or B could be the leader's favourite under a situation of low average differentiation, while in the second case both A and B would be neglected by the leader under a case of high differentiation. In either case, A would perceive a negative atmosphere and a negative CWX in relation to B.

As a robustness test, we carried out similar analyses assuming random effects models and we reached to similar results.

5 Conclusions and future research

In the present work, we demonstrate that the well-known and well-accepted model of Sherony and Green based on the Balance Theory, which has been assumed for almost 20 years, may not hold true to all the cases.

Our results provide evidence by demonstrating that similarity and dissimilarity in LMX is not the only relevant driver that determines co-workers' relationships. Subsequent works support that dissimilarity is associated with negative outcomes, such as higher levels of turnover, less helpful behaviour in the workplace, and

greater conflict (Bashshur et al. 2011; Liao et al. 2008; Tepper et al. 2011), which negatively affect relationships at work. However, in order to fully understand the resulting CWXs and its consequences at the individual and dyad level when there is dissimilarity in LMXs, individual perspectives must be taken into consideration from each of the two subordinates. For the CWX analysed at the individual level, we suggest that the level of the quality of the LMX experienced by each co-worker will decidedly influence both his/her perceptions regarding the workplace and of the CWX relationship held with the other co-worker in the same dyad.

Our work modifies previous assumptions mainly in two aspects. First, based on the highly significant and positive coefficient of LMX (from the perspective of a focal co-worker), it cannot be assumed that two team members that both keep a low-quality relationship with their leaders will hold a high-quality relationship with each other. On the contrary, they will most likely present low pro-social behaviour, and will tend to perceive the work atmosphere negatively and show negative attitudes towards work. Even if they want to change this situation, they will presumably put more effort into in-role activities rather than on extra-role behaviours (Kamdar, et al. 2006; Liden et al. 2006) and will, consciously or unconsciously, avoid friendly relationships at work, particularly with those members who can be seen as part of those "dangerous friendships" since they do not hold good relationships with the leader. Second, we argue that CWX relationships are based on perceptions in such a way that two members of the same dyad may perceive their relation in a different way. This is in line with the results of some previous works. Although Omilion-Hodges and Baker (2013) did not specifically noted that each co-worker may show a different perspective, their results are partly in accordance with our hypotheses. Consequently, the dyad level may not be the most appropriated in all cases. For certain studies, we may need to step down at the individual level of analysis to extract all value from our analyses (Terpstra-Tong et al. 2020).

Finally, from our results we can conclude that CWX perceptions in the dyad depend not only on the similarity of the LMX within the dyad and the quality of LMX that each member experiences, but also on the average LMX at the team level and the level of differentiation that the leader holds at the team level. While a higher within team LMX quality enhance the work atmosphere, and promotes high-quality CWX between high-quality LMX members, it may affect negatively the perception of CWXs of low-quality LMX members because their feeling of relatively deprivation is emphasised by the high proportion of co-workers with high-quality LMX (since the team holds on average a high LMX). Perceptions of low-quality LMX members only slightly improve when either the other co-worker holds low-quality LMX or when the average within-team LMX is low, suggesting that they do not feel so relatively deprived when many other members of the team are in the same situation. In our work we also draw some conclusions regarding the leader's victim and the leader's pet by extending the Teachers's Pet Phenomenon to our setting. While the leader's pet tends to symphyses with the leader's victim the reverse does not occur.

5.1 Practical implications and future research

This study offers major implications for practice while at the same time it opens a whole avenue for future research. Leaders should try not to differentiate greatly between team members since those that hold a low-quality relationship with the leader may then present a bias towards perceiving that they do not deserve such treatment and they will therefore become less pro-social and will show negative feelings towards the workplace. In contrast, and in line with other previous research (Cogliser and Schriesheim 2000; Tse and Dasborough 2008), it seems that leaders should enhance high-quality relationships with their subordinates, thereby promoting affectivity towards them and friendship at work. Those that achieve this, will foster high-quality relationships, and cohesion and identification among team members, who will perceive the workplace as positive and motivating, which in turn will determine team members' behaviour and performance (Chiaburu and Harrison 2008; Tse and Dasborough 2008).

Differences in perceptions will in turn, predict employee behaviour. When employees regard certain role behaviours as part of their job (in-role), then the behaviour occurs frequently (Coyle-Shapiro et al. 2004). In this respect, employee role perceptions are shown as critical to achieve desired behaviour from employees. The findings by (Kamdar et al. 2006) showed that employee perceptions of the definition of the OCB role were associated with behaviour because employees who believed OCB to be a role obligation were inclined to engage in the behaviour, and because employees who denied that OCB was a role obligation were inclined to respond to perceived unfair treatment by withholding citizenship contributions (Kamdar et al. 2006, p. 851). For social exchange and role-identity theorists, roles are defined in terms of the responsibilities and behavioural obligations perceived by an individual within a specific organizational setting (Kamdar et al. 2006). In this respect, supervisory treatment can influence subordinate beliefs regarding their obligations towards peers and their obligations to the organization in general. However, individuals often differ in role perceptions since they rely on different social cues (Salancik and Pfeffer 1978). Psychological contracts theory suggests that employee roles are not fixed and that employees establish their roles via environmental cues from formal and informal structures of the organization (Robinson and Morrison 1995). It has been suggested that employees make inferences about the quality of the exchange relationships they have with their organizations based on their perceptions of various aspects of their job and, in response to these perceptions, determine the amount of effort to put into their work (Ferris et al. 2002). Research coming from Van Dyne et al. (2008) showed that the relationship between quality LMX and organizational citizenship behaviours was moderated by employees' perceptions of their roles. They argued that supporting attitudes (helping and voice) from the part of subordinates to other co-workers is higher when employees have high-quality LMXs and when they view helping and voice as part of their job. As regards the case of CWXs, in-role and extra-role tasks are viewed as being dependent on their LMXs (Graen and Uhl-Bien 1995). Therefore, it is rational to think that if the employee perceives a high-quality LMX, he or she will receive cues that behaviour helpful to co-workers is expected. In the case that an employee perceives low-quality LMX, he

or she will not receive such cues. Supervisory treatment can influence subordinate beliefs regarding their LMX quality and obligations towards peers. Indeed, one key function of supervisory work is to ensure that subordinates are ready and willing to make peer-focused contributions. Consequently, an immediate implication for practice is that leaders should then try to offer subordinates positive cues concerning the relationships they hold and about the expected helpful and citizenship behaviours, while assuming these behaviours as being in-role.

Leaders, to be successful, should also devote more attention to the specificity of each individual, as team members' perceptions of the workplace can differ greatly based on the quality of LMX they hold. Regular one-on-one and group meetings should be considered in order to satisfy the individual needs (Omilion-Hodges and Baker 2013). Therefore, leaders, by developing a good quality relationship with each subordinate and by providing the right cues about their behaviour, seem to be able to determine subordinate feelings and perceptions to a major degree. Leaders can promote strong social identification (Tse et al. 2012), friendship at work (Cogliser and Schriesheim 2000; Tse and Dasborough 2008) and trust among co-workers (Lau and Liden 2008), which in turn determines CWX relationships through which the employees' reactions and attitudes towards work are defined. Alternatively, leaders should try to show a more transparent behaviour in the relation towards their subordinates, with clear indications of how they can achieve rewards and benefits (Omilion-Hodges and Baker 2013). By doing so, low-quality LMX members' perceptions of unfairness due to different treatment would be smoothed, thereby leading these subordinates to feel less unsatisfied and less negative and this can even trigger positive perceptions of the work atmosphere in the hope that the situation can be reversed. All this would lead these members to show attitudes of a more pro-social nature that stimulate cooperation at work.

We present this to be the first limitation of our work: leaders behaviour transparency should be included in future analysis as this measure is expected to moderate the relationship between LMX and co-workers' relationship. Another limitation stems from the fact that our sample belongs to a specific sector of R&D teams in a single country, where interactions are characterised by being strongly interdependent on a task. It would be desirable to test our hypotheses in other settings. Additionally, as in the majority of other studies, this study is cross-sectional, which limits the capacity of our results to infer causality.

While Sias and Jablin (1995) posit that co-workers are aware of the differential treatment on the part of the leader, they may not always be so conscious of such differences. Future research should focus on the analysis of how co-workers perceive the treatment that others receive and how this perception may affect their relationships with their co-workers. The benefits that high-quality LMX members receive may be evident on certain occasions, but on other occasions, they may not. As Lee (2001) states: "*Appearance of organizational justice may be more important than actual justice*" (Lee 2001, p. 1). Consequently, rather than taking into account LMX as perceived by the subordinate, researchers should take into account how each focal subordinate perceives his/her own LMX and how he/she perceives the LMX quality

of his/her co-worker, since the perception of differential treatment stems from these two perceptions.

Data availability The datasets generated during and/or analyzed during the current study are available from corresponding author on reasonable request.

Declarations

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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