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Are we in this together? Knowledge hiding in teams, collective prosocial motivation and leader-member exchange

Structured abstract

Purpose

Although organizations expect employees to share knowledge with each other, knowledge hiding has been documented among coworker dyads. The paper draws on social exchange theory to examine if and why knowledge hiding also occurs in teams.

Design/Methodology/Approach

Two studies, using experimental (115 student participants on 29 teams) and field (309 employees on 92 teams) data, explore the influence of leader-member exchange (LMX) on knowledge hiding in teams, as well as the moderating role of collective (team-level) prosocial motivation.

Findings

The results of experimental Study 1 showed that collective prosocial motivation and LMX reduce knowledge hiding in teams. Field Study 2 further examined LMX, through its distinctive economic and social facets, and revealed the interaction effect of team prosocial motivation and social LMX on knowledge hiding.

Originality/Value

This study complements existing research on knowledge hiding by focusing specifically on the incidence of this phenomenon among members of the same team. This paper presents a multi-

level model that explores collective prosocial motivation as a cross-level predictor of knowledge hiding in teams, and examines economic LMX and social LMX as two facets of leader-member exchange.

Keywords: knowledge hiding in teams; social and economic leader-member exchange; (collective) prosocial motivation

1 INTRODUCTION

Knowledge hiding, defined as an intentional attempt, by an individual, to conceal knowledge or information that has been requested by another person, regularly occurs in the workplace (Connelly et al., 2012). Much of the existing research on knowledge hiding has focused on interpersonal factors, such as distrust, that predict this behavior (Connelly et al., 2012; Černe et al., 2014). There seems to be an underlying assumption that employees hide knowledge from individuals who are distant or separate from them within the organization, because they have not established a social exchange relationship (Blau, 1964), which must be long-term, trust-based, reciprocal, and interdependent.

Teams have become the basic organizational working unit (Chen et al., 2013) and over 80% of the work conducted in Fortune 1000 companies is based on teamwork (Hollenbeck, Beersma, & Schouten, 2012). Many discussions and interactions take place in teams, and individual employees are frequently grouped into a team to work together (Barrick et al., 1998; Hu & Liden, 2015). Nonetheless, knowledge hiding may, in fact, occur among members of the same team. Each team member has individual goals, which he or she may value more highly than the team's goals (Heidemeier & Bittner, 2012; Knight, Durham, & Locke, 2001).

Indeed, there is some evidence that competition can exacerbate the effect of distrust on hiding (Černe et al., 2014; Hernaus et al., in press; Khumar Jha & Varkkey, 2018). When employees feel compelled to compete with each other, it may prompt them to hide knowledge to maximize their competitive advantage. Knowledge, embedded in the interactions of people,

tools, and tasks, provides a basis for competitive advantage in firms (Argote & Ingram, 2000). Further, individuals' self-interested behaviors can be contagious (Contractor, Wasserman, & Faust, 2006). As a result, when individuals hide knowledge from fellow team members, it may elicit a reciprocal response from team members (Černe et al., 2014), thereby prompting even more knowledge hiding in teams.

This study proposes that prosocial motivation, defined as the desire to protect and promote the well-being of others (Grant & Berg, 2012), reduces these effects. According to Bolino and Grant (2016), prosocially motivated employees care about the well-being of others. Prosocially motivated employees are therefore likelier to be concerned about establishing and maintaining the social-exchange relationships within their team (Bernerth et al., 2007); this in turn makes them likely to refrain from hiding knowledge from their team members. This may, however, be dependent on the team context, which is inherently shaped by leadership.

Leaders play an important role in shaping a team's collective understanding of how workplace interactions should unfold (Hollander, 1980; Shore et al., 2009). When leaders signal employees that knowledge hiding is practiced, tolerated, and expected, it further encourages the signaled employees to continue pursuing that course of action (Offergelt et al., in press). The relationships that develop between team members and their immediate supervisors set the stage for how team members respond to requests and interact with one another (Boies & Howell, 2006). Accordingly, this paper examines the role of leader-member exchange (LMX), i.e., a relationship-based approach to leadership that focuses on the dyadic relationship between leaders and each of their followers (Graen & Uhl-Bien, 1995) in shaping team members' knowledge hiding.

Two facets of LMX in teams are considered: social (SLMX) and economic (ELMX; Kuvaas et al., 2012), because both impact the interpersonal dynamics of the employee-leader relationship. ELMX, not only the broader construct of LMX which only encompasses social

relationships (corresponding to SLMX), is particularly interesting. ELMX does not entail a lack of leadership, but rather a specific pattern of interactions among leaders and followers directed toward a more transactional and calculative nature of exchange (Buch, 2015). Social LMX corresponds to the traditional notion of LMX (Graen, & Schiemann, 1978; Graen, & Uhl-Bien, 1995), and represents the quality of social and relational interaction between the leader and followers (Kuvaas et al., 2012). The main research question of this paper is as follows: what is the predictive role of team-level prosocial motivation and both forms of LMX, and their interplay, in explaining knowledge hiding among team members?

The first intended contribution of our research is to establish whether knowledge hiding occurs between members of the same team, who are assumed to have shared goals. This paper draws on existing research on knowledge hiding among individuals (usually in dyadic interactions; Connelly et al., 2012; Černe et al., 2014) who work together closely, and conceptualizes this phenomenon in the context of same-team membership. While Babič et al. (2018) and Škerlavaj et al. (2018) tested the role of individuals' prosocial motivation in preventing their own knowledge hiding, they conducted studies that examined knowledge sharing without a clear target (a field study) and in dyadic exchanges (an experiment). By contrast, the present paper focuses specifically on knowledge hiding among team members.

The second potential contribution of this research is to extend our knowledge of the antecedents of knowledge hiding (cf., Peng, 2013; Serenko & Bontis, 2016; Stenius et al., 2016). This paper draws on social exchange theory as a framework to understand how team-level prosocial motivation and LMX predict knowledge hiding among team members. In so doing, this study complements the recent studies of Zhao et al. (in press) and Offergelt et al. (in press) on the role of leadership in knowledge hiding, extends this research to a multi-level domain, and differentiates between SLMX and ELMX, two qualitatively different facets of LMX. This cross-level framework contributes to the understanding of how and why knowledge

hiding among the members of the same team occurs, and provides practical guidance for managers and organizations on minimizing such behavior.

To achieve these aims, two studies were conducted: an experiment and a field study. Study 1 tests the direct effects of prosocial motivation and manipulated LMX on knowledge hiding in teams. An experimental design is used in Study 1 to allow for inferences to be made about the causality of the proposed relationships, to rule out the possibility of other variables influencing the results, and to alleviate concerns of reverse causality. Study 2 aims to replicate and provide external validity for those findings, disentangle the disparate effects of ELMX and SLMX, and examine their interplay with prosocial motivation.

2 THEORY & HYPOTHESES

Knowledge hiding consists of three related behaviors: *playing dumb*, where an individual pretends not to know the relevant information; *evasive hiding*, where an individual pretends that the information will be forthcoming, even though he or she intends to conceal it; and *rationalized hiding*, where an individual provides an accurate explanation of the reasons why the information is not forthcoming (Connelly et al., 2012). Knowledge hiding explicitly excludes cases in which employees fail to share knowledge due to ignorance or unintentional error (Connelly et al., 2012). Consider the following example of knowledge hiding: An employee receives a request for knowledge, and engages in activities designed to conceal the requested knowledge (e.g., pretending to not know the relevant information).

Although the concept of knowledge hiding is still novel, several important findings are available. Connelly et al. (2012) first defined knowledge hiding in an organizational realm and crafted an initial nomological network of its antecedents, consequences, and contingencies. Černe et al. (2014) explored creativity, as its consequence. Based on a social exchange perspective, they found a negative relationship between knowledge hiding and the knowledge hider's creativity, as well as a moderating role of a mastery motivational climate. Subsequently,

additional research by Connelly and Zweig (2015) highlighted some additional consequences of knowledge hiding at work, such as interpersonal distrust and the infliction of harm on interpersonal relationships. Zhao et al. (in press) extended the line of knowledge hiding antecedents into leadership, and found that LMX promotes organizational identification, thereby reducing levels of employees' knowledge hiding.

However, none of the existing studies have specifically examined knowledge hiding in the context of work teams. In contemporary organizations, many tasks, obligations, and work activities are completed by teams of employees, working with mutual dependence and mutual responsibility, toward the attainment of common goals (Katzenbach & Smith, 1993; Wenger & Snyder, 2000). Accordingly, team members are generally expected to share knowledge and help each other (Foss, Woll, & Moilanen, 2013; Gagné, 2009; Hansen, 2002; Hansen, Mors, & Løvås, 2005), and knowledge sharing is influenced by the extent to which hiders and targets have a personal relationship (Zhang & Jiang, 2015). However, this study does not focus on the lack of knowledge sharing in teams. Because knowledge hiding is, by definition, an intentional act, its antecedents are different from those of a mere lack of knowledge sharing (Connelly et al., 2012). Because teams are composed of individuals with diverse knowledge, strengths, and weaknesses, knowledge hiding in a team setting may also have significant consequences. This paper is therefore interested in the extent to which team members actively conceal information from each other, when such information has been specifically requested.

2.1 Team prosocial motivation

Employees do not usually perform their tasks with absolute autonomy, and many work-related goals are, in fact, achievable only through interdependent efforts (Kiggundu, 1983; Liden et al., 2006). Teams must therefore coordinate their actions to ensure that members are able to accomplish their goals (Chen & Kanfer, 2006; Katzenbach & Smith, 1993). The ensuing

interactions suggest that team members will be influenced by the views, motivation (Grant & Berg, 2011; Grant & Berry, 2011; Hu & Liden, 2015; Bolino & Grant, 2016), effectiveness, and performance of other team members (Cheung et al., 2016; Lin, 2010; Katzenbach & Smith, 1993).

Prosocial motivation has been theorized at multiple levels of analysis (Beersma & De Dreu, 1999; Grant, 2007; Grant & Berry, 2011). However, very limited empirical research exists on team-level (i.e., collective) prosocial motivation (with the notable exception of Hu & Liden, 2015), and, to the best of our knowledge, no multi-level study has, to date, focused on the emergence of this phenomenon (Chen, Mathieu, & Bliese, 2005). The development of prosocial motivation is unlikely to be isomorphic at the individual and team levels, and the evolution, incidence, and outcomes of collective prosocial motivation may differ from individual prosocial motivation (Van Lange et al., 1997). The study by Hu and Liden (2015), for example, indicates that team prosocial motivation demonstrates a strong impact on team processes and effectiveness outcomes when team tasks require higher interdependence among team members (Bolino & Grant, 2016; Grant & Berg, 2011; Lin, 2010).

Collective prosocial motivation is defined as a team's shared belief in the value of helping others and in its own ability to undertake the course of action required to carry out this belief (Grant & Berg, 2012). Prosocially motivated team members conceive of mixed-motive situations as cooperative and collaborative tasks that privilege fairness and collective welfare, value equality in the distribution of outcomes between themselves and others, and cherish collectively beneficial outcomes (Beersma & De Dreu, 1999). In addition to considering their own individual interests, prosocially motivated team members are deeply concerned about their fellow team members (Bolino & Grant, 2016; Grant & Berg, 2011). Moreover, when those prosocially motivated oriented employees are devoted to working as a team, they start to develop shared perceptions about themselves and team members, in terms of their team's

prosocial motivation. Individual prosocial motivations become team interest and a unique entity (Hu & Liden, 2015).

Prosocial motivation may be conceptualized as collective when team members have a shared perceptions of their colleagues' other-oriented behaviors and underlying motivations (Hu & Liden, 2015). Perceptions of team-level prosocial motivation influence the extent to which individuals make efforts to help each other (Grant & Berg, 2011), whether they reciprocate others' efforts, and whether and for how long they persevere in the effort to do so. This can promote synergistic gains and facilitate effective team cooperation, and it helps to effectively integrate different ideas and perspectives within the team (Hu & Liden, 2015; Kijkuit & Van Den Ende, 2007). Team prosocial motivation is unique because it can be seen as an aggregation of individuals' prosocial motivation that becomes even more powerful when established as a shared collective belief, in terms of the extent to which the team values making a prosocial impact developed through iteration among team members (Morgeson & Hofmann, 1999). Prosocial motivation is developed and heavily based on individual differences, as well as co-shaped by the coworkers. In this sense, prosocial motivation denotes a team's collective belief that is also based upon shared perceptions of colleagues' other-oriented behavior. The team's values have a prosocial impact on all team members and their collective prosocial motivation (Grant, 2008, Grant & Berg, 2011, Grant & Berry, 2011).

2.2 LMX (SLMX and ELMX)

Leader-member exchange (LMX) traditionally builds on the premise that leaders develop unique relationships with each employee (Graen & Schiemann, 1978) and can be understood in terms of the extent to which the leader and an employee engage in favorable reciprocal exchanges (Blau, 1964).

According to Kuvaas et al. (2012), LMX research should distinguish between economic or transactional relationships and social or relational types of relationships, as qualitatively and

fundamentally different, and not merely positioned differently along the LMX continuum. Several recent studies have taken up this idea and investigated SLMX and ELMX as two distinct constructs (Buch et al., 2015; De Ruiter et al., 2016; Kuvaas & Buch, 2018). We follow this line of research to define team-level SLMX as a long-term orientation, wherein exchanges between team supervisors and team members are ongoing, based on feelings of diffuse obligation, and less in need of an immediate “payoff” (Blau, 1964; Cropanzano & Mitchell, 2005; Kuvaas et al., 2012). This definition can be seen as consistent with the general view of LMX, and is representative of the majority of extant research examining an occurrence (or a lack) of social, rather than transactional, LMX relationships.

By contrast, team-level ELMX associations have a transactional or contractual character, and imply the downward influence of the team supervisor, formal status differences between team supervisors and subordinates, and discrete agreements (Blau, 1964; Buch, 2015; Kuvaas et al., 2012). In the context of teams, it is important to examine ELMX, as well as SLMX (or simply LMX), because a high-ELMX relationship differs from a low-SLMX relationship (or a lack of LMX) and represents a different type of relationship; a high-ELMX relationship manifests as an exchange that tends to be more explicit and quid pro quo in a tangible, economic sense (Buch & Kuvaas, 2016; Kuvaas & Buch, 2018; Liden et al., 2015).

2.3 Hypotheses development

2.3.1 The relationship between collective prosocial motivation and knowledge hiding in teams

Prosocial motivation can be described as the desire to expend effort that derives from a concern for helping or contributing to other people (Grant, 2007). Employees who are more prosocially motivated are likelier to engage in proactive behaviors, such as helping behaviors (Grant, Parker, & Collins, 2009; Grant & Berg 2011), citizenship behaviors (Grant & Mayer, 2009), creativity (Grant & Berry, 2011), in-role performance, and productivity (Grant, 2008).

Prosocially motivated employees are likelier to foster cooperative behavior with their colleagues in teams (Bolino & Grant, 2016; Hu & Liden, 2015), because prosocial motivation and other-orientation (Grant & Berg, 2011) encourages integration of others' viewpoints (Hoever, van Knippenberg, van Ginkel, & Barkema, 2012).

The basic premise of this paper is that teams that include members with generally high levels of prosocial motivation have less knowledge hiding among team members. This is consistent with findings from the study of Škerlavaj et al. (2018), who have tested this relationship at the individual level. However, this paper investigates the relationship between collective (team-level) prosocial motivation and knowledge hiding in teams, through the theoretical lens of social exchange. Teams with high collective prosocial motivation are likelier to help others with their tasks (Grant & Mayer, 2009; Grant et al., 2009), thereby fostering a more favorable pattern of social exchange among team members (Bernerth et al., 2007; Konovsky & Pugh, 1994). In such a unit, team members are likelier to respond positively to colleagues' requests to share knowledge or assist them with their tasks. In other words, when faced with requests for knowledge, highly prosocially motivated team members are more inclined to prioritize others' tasks and needs (De Dreu & Nauta, 2009), and less concerned with their own personal wishes and the desire to get ahead (Van Lange et al., 1997) by hiding knowledge. Thus:

Hypothesis 1. Collective prosocial motivation reduces knowledge hiding in teams.

2.3.2 The direct relationship between LMX (ELMX and SLMX) and knowledge hiding in teams

Employees who perceive strong ELMX relationships with their leaders see all resources as a zero-sum game (Furunes et al., 2015; Erdogan & Bauer, 2015). ELMX relationships are market-oriented, transactional, and contractual in nature (Kuvaas et al., 2012). These exchanges involve economic or quasi-economic goods and are motivated by immediate self-interest

(Walker, 2006; Liden et al., 2015). In such relationships, the emphasis is on the balance between what one gets from the relationship and what one gives to it. In this type of a relationship, to simply give (without knowing what you will get in return) is the same as losing (Buch et al., 2014; Buch, Kuvaas, Dysvik, & Schyns, 2014).

When team members develop ELMX relationships with their supervisors, it establishes a general pattern that also affects social norms within the team (Buch et al., 2014; Kuvaas & Buch, 2018). Based on the trust in the relationships that team members develop with their supervisors, this pattern affects their behaviors toward other team members (Salamon & Robinson, 2008). Leader-signaled knowledge hiding encourages subordinates to hide knowledge, even though they suffer from negative job attitudes in reaction (Offergelt et al., in press). LMX relationships frequently spill over to relationships with others (Xu et al., 2012). The unique LMX relationship that each team member has with his or her supervisor may influence the salience of individual-within-team comparison processes on subordinate outcomes (Henderson et al., 2009). In other words, this employee-supervisor relationship influences employee relationships with other team members and their outcomes. Therefore, employees characterized by high levels of SLMX may still prioritize coworkers' needs more, and therefore prioritize others' requests for assistance first (Černe et al., 2014; Grant, 2007; Grant & Berry, 2011). This characterizes situations where the contractual character of the exchange is established and based on discrete agreements and calculus-based trust (Kuvaas et al., 2012; Dysvik et al., 2015).

The transactional nature of the ELMX relationship can explain why employees may deliberately choose to avoid contributing knowledge (Kuvaas et al., 2015). Within the ELMX relationship, employees' motivations are more instrumental, so providing knowledge is likelier to be considered as extra-role behavior that must be specifically rewarded (Dysvik et al., 2015; Kuvaas et al., 2012). The ELMX antecedents that potentially lead to knowledge hiding are:

achievement and gaining a competitive advantage, transactional or contractual character and calculative nature of exchange, formal relationships between team supervisors and subordinates, as well as among team members, and discrete agreements (Buch, 2015; Kuvaas et al., 2012). If such logic is applied to this paper's investigation of knowledge hiding in teams, more knowledge hiding in teams can be expected where employees perceive their leader-member relationships to be primarily economic. These team members prioritize their own tasks and only respond to others' requests for knowledge when they perceive that they will immediately get something in return (Dysvik et al. 2015). An employee whose relationship with his or her supervisor is characterized by high levels of ELMX is thus unlikely to assume that reciprocal benefits are immediately forthcoming. Therefore:

Hypothesis 2. ELMX is positively related to knowledge hiding in teams.

However, some employees have social exchange relationships (SLMX) (Bernerth et al., 2007) with their supervisors, based on exchange and sharing of knowledge, characterized by feelings of diffuse obligations, and not only by sharing knowledge in exchange for an immediate "payoff" (Buch et al., 2015). In these relationships, the most emphasized factors are taking care of others, as well as the exchange partners' trust and well-being (Kuvaas et al, 2012).

Team members who work within SLMX relationships (Bernerth et al., 2007) can thus be expected to refrain from knowledge hiding. In other words, employees who are part of such relationships, when faced with the request to share their knowledge, are more concerned about the well-being of their peers (Graen & Uhl-Bien, 1995). Further, in teams where individuals' relations with their supervisors are characterized by (S)LMX, reciprocal social exchanges are likelier to contribute to lower levels of knowledge hiding (Černe et al., 2014). A hypothesis with equivalent constructs (LMX and SLMX) is posited, which are tested in Study 1 (LMX) and Study 2 (SLMX - because its counterpart, ELMX, is also investigated in this study).

Hypothesis 3. (S)LMX is negatively related to knowledge hiding in teams.

2.3.3 The moderating role of team-level prosocial motivation in the relationship between SLMX and knowledge hiding

As mentioned above, team members with high levels of prosocial motivation are likelier to prioritize others' interests, because they seek to have a positive impact on others' lives (Grant, 2007). Therefore, employees in teams with high levels of prosocial motivation prioritize tending to others' interests. However, individuals differ in terms of our orientations toward caring about others, and in some teams, the average level of prosocial motivation is inevitably be low.

This paper focuses on the interplay between SLMX and prosocial motivation and explicitly explores the condition of low collective prosocial motivation. Even when team members are not prosocially motivated, the influence exerted by the supervisor, through the SLMX relationships that have been established, engender a social norm (Xu et al., 2012; Buch et al., 2014) that reduces knowledge hiding within the team. Employees that have developed high levels of SLMX are thus inclined to hide less knowledge from their team members (even if they are not inherently prosocially motivated) because a social norm of reciprocity (Gouldner, 1960) has been established through the influence of the leader. Therefore:

Hypothesis 4. An interplay between SLMX and collective prosocial motivation exists, such that, at low levels of collective prosocial motivation and high SLMX, less knowledge hiding occurs in the team.

The interaction between collective prosocial motivation and ELMX, as a counterpart of SLMX, was not proposed. This is because the logic of ELMX does not square with the overarching theoretical framework of social exchange; rather, economic exchange represents only interactions among leaders and followers directed toward exchange of a more transactional and calculative nature (Buch, 2015). As such, it is not believed that ELMX can influence social

exchange patterns among team members and interact with prosocial motivation to predict knowledge hiding in teams. The conceptual model is depicted in Figure 1.

Insert Figure 1 about here

3 STUDY 1: METHODS

3.1 Sample

Study 1 is based on a sample comprised of 115 second-year undergraduate students taking a human resource management (HRM) course at a European (Slovene) University. The participants ranged in age from 20 to 29 years, and the mean age was 21.12 years ($SD = 1.159$). Approximately 60% were female. On average, the participants have a year and a half of work experience (mean work experience = 1.64, $SD = 1.46$).

All 115 participants were assigned to 29 teams, and these teams were randomly assigned to two conditions: with LMX manipulation and without LMX manipulation. By measuring the participants' perceptions of prosocial motivation (and splitting them into two conditions using the split means approach), it was possible to test the relationship between team prosocial motivation and knowledge hiding (Hypothesis 1). The manipulation of LMX (Hypothesis 3) also acts as a predictor of knowledge hiding.

3.2 Procedure

The task (designing a job advertisement) required teamwork. Within the team, one 'leader' was randomly chosen. The experiment started with the presentation of a Human Resource (HR) Management scenario to the participants. The scenario description was based on the work of Dadhich and Bhal (2008). The participants were assigned the role of company HR managers for a large car retailer. In the scenario, one of the company's branch managers has just resigned and the company's HR department must come up with a printed newspaper job advertisement to find the replacement. The previous manager's tasks were provided, and

participants had previously received instructions as to what they needed to focus on when designing a job advertisement (e.g., that it should not be discriminatory, it should be informative, and it should be appealing and attractive). The team task for the experiment includes the following written instruction: "In the sheet of paper that was given to your team, you have to write and draw what should be on job advertisement to attract candidates."

LMX manipulation. To manipulate LMX, the experimenter had a short conversation with each leader of the team. To ensure the proper manipulation of LMX, the experimenter instructed team leaders to be friendly with their team members, to be prepared to help them with the task, and to support them (Klein & Kim, 1998; Scandura & Graen, 1984). The team leaders thus acted in accordance with the manipulation strategy and those verbal instructions. In the experiment, and then in the questionnaire, we focused on the verification of perceptions of team members about their relationship with their team leaders and to verify the occurrence of LMX.

For the LMX manipulation (for both high-LMX and low-LMX), in addition to the verbal instructions provided to team leaders, the following short instructions were prepared for team members on how they perceive their team leader and distributed to prior to the task.

[For High LMX:] "You like your leader and you want to work with him. The leader gives you enough clarity about what actually you need to do and how. The leader contributes high quality / good solutions and gives you sufficient time for the task. You are counting on the fact that you will be defended by your leader in the case of any future conflict, and in exchange for this you are doing more than is written in the description of your responsibilities for which you are in charge."

[For Low LMX:] "You do not like your boss and you do not want to work with him. The boss does not give you enough clarity about what actually you need to do and how. The leader does not contribute high quality / good solutions and does not give you sufficient time for the task."

You are not counting on being defended by your leader in the case of any future conflict, and in consideration for this you are not doing more than it is written in the description of the responsibilities for which you are in charge."

3.3 Measures

All measures used a 7-point Likert-type scale. Unless otherwise noted, 7-point scales were used (1 = strongly disagree to 7 = strongly agree).

In Study 1, **LMX (as a manipulation check)** was measured with a 7-item scale developed by Graen and Uhl-Bien (1995) – $\alpha = .90$. All scales were adapted to fit the task context. Representative items include: "During the task, we knew exactly what we could expect from our team leader"; "the team leader recognized the potential of the team members"; and "the team leader understood the task-related problems and needs of team members."

Knowledge hiding in teams was measured with self-reported items, adapted from the 12-item scale developed by Connelly et al. (2012) – $\alpha = .95$. The items were modified to reflect perceptions of the extent to which individuals perceived knowledge hiding within the team (using the referent-shift approach) (Kozlowski et al., 2013). Representative items include: "During the task, we agreed to help each other, but did not really intend to do this"; "we pretended that we did not have the requested information"; and "we pretended that we did not know about what we are asked from other members within the team." A self-report scale was used, because there is meta-analytic evidence that self-reported socially undesirable behaviors actually capture a broader subset of behaviors than do other-reported behaviors (Berry et al., 2012).

Team prosocial motivation was measured with an adapted (to the team level, using the composition referent-shift approach; Kozlowski et al., 2013) 5-item scale developed by Grant and Sumanth (2009) – $\alpha = .95$. Examples of the items included in the questionnaire were as follows: "The team was happy to work on a task, because the outcome brings all team members

equal benefit”; “we work in the team successfully when we perform tasks that contribute to the welfare of others”; and “in our team, it is important that we have opportunity to use our abilities to help other team members.”

Because collective prosocial motivation perceptions reside within individuals, they were measured at the individual level and then aggregated to the team level. Collective prosocial motivation refers to individual members' perceptions of the extent to which their team members are seeking beneficial outcomes, not only for themselves, but also for other team members (Pruitt & Carnevale, 1993), and these perceptions develop into homogenous shared beliefs, due to regular contact and mutual experiences. Individuals working on the same team are likely to take part in the same process and collect similar information (Hinsz et al., 1997), so the composition referent-shift approach was used to ask about prosocial motivation in their team. The aggregation indices yielded acceptable values to support this emergence type (Mean rwg [slight skewed shape] = .68, SD rwg = .37; ICC(1) = .72, ICC(2) = .91).

4 STUDY 1: RESULTS

Means and standard deviations, for each condition and for all study variables, are shown in Table 1. Between-subjects analysis of variance (ANOVA) showed the expected main effects of the LMX manipulation on LMX ratings ($F = 129.389, p < .01$), serving as a manipulation check, as well as the expected main effect of self-reported team prosocial motivation (using the mean splits approach) on knowledge hiding in teams ($F = 66.610, p < .01$), supporting Hypothesis 1. Hypothesis 3, that LMX is negatively related to knowledge hiding in teams, is also supported, because the ANOVA revealed a significant effect of the LMX manipulation on knowledge hiding in teams ($F = 120.018, p < .01$). Finally, the ANOVA revealed a significant interaction effect of the LMX manipulation and prosocial motivation ($F = 5.384, p < .05$), supporting Hypothesis 4. The plot of this interaction is shown in Figure 2.

Insert Table 1 about here

Insert Figure 2 about here

5 STUDY 1: DISCUSSION

The results of Study 1 support the direct influence of both LMX (manipulated) and team prosocial motivation (measured) on knowledge hiding in teams, as well as their interaction. However, given the experimental nature of this study, additional support is needed to establish the external validity of these relationships. Study 1 has also failed to distinguish between the two types of LMX relationships (ELMX and SLMX), which were hypothesized to have different effects. A second study was therefore conducted, in a field setting.

6 STUDY 2: METHODS

6.1 Sample

Empirical data for Study 2 were collected from a European insurance company, with branches across Slovenia, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, and Macedonia. The total potential sample comprised 2,405 employees, holding a wide variety of jobs, including knowledge-intensive jobs, clerical jobs, and sales jobs. Data were collected in two waves, three weeks apart, to reduce the influence of common method bias. In wave 1, data on prosocial motivation and the control variables were collected, and in wave 2, on knowledge hiding and SLMX/ELMX.

In the first wave of data collection, 568 responded (a 24% response rate). Of these participants, complete responses were obtained from 309 employees (a 54% response rate) in the second wave of data collection, representing 13% of the possible sample. These participants were members of 92 teams. The average team size was approximately three members (mean = 3.34, SD = 1.97) and ranged from two to nine. At least two members from each of the 92 teams

participated. About 53% of the participants were female and about 25% were between the ages of 35 and 44 years (mean = 42.13, SD = 9.19). About 36% reported under seven years of work experience (mean work experience = 9.49, SD = 8.47) and the percentage of respondents who reported under three years of working with their current supervisor was 54% (dyad tenure; mean = 4.55, SD = 4.38). Response bias analyses indicated no significant differences between the sample and the population, in terms of age, gender, work experience, or dyad tenure.

6.2 Measures

Seven-point Likert-type scales, ranging from 1 (“strongly disagree”) to 7 (“strongly agree”) were used, unless otherwise noted.

Prosocial motivation. Prosocial motivation was measured with a 5-item scale, developed by Grant and Sumanth (2009). Sample items include: “I get energized by working on tasks that have the potential to benefit others” - $\alpha = .92$.

As Kozlowski and Klein (2000) note, individual members’ understandings of their team’s collective attributes (e.g., team prosocial motivation; Hu & Liden, 2015) may converge and form a collective belief at the team level, in what is referred to as a “bottom-up” process. As a result, all members of a team tend to focus on similar information to form an assessment of their collective prosocial motivation, leading to the emergence of prosocial motivation as a shared composition-process-based construct (Chan, 1998; Chen et al., 2005). A composition consensus emergence model was thus used (average prosocial motivation) for this study. This approach complements that of Study 1, which also treated prosocial motivation as a composition construct, but used the referent-shift approach. The aggregation indices yielded acceptable values (Mean rwg [slight skewed shape] = .86, SD rwg = .28). The within-group agreement indices yielded acceptable values (Mean rwg [slight skewed shape] = .86, SD rwg = .28, while the intra-class correlations were lower than in Study 1 (ICC(1) = .06, ICC(2) = .18),

which is likely attributable to the strong component of individual differences in prosocial motivation and an aggregation procedure that does not preclude a single referent.

Knowledge hiding in teams. Knowledge hiding was self-reported and assessed by means of a 12-item scale, developed by Connelly et al. (2012) - $\alpha = .91$. The referent of the scale was adapted to address knowledge hiding among members of the same team. The scale opens with instructions for respondents to think of a situation when a colleague from the same team made a request for knowledge, and the respondent declined. Sample items include [In this situation ...] “I pretended I did not know what s/he was talking about” and “Agreed to help him/her but never really intended to.”

ELMX and SLMX were measured with an 8-item version of the scale developed by Kuvaas et al (2012). Sample items for ELMX ($\alpha = .83$) include: “The best way to describe my relationship with a superior is to do what he/she tells me to do.” Items for assessing SLMX ($\alpha = .75$), for example, include: “My relationship with a superior depends on mutual trust.”

Control variables. Team size was controlled for, because internal team dynamics may be affected by how many employees are on a team (Pearce & Herbig, 2004). Additional controls include average dyad tenure (i.e., how long an employee had been working under the supervision of the current supervisor), because the length of the supervisor–subordinate relationship can affect work perceptions (Fagenson-Eland, Marks, & Amendola, 1997), as well as relationship quality (Nahrgang & Seo, 2015).

6.3 STUDY 2: RESULTS

Table 2 provides the descriptive statistics (means, standard deviations, and correlations) for all variables analyzed in Study 2.

Insert Table 2 about here

Data were analyzed using a series of hierarchical linear regression (i.e. random coefficient modeling or multi-level in HLM 7.0 software) analyses to test the relationship between ELMX/SLMX and knowledge hiding at the individual level, as well as the cross-level effect of team-level prosocial motivation on knowledge hiding and on the relationship between SLMX and knowledge hiding at the individual level. The results are presented in Table 3. In the first step (Model 1), the two control variables were entered - team size and dyad tenure; neither exhibited a significant relationship with knowledge hiding. In step 2 (Model 2), collective prosocial motivation at the team level was entered and was found to not be significantly related to knowledge hiding ($\beta = -.06, ns$). Hypothesis 1, from experimental Study 1, was thus not replicated. In the third step (Model 3), ELMX and SLMX were entered. It was found that ELMX was not significantly related to knowledge hiding within the team ($\beta = .038, ns$). Hypothesis 2 was thus not supported. However, SLMX was marginally significantly related to knowledge hiding in teams ($\beta = -.07, exact p = .093$). Hypothesis 3 was thus only marginally supported.

Insert Table 3 about here

In the last step (Model 4), the interaction between collective prosocial motivation and SLMX was examined in the context of predicting knowledge hiding in teams (as well as controlled for the same moderation of ELMX). The results showed that the interaction was, once again, marginally significant (interaction term prosocial motivation x SLMX = .12, exact $p = .081$), marginally supporting Hypothesis 4. This moderation is shown in Figure 3, which illustrates that, when the collective prosocial motivation in teams is low, high levels of SLMX are, to some extent, able to reduce the likelihood that team members will engage in knowledge hiding behavior. ELMX did not exhibit a significant moderating effect on the prosocial motivation-knowledge hiding relationship.

Insert Figure 3 about here

7 GENERAL DISCUSSION

Experimental Study 1 showed that team prosocial motivation reduced knowledge hiding in teams, supporting the first hypothesis. High levels of LMX inhibited the emergence of knowledge hiding behavior among employees, and an interaction existed between collective prosocial motivation and LMX. In Study 2, some of these results were replicated in a field setting. Specifically, a marginally significant direct relationship between SLMX and knowledge hiding was found. Field Study 2 also showed that only high-quality LMX, operationalized in the form of high SLMX, interacts with collective prosocial motivation in the prediction of knowledge hiding in teams. A specific area of focus consisted of low levels of collective prosocial motivation, where high SLMX acts to reduce the level of knowledge hiding in teams.

7.1 Theoretical contributions

This paper's first theoretical contribution is to the literature on knowledge hiding, and to an enhanced understanding of whether and how knowledge hiding occurs in team settings. Although one may assume that employees avoid hiding knowledge from fellow team members because of their shared identities, goals, and rewards, the results of the two studies reported in this paper suggest that knowledge hiding does, in fact, occur among members of the same team. Prior research has focused primarily on knowledge hiding in dyads or without a clearly specified target: coworkers, employees who are not closely co-located, and other individuals who are simply in the same organization (Connelly et al., 2012; Černe et al., 2014; Connelly, & Zweig, 2015). Indeed, the extant research has established that competitive norms are a salient predictor of knowledge hiding (Černe et al., 2014). However, the results of the present paper suggest that knowledge hiding occurs among employees who belong to the same unit or team, and are supposed to work cohesively toward the common benefit of the team as a whole, as

well. This complements the recent studies of Huo et al. (2016) and Khumar Jha and Varkkey (2018), who investigated knowledge hiding among R&D unit members, extending it to cover the setting of general work teams.

The second contribution of our two studies relates to the identification and testing of the interplay between individual and contextual factors that predict knowledge hiding among team members. The interaction between prosocial motivation and (S)LMX is based on social exchange theory (Blau, 1964). Experimental Study 1 indicated that the aggregated levels of team members' prosocial motivation act as direct predictors of knowledge hiding in teams. Although this finding could not be replicated in field Study 2, relatively robust results regarding the cross-level interaction between collective prosocial motivation and LMX were found. Even when team members have collectively low levels of prosocial motivation, leaders who cultivate high-quality relationships with their subordinates can mitigate its problematic effects. This multi-level approach contributes to the extant research on the antecedents of knowledge hiding, which has, to date, focused on interpersonal dynamics, such as distrust (Connelly et al., 2012; Černe, et al., 2014), or systemic contextual conditions, such as knowledge management systems, policies and culture (Huo et al., 2016; Serenko & Bontis, 2016), but has (with recent notable exceptions of Zhao et al., in press and Offergelt et al., in press) neglected the impact of leader behaviors.

Our studies also expand on recent research on the effect of prosocial motivation on knowledge hiding that has been conducted in the dyadic context, or without a specific target in organizations. Škerlavaj et al. (2018) have applied the conservation of resources theory to demonstrate that employees with high levels of prosocial motivation and perspective taking hide less knowledge. In the current paper, however, we use social exchange theory (Blau, 1964) to extend this line of research to undertake a more narrowly focused examination of knowledge

hiding in teams. The interactive cross-level role of prosocial motivation and LMX, which was examined in this paper, thus considers both inherent and contextual factors and their interplay.

This study also adds to the mature, but still very relevant, stream of leader-member-exchange research. Zhao et al. (in press) have recently examined the link between LMX and knowledge hiding. Our paper complements this research by testing SLMX and ELMX, two qualitatively different facets of LMX, and thereby adding to the growing stream within the leadership literature that does so. The findings presented in this paper are congruent with other studies that indicate a beneficial impact of SLMX (cf., Buch, 2015; Dysvik et al., 2015; Epitropaki et al., 2016; Kuvaas et al., 2012) when the outcome variable is heavily based on social interactions, as is the case with knowledge hiding. SLMX can also be seen as an important leadership approach, especially when team members exhibit low levels of prosocial motivation. On the other hand, ELMX has not demonstrated equivalent advantages.

7.2 Practical implications

The findings reported in this paper have several implications for organizations and managers. Managers are encouraged to first attempt to improve the prosocial capacities of their team members. This may take the form of structuring opportunities for employees to interact with the beneficiaries of their work, or communicating the urgency and importance of coworkers' problems (Grant, 2007). Team members who can empathize with colleagues' needs and are aware of the potential impact of their knowledge on others are less likely to hide it.

Moreover, a remedy that can be applied in the event that team members exhibit low levels of prosocial motivation has been identified in this study; even when team members are neither inherently other-oriented nor prosocially motivated, SLMX was found to buffer this problem and lead to reduced levels of knowledge hiding. Therefore, a further practical implication is to promote a strategy of nurturing long-term trusting SLMX relationships

between team supervisors and team members. SLMX characteristics are, in fact, very similar to the traditional LMX approaches (Kuvaas et al., 2012), and can be stimulated by investing time and energy in relationship-oriented behaviors, such as delegating, supporting, consulting, and recognizing (Yukl, 2012). As discussed by Dysvik et al. (2015), the development of high-quality SLMX relationships may also be facilitated by reducing status distinctions and investing in commitment-based human resource practices, such as the provision of employment security, training and development focused on relationships and interpersonal justice, rather than on relationships as self-managed teams, decentralization of decision-making, and extensive sharing of performance information throughout the organization.

7.3 Limitations and future research directions

Despite the aforementioned contributions, this paper is not without limitations. One potential limitation relates to the manipulation of LMX in experimental Study 1. LMX is a dyadic construct (Markham, 2010) based on perceptions and everyday interactions among leaders and team members that usually evolves over time. As such, Study 1's use of a short experimental task and leader descriptions as the basis for the construct represents a problematic manipulation and, although previous studies have taken a similar approach or used similar principles as the basis for experimental constructs such a manipulation may fail to capture the full extent of LMX relationships. Given the multidimensional nature of LMX as a construct (Dienesch & Liden, 1986; Henderson et al., 2009), future experimental research on LMX should seek to capture the facets of SLMX and ELMX, as well as the more general LMX, to obtain a clearer picture of the effects of each type of LMX (Chen et al., 2014; Dienesch & Liden, 1986).

These problems were mitigated by field Study 2, where both SLMX and ELMX (i.e., the more nuanced conceptualization) were used, capturing respondents' perceptions of their actual relationships with their current supervisors, instead of manipulating these leadership

behaviors. However, neither the direct role of collective prosocial motivation, nor that of SLMX, in predicting knowledge hiding, could be replicated. This indicates that, in a field setting, there may exist more important factors that influence knowledge hiding in teams; future research should aim to tackle the identification of such factors. The non-significant findings in the field may also be attributable to the use of a relatively small sample size, given the multi-level nature of the research. Future research should tackle LMX in a larger-scale field, as well as in experimental studies. Theoretically, prosocial motivation of team members may also influence their exchange relationships, which lends itself to an interesting model that future research may want to explore: a mediation model, whereby LMX mediates the relationship between prosocial motivation and knowledge hiding in teams.

The second limitation of the present research relates to the cross-sectional design of field Study 2. Although this study relied on two waves of data collection, the absence of longitudinal data limited our ability to make causal claims. Experimental Study 1 helped to alleviate this concern with regard to the focal relationships. Future research should, nonetheless, adopt a longitudinal design, which would enable researchers to study the evolution of all the variables and their influence on each other over time.

The third potential limitation, which also points the way toward more future research, is related to the failure to capture trust as a mediating factor, or even a control variable. Therefore, our assumptions about levels of trust/distrust, albeit established in previous research on knowledge hiding (Connelly et al., 2012; Černe et al., 2014; Connelly & Zweig, 2015), can only be rendered implicitly in this paper. Future research should test the relationships proposed in this study, while controlling for levels of trust among team members, or potentially by treating trust as a mediating mechanism or a boundary condition to the established associations. In future, it is also worth considering additional boundary conditions that may affect the knowledge-exchange process in organizations, such as knowledge-sharing technologies

available in organizations (Del Giudice, Della Peruta, & Maggioni, 2015), organizational or job design (Černe, Hernaus, Dysvik & Škerlavaj, 2017; Hernaus & Matić, 2017; Hernaus et al., in press) or the ethical climate among leaders and team members (Bavik et al., 2018).

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Table 1: Study 1 - Means and Standard Deviations in Each Condition

	Low LMX	High LMX
LMX	4.26 (.77)	6.27 (.46)
Knowledge hiding	1.76 (.64)	4.12 (1.00)
Prosocial motivation	3.47 (1.24)	6.20 (.62)

Notes. Standard deviations are in parentheses. Individual-level n = 115. Team-level n = 29.

Table 2: Study 2 - Means, Standard Deviations, and Correlations

	Variable	Mean	SD	1	2	3	4	5	6
1	Knowledge hiding	1.57	0.54	(.91)					
2	ELMX	4.01	1.04	.10 [†]	(.83)				
3	SLMX	5.28	0.78	-.09	-.01	(.75)			
4	Prosocial motivation	5.9	0.79	-.06	.09 [†]	.15 [*]	(.90)		
5	Team size	4.07	2.52	-.02	-.12 [*]	-.22 [*]	.01	-	
6	Dyad tenure	4.38	4.06	.23 ^{**}	.13 [*]	-.11 [†]	.01	.22 ^{**}	-

Notes. Team-level $n = 92$. Individual-level $n = 309$. ^{**} $p < .01$, ^{*} $p < .05$, [†] $p < .10$. Reliability indicators (Cronbach's alphas) are on the diagonal in the parentheses.

Table 3: Study 2 - Hierarchical Linear Regression (HLM) Analyses Predicting Knowledge Hiding in Teams

	Model 1	Model 2	Model 3	Model 4
Intercept	1.49 (.09)	1.48 (.09)	1.49 (.09)	1.49 (.09)
Team size	-.04 (.01)	-.04 (.01)	-.13 (.02)	-.14 (.02)
Dyad tenure	.05 (.02)	.05 (.02)	-.03 (.01)	.02 (.01)
Collective prosocial motivation		-.07 (.08)	-.06 (.08)	-.07 (.08)
ELMX			.03 (.04)	-.02 (.04)
SLMX			-.07 [†] (.03)	-.09 [†] (.04)
SLMX × Prosocial motivation				.12 [†] (.05)
ELMX × Prosocial motivation				.11 (.07)
Deviance	608.53	609.15	617.26	622.16
Pseudo R ²	.12	.12	.13	.16

Notes. Individual-level n = 309. Team-level n = 92. **p<.01, *p<.05, †p<.10. Standard errors are in parentheses next to standardized coefficients.

Figure 1: Conceptual model with hypotheses

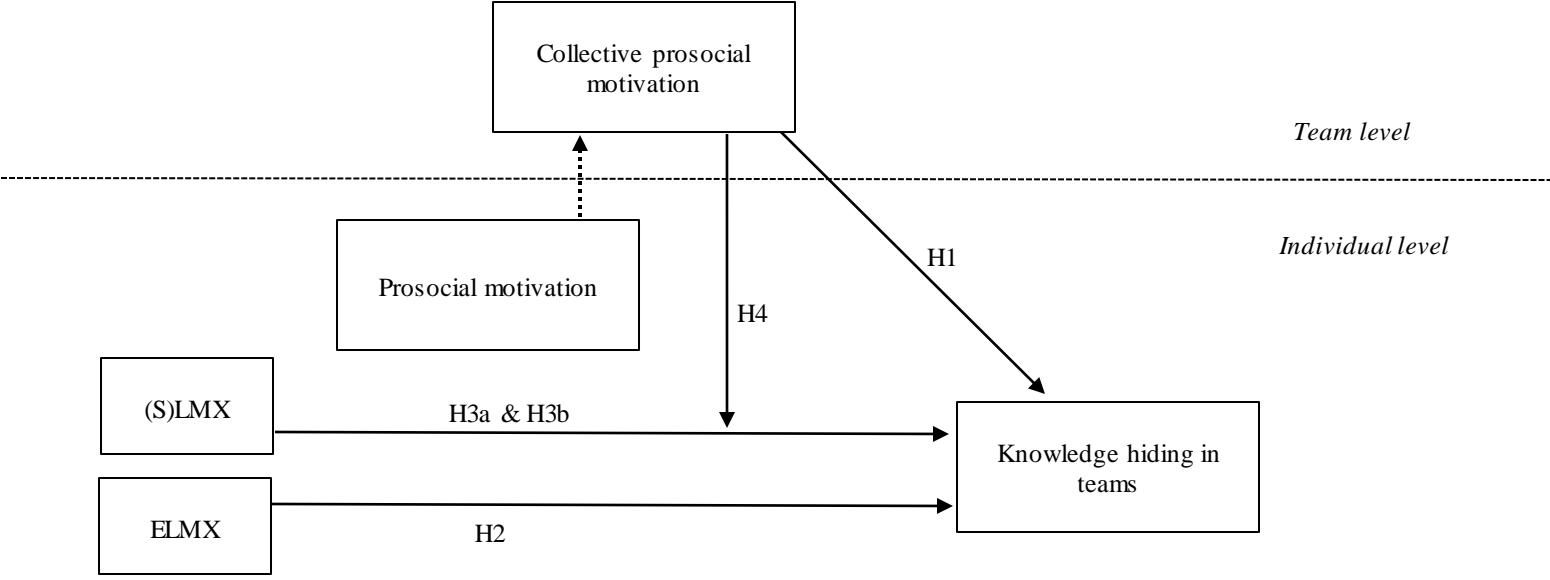


Figure 2: Study 1 - The moderating role of LMX on the prosocial motivation-knowledge hiding relationship

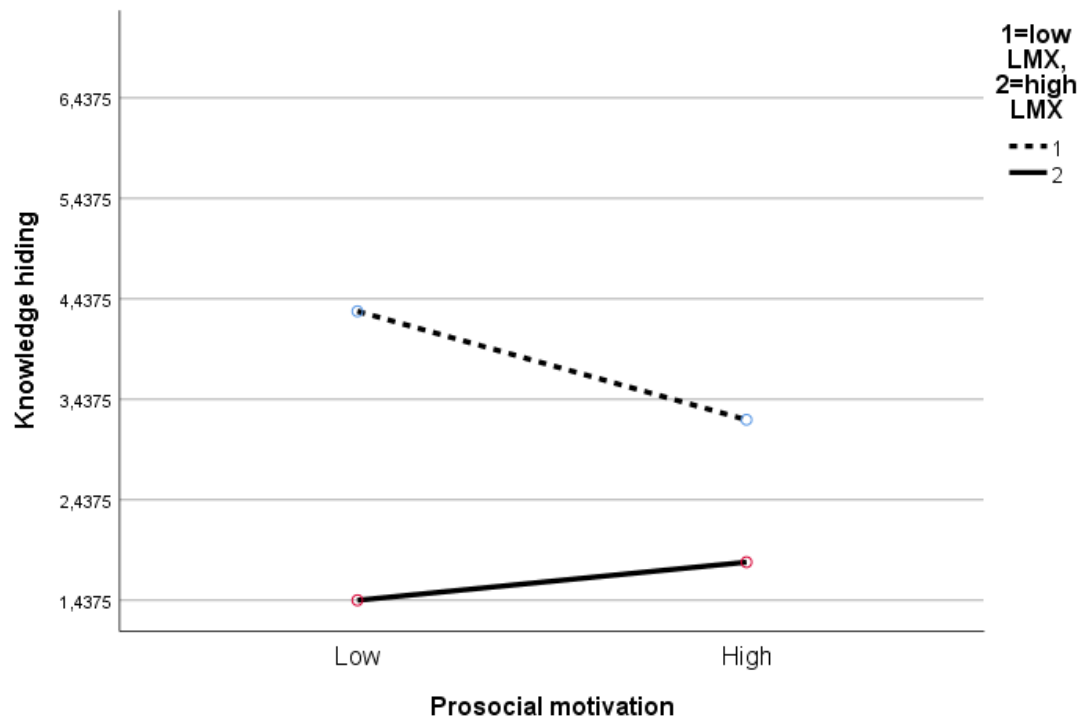


Figure 3: Study 2 - The moderating role of perceived SLMX on the prosocial motivation-knowledge hiding relationship

