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REVISITING THE LINK BETWEEN COOPERATIVE CLIMATE AND KNOWLEDGE SHARING BEHAVIOR: THE ROLE OF JOB AUTONOMY AND INTRINSIC MOTIVATION

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Abstract

We explore the association between a cooperative climate in the organization and employees' knowledge sharing behavior. Existing research demonstrates that employees tend to be more willing to both provide and acquire knowledge if their working climate has higher levels of cooperation. However, this work has not considered the contingent value of this link. We propose that the explanatory power of a cooperative climate in the decision to share may be strengthened if job autonomy and intrinsic motivation are taken into consideration. Those high in job autonomy tend to be more affected by a cooperative climate to share knowledge. Conversely, those high in intrinsic motivation will be less influenced by climate cues when deciding to share knowledge. Our research also suggests relevant implications for practitioners.

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ABSTRACT

We explore the association between a cooperative climate in the organization and employees' knowledge sharing behavior. Existing research demonstrates that employees tend to be more willing to both provide and acquire knowledge if their working climate has higher levels of cooperation. However, this work has not considered the contingent value of this link. We propose that the explanatory power of a cooperative climate in the decision to share may be strengthened if job autonomy and intrinsic motivation are taken into consideration. Those high in job autonomy tend to be more affected by a cooperative climate to share knowledge. Conversely, those high in intrinsic motivation will be less influenced by climate cues when deciding to share knowledge. Our research also suggests relevant implications for practitioners.

Keywords: Knowledge sharing, organizational climate, cooperative climate, intrinsic motivation, job autonomy.

INTRODUCTION

Scholars and practitioners have devoted significant efforts to exploring the antecedents and consequences of knowledge sharing (Argote, McEvily, & Reagans, 2003; Foss, Husted, & Michailova, 2010). Evidence reveals that the engagement in knowledge sharing activities is positively linked to the development of new products and services (Hansen, 1999; Smith, Collins, & Clark, 2005), the transfer of best organizational practices (Szulanski, 1996) and can represent a source of competitive advantage (Kogut & Zander, 1992; Reagans & McEvily, 2003). Existing research on the topic has assumed knowledge sharing as an externally determined phenomenon, not spontaneously happening (Bock & Kim, 2002; Davenport & Prusak, 1998; Szulanski, 1996) that is usually explained as a combination of individual and contextual factors (Collins & Smith, 2006; Kogut & Zander, 1992; Smith et al., 2005). Knowledge sharing is a discretionary activity, and individuals in organizations are presented with opportunities to share knowledge (Cabrera & Cabrera, 2005; Reagans & McEvily, 2003; Reinholt, Pedersen, & Foss, 2011). Contextual conditions and situational cues, such as a social climate characterized by cooperation (Leana & Buren, 1999; Szulanski, Cappetta, & Jensen, 2004), teamwork (Smith et al., 2005) and trust (Nahapiet & Ghoshal, 1998), have a powerful influence on the employee's decision to exploit knowledge sharing opportunities (Collins & Smith, 2006; Schepers & Berg, 2006).

However, while the importance of the social climate in the decision to share knowledge is well acknowledged in existing literature, it is also well recognized that shaping the social climate towards cooperation often requires significant investments in terms of time and effort spent by management and employees (Collins & Smith, 2006; Ruggles, 1998) as the "climate of the organization is very difficult to change" and because of the "diversity" of employee beliefs, values and other characteristics (Schneider, Brief, & Guzzo, 1996:4). Therefore, managers who wish to promote knowledge sharing by influencing the organizational climate should take

substantial diversity, ambiguity and inertia into account (Foss et al., 2010). Given this, the questions are to what extent a cooperative climate is strictly necessary to promote knowledge sharing among all employees, and whether management, rather than undertaking costly investments in building a cooperative climate, may instead rely on other, perhaps more easily manipulable instruments? Extant research gives little direct insight into these questions.

To address and partly answer them, we test a contingency model of the link between a cooperative climate and the employee's knowledge sharing behavior in the organization. Specifically, we argue that the relation between a cooperative climate and knowledge sharing is contingent upon the employee's intrinsic motivation to share knowledge (Deci & Ryan, 1985, 2000) and the employee's job autonomy (Hackman & Greg R. Oldham, 1976). We draw on self-determination theory (SDT) (Deci & Ryan, 1985, 2000) which provides a conceptual framework that has been widely incorporated into management research (e.g.:Gagné, 2009; Gagné & Deci, 2005; Grant, 2007; Grant, 2008; Grant & Berry, 2011). Based on this theory, we argue that employees may find knowledge sharing inherently interesting. The higher employees are in intrinsic motivation, the less important will a cooperative climate be for their decision to share knowledge. To capture the extent to which employees have opportunities to benefit from a cooperative climate to share knowledge, we introduce the role job autonomy (Foss, Minbaeva, Pedersen, & Reinholt, 2009; Hackman & Greg R. Oldham, 1976). Specifically, we examine whether job autonomy moderates the link between a cooperative climate and knowledge sharing.

THEORY AND HYPOTHESES

Organizational Climate and Employee Behavior

Although many definitions of organizational climate have been offered in the literature,¹ there is considerable agreement that organizational climate refers to those characteristics of the workplace that facilitate or inhibit the exhibition of certain behaviors (Schneider, 1975; Schneider, Smith, & Sipe, 2000). According to Schneider et al. (2000), organizational climate is viewed by employees as a source of embedded knowledge about how things are to be done and prioritized. Thus, the climate of the organization functions as a source of situational cues about embedded organizational policies, practices and procedures. Employees can use these contextual cues as guidelines about how organizations work and how they are expected to behave (Ashkanasy, Wilderom, & Peterson, 2000).

The focus of climate research has changed over the last decades, switching from a focus on a general perspective of organizational climate (e.g.: Kozlowski & Klein, 2000; Litwin & Stringer, 1968) to a deconstruction of the concept into multiple facets of organizational reality (beginning with Schneider, 1975). This new approach to organizational climate has been used by organizational behavior scholars as a cornerstone to develop and test a wide number of specific climate constructs. such as the climate for justice (Naumann & Bennett, 2000), creativity (Gilson & Shalley, 2004), innovation (Anderson & West, 1998; Pirola - Merlo & Mann, 2004), diversity (McKay, Avery, & Morris, 2008), and ethics (Ambrose, Arnaud, & Schminke, 2007). Because they represent different facets of a given context, many of these specific climates can be simultaneously found in the organization (Kuenzi & Schminke, 2009).

¹ Major reviews of organizational climate are Denison (1996); Glick (1985), Kuenzi and Schminke (2009) and Schneider (1990)

Existing research reveals that management scholars usually focus their research on a facet-specific climate, depending on the phenomenon to be analyzed. For example, Ehrhart (2004) described how a climate of procedural justice affected the employee's organizational citizenship behaviors (OCBs). Employees in organizational units where they feel they are treated fairly are more willing to perform helping behaviors. The causal mechanism is that if employees perceive they are treated fairly, they assign meaning to that treatment as representative of a social exchange relationship (Blau, 1964). Therefore, employees will tend to assign the same meaning when interacting with other members. This may result in the performance of higher levels of OCBs. (Gilson & Shalley, 2004) also describe how a climate that is supportive of creativity has a positive impact on employee's creative behavior. When employees feel comfortable in taking risks and openly exchange information, engagement in creative behaviors is more likely to arise in the organization. Chen, Lam, & Zhong (2007) showed that an empowering climate in a team is positively linked to the individual team members' sense of empowerment. Other authors have linked climate aspects with knowledge-related variables, such as knowledge exchange (Collins & Smith, 2006; Smith et al., 2005; Wasko & Faraj, 2005).

Cooperative Climate and Knowledge Sharing Behavior

Knowledge sharing is defined as the provision or receipt of task information, know-how and feedback on a product or a procedure (Hansen, 1999). It is conceptualized as a discretionary behavior that allows organizations to exploit knowledge-based resources and which may ultimately lead to a competitive advantage (Cabrera & Cabrera, 2005; Davenport & Prusak, 1998; Nahapiet & Ghoshal, 1998)Cabrera and Cabrera, 2005; Davenport and Prusak, 1998; Nathapiel and Ghoshal, 1998). By connecting previously unconnected ideas or recombining existing knowledge in novel ways, organizations benefit from a higher level of absorptive capacity

(Cohen & Levinthal, 1990), organizational learning (Hansen, 2002; Kogut & Zander, 1992), and knowledge creation (Cohen & Levinthal, 1990; Tsai, 2001).

Research on knowledge sharing has revealed not only its organizational benefits, but also its complex nature. Because knowledge sharing requires motivated effort from the employee side, many knowledge sharing initiatives tend to fail in the organization (Cabrera & Cabrera, 2002; Szulanski, 1996). Moreover, implementing formal rewards to encourage knowledge sharing tend to be inefficient due to the difficulty of measuring knowledge sharing behavior (Osterloh & Frey, 2000) or because such rewards may drive out the autonomous motivation that is the main motivational driver of knowledge sharing (Foss et al., 2009; Reinholt et al., 2011). In turn, research shows that knowledge sharing tends to rely on more complex factors such as reciprocity, trust, and social exchange processes (Levin & Cross, 2004)..

Among the broad relational context where knowledge sharing takes place, the organizational climate has been acknowledge as a significant force to explain employee's behavior to share knowledge (Collins & Smith, 2006; Smith et al., 2005; Wasko & Faraj, 2005). Knowledge sharing research has primarily focused on how facet-specific climates promote the exchange of knowledge among organizational members. Given the discretionary nature of knowledge sharing, scholars have tended to focus on the cooperative aspects of the organizational climate. Thus, Collins & Smith (2006) develop and test a model where they relate a social climate of trust, cooperation and shared codes and language with higher levels of knowledge exchange and combination in the organization. They argue that a firm social climate can encourage employees to focus on the larger community of the organization rather than on their own interests. Therefore, knowledge acquisition and provision can be facilitated among them. Similarly, Bock et al. (2005) showed that an organizational climate characterized by fairness, affiliation and innovativeness was positively related to the intention to share knowledge.

Specifically, by being exposed to such a climate, employees developed subjective norms. These norms were positively related to the intention to share implicit and explicit knowledge among colleagues.

Although extant research has provided evidence concerning the link between climate and cooperation, the research literature offers little direct insight on the nature of the causal mechanisms through which cooperative climate links to knowledge sharing. We argue that climate cues tend to influence the decision to share knowledge through a number of causal mechanisms. First, social psychologists propose that interactions among organizational members are likely to create descriptive norms of behavior (Cialdini & Trost, 1998). These descriptive norms are informally agreed on by group members, and develop from watching what others do in certain situations (Ehrhart & Naumann, 2004). Thus, when group members perceive that the group as a whole supports a certain behavior; they will be more likely to exhibit this behavior themselves. Consequently, we argue that a cooperative climate can be conceived as a source of descriptive norms of behavior among organizational members. Consistent with this idea, Bock et al., (2005) showed that employees perceiving group norms to share knowledge are more inclined to engage in knowledge sharing. Second, social exchange theory (SET) (Blau, 1964; Deutsch & Gerard, 1955) may provide a complementary theoretical basis to link cooperative climate and knowledge sharing behavior. Because a cooperative climate implies social exchanges among organizational members, SET hypothesizes that employees may show a tendency to “pay back” their colleagues. Engaging in knowledge sharing is likely to be an avenue for reciprocation because of its discretionary nature and potential benefits for group performance (Osterloh & Frey, 2000). Third, a cooperative climate is likely to increase trust among employees, which has been demonstrated to be a strong predictor of knowledge sharing (Leana & Buren, 1999; Szulanski et al., 2004; Zaheer, Bill McEvily, & Perrone, 1998). Groups with great levels of

internal trust are also more willing to share tacit knowledge, which is particularly valuable for organizational purposes (Lin, 2007). Fourth, social comparison theory (Festinger, 1954; Suls & Wheeler, 2000) argues that employees tend to compare with others when working in a social environment. Evidence suggests that when employees are part of a cooperative climate, their comparison with other members will result in a higher tendency to behave in a cooperative manner as well (Buunk, Zurriaga, Peiró, Nauta, & Gosalvez, 2005; Kelley & Thibaut, 1978). Therefore, they will be more likely to engage in prosocial organizational behaviors such as knowledge sharing. To sum up, we predict that a cooperative climate in the organization will facilitate the exchange of knowledge among members through various mechanisms described above. Therefore, we hypothesize that:

Hypothesis 1: *A collaborative climate in an organization is positively associated with knowledge sharing behavior among organizational members.*

Enhancing Primary Needs Through Knowledge Sharing

Motivation researchers have recognized that the desire to make an effort can derive from various sources (Deci & Ryan, 1985; Herzberg, 1966). Although early motivation scholars believed that external incentives were determinants individual action (Steers, Mowday, & Shapiro, 2004), scholars have increasingly proposed that work content can be inherently interesting and enjoyable, that is, that the locus of causality is internal (e.g.: Grant, 2008; Herzberg, 1966).

Based upon this idea, self-determination theory (SDT) (Deci & Ryan, 1985, 2000) offers a theoretical framework to differentiate behaviors with respect to how self-motivated and volitional they are. Intrinsic motivation is defined as the desire to expend effort on a certain work based on interest in and enjoyment of the work itself (Gagné & Deci, 2005; Ryan & Deci, 2000). When intrinsically motivated, employees decide to expend effort based on personal enjoyment rather

than on external cues (Kehr, 2004). Thus, intrinsically motivated employees value the content of the work itself as a source of motivation (Gagné & Deci, 2005). Research has also shown that intrinsically motivated individuals tend to put more effort and persistence into tasks (Amabile, Hill, Hennessey, & Tighe, 1994).

Knowledge sharing researchers are increasingly aware about the explanatory power of intrinsic motivation to explain knowledge sharing behavior (Brock et al., 2005; Cabrera & Cabrera, 2002; Lin, 2007; Quigley, Tesluk, Locke, & Bartol, 2007; Reinholt et al., 2011; Wasko & Faraj, 2005). For instance, Gagné (2009) and Foss et al. (2009) argued that HRM practices can be used to foster autonomous motivation to share knowledge.

SDT also proposed that all individuals share three primary needs: autonomy, competence and relatedness. Those three needs are defined as essential nutriments for optimal human development and integrity (Gagné, 2009; Ryan, Sheldon, Kasser, & Deci, 1996). Thus, to the extent that certain action satisfy the needs for competence, relatedness and autonomy, individuals will show higher levels of intrinsic motivation towards the action, and therefore, will be less determined by external factors. Although these three needs are common to all individuals, individuals differ in the activities that they choose to comply with them (Deci and Ryan, 2000). In those cases where individuals perceive that engaging in a certain action can be a source to fulfill their primary needs, they will prefer to be the originators of the activity rather than pawns of the will of others (Deci & Ryan, 1985; Grant, 2008).

SDT theory speaks to the importance of considering the nature of the activity itself as a source of intrinsic motivation, rather than the contextual factors. We propose that engaging in knowledge sharing may be viewed by some employees as a way to enhance their primary needs: by voluntarily engaging in knowledge sharing activities, needs for autonomy, relatedness and competence may be fostered. First, SDT research indicates that autonomy is presented when an

employee perceives personal choice or volition when performing an action. Knowledge sharing is regarded as a discretionary behavior (Cabrera & Cabrera, 2002), and therefore may represent an opportunity to experience autonomy need satisfaction. Second, engaging in knowledge sharing may impact relatedness by promoting closeness to others, as well as cohesiveness or intimacy (Weinstein & Ryan, 2010). Knowledge sharing implies the building and development of social relationships (Reinholt et al., 2011). Therefore, some employees will conceive knowledge sharing as a way to energize their relatedness needs. Finally, knowledge sharing can be viewed as a way to enhance competence needs by some employees. By sharing knowledge, employees may feel that they act on the environment in ways that directly result in positive changes for their colleagues (Weinstein & Ryan, 2010). Along related lines, research shows that engaging in volunteering work elicits experiences of competence (Caprara & Steca, 2005). These arguments suggest that some employees will show a natural tendency to engage in knowledge sharing behavior. Thus, we hypothesize that the effects of a favorable social context –represented here by a cooperative climate – will be less influential for them to decide whether to engage in knowledge sharing. To illustrate, consider the case of an employee feeling intrinsically motivated to share knowledge. Here, effort is based on the enjoyment and pleasure in the process of sharing. According to the above argument, the nature of the organizational climate *per se* is less relevant to their decision to share.

However, extant research reveals that not all employees find knowledge sharing as an inherently motivating activity (Cabrera & Cabrera, 2002; Szulanski, 1996; Szulanski et al., 2004). For instance, knowledge sharing can be impeded by the fear of losing competitive advantage in the organization (Husted & Michailova, 2002). We propose that the importance of an adequate context becomes especially salient for these employees. Social forces derived from a cooperative

climate will be here taken as the main drivers to the decision to share knowledge rather than the activity itself.

In sum, although all employees may recognize that engaging in knowledge sharing provides a number of advantages for coworkers, organizations and their own work, we draw on SDT to argue that some will show a natural tendency to share while others not. The former will conceive knowledge sharing in as a source to fulfill their primary needs, and thus their knowledge sharing behavior will be less dependent of a cooperative climate. In contrast, the latter will not find knowledge sharing as a stimulating activity *per se*, and thus, a cooperative climate will become the necessary external force for them to engage in knowledge sharing. Therefore, we hypothesize:

Hypothesis 2: *Intrinsic motivation negatively moderates the relationship between cooperative climate and knowledge sharing.*

Benefiting from a Cooperative Climate: The Role of Job Autonomy

In spite of the seemingly obvious advantages of a cooperative climate in promoting knowledge sharing, employees' job characteristics may influence this link. Specifically, we expect the strength of the relationship between cooperative climate and knowledge sharing to differ across employees who are given different levels of job autonomy. Job autonomy refers to the degree of latitude employees possess in making job-related decisions. Employees with high levels of job autonomy have higher discretion in deciding what tasks to perform, how the work is to be done and how work exceptions are to be handled (Hackman & Greg R. Oldham, 1976; A. N. Turner & Lawrence, 1965). Hence, job autonomy is viewed as an opportunity for the employee to decide when and how to perform specific tasks. Empirical evidence shows positive relationships between job autonomy and a number of employees' behaviors in the organization, such as the proclivity to act proactively (Parker, Williams, & Turner, 2006) and personal

initiative (Frese, Kring, Soose, & Zempel, 1996). By having greater autonomy, employees may free up time to engage in learning activities (Latham & Pinder, 2005)

The importance of providing employees with job autonomy is especially salient in performing extra-role behaviors (Fried, Hollenbeck, Slowik, Tiegs, & Ben-David, 1999; Smith, Organ, & Near, 1983). Extra-role behaviors refer to those actions that are not enforceable requirements of the job but on which many organizations depend (Organ, 1988). Employees with greater discretion in their jobs might have more opportunities to broaden their roles and thus, engage in extra-role behaviors (Morgeson, Delaney-Klinger, & Hemingway, 2005).

Indeed, this argument has been empirically tested with knowledge sharing behavior, which is recognized as an ideal-typical extra-role behavior by its very nature. Empirical studies have found support for the positive link between job autonomy and knowledge sharing behavior (Cabrera, Collins, & Salgado, 2006; Foss et al., 2009; Gagné, 2009; Janz, Colquitt, & Noe, 1997). By giving employees higher levels of autonomy in their tasks, they will be more willing to search for more effective ways to perform their tasks and put higher efforts on their task performance (Fuller, Marler, & Hester, 2006). Given that knowledge sharing is recognized as a source to increase task effectiveness, a positive link between job autonomy and the engagement in knowledge sharing activities is predicted.

Further, Cabrera et al. (2006) argue that job autonomy may be viewed as a proxy that reflects a lack of instructions about the way that the job must be done. Thus, these employees higher in job autonomy will be more likely to engage in discretionary forms to improve their task performance. Such support may come when engaging in knowledge sharing behavior. Evidence of this idea can be found when analyzing employees performing creative tasks (Amabile, Conti, Coon, Lazenby, & Herron, 1996). It is very difficult to set up specific procedures to measure and reward creative outputs in the organizations (Osterloh & Frey, 2000). Therefore, employees

engaged in creative activities are usually given high levels of autonomy to search for novel and useful ideas within the organization. Here, engaging in knowledge sharing activities seems to be a potential source to obtain and integrate new perspectives and, in turn, improve creative outputs related to the task to be performed (Oldham, 2003). Further, creative employees are more likely to rely on a wider range of ideas that may act as potential knowledge to be shared among other members in the organization.

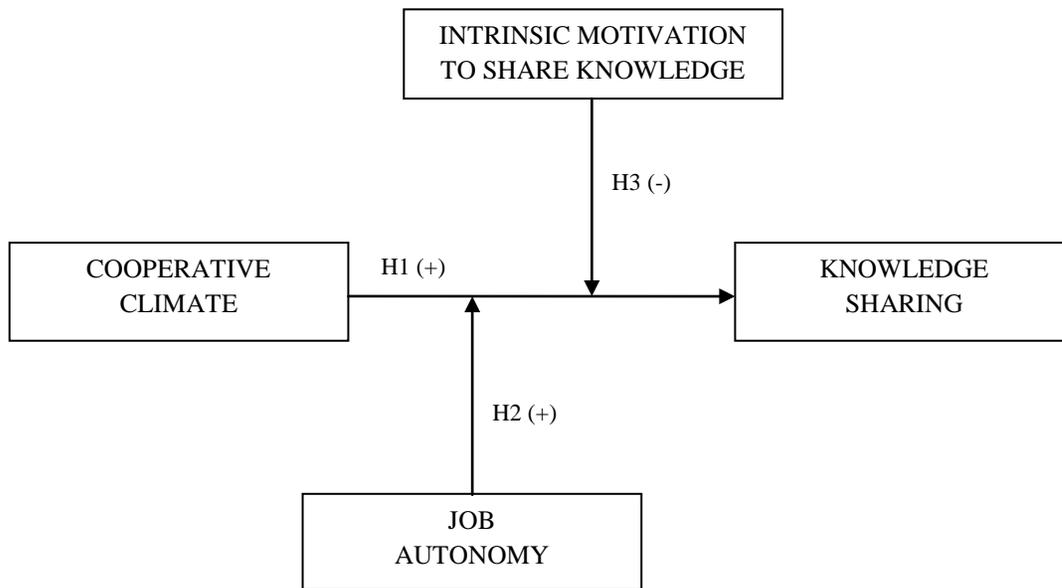
As noted earlier, existing theory reveals that a cooperative climate seems to represent an ideal context for these employees to engage in knowledge sharing activities. Conversely, we predict that employees with lower levels of job autonomy will be less influenced by a cooperative climate. Lower levels of job autonomy means reduced freedom to choose when, where and how to do the required tasks in the organization (Cabrera et al., 2006). Consequently, employees with low job autonomy will have lower chances to exploit the potential benefits (e.g.: knowledge sharing) provided by a cooperative climate. . Further, tasks with low levels of job autonomy often require lower levels of knowledge creation and sharing. Therefore, employees that are low in job autonomy will see lower utility in sharing knowledge among other organizational members.

Consequently, we expect that the freedom and latitude available to employees to make decisions in their jobs create opportunities for them to engage in knowledge sharing activities, and thus, reinforce the positive influence of a cooperative climate on knowledge sharing.

Hypothesis 3: *Job autonomy positively moderates the relationship between cooperative climate and knowledge sharing.*

All three hypotheses are summarized in Figure 1:

FIGURE 1: THEORETICAL MODEL



RESEARCH METHODS

Data Collection and Research Site

All data used in the analysis was collected in one single company. This implies that we controlled for contextual factors that may impact intra-organizational knowledge sharing ((Tsai & Ghoshal, 1998). This may be seen as an advantage over questionnaires addressed to a large number of firms but only a few (typically only one) respondents per company. Our objective was to reach employees of the firm potentially involved in knowledge sharing activities. To do so, we selected these departments especially involved in knowledge sharing (Engineering, R+D, Sales and Marketing, Technical Service and Purchasing). Because our goal was to examine employee`s motivation, job autonomy, climate and behavior we used self-reports to operationalize and measure the variables, following the line of most studies about work motivation (Brock et al., 2005; Cabrera et al., 2006; Szulanski, 1996) and human behavior (Howard, 1994). The adequacy of perceptual measurements to capture motivation is suggested due to difficulties in observing the

variable (Ryan & Connell, 1989). Similarly, job characteristics (Foss et al., 2009) and climate features (Argote, Beckman, & Epple, 1990; Quigley et al., 2007) have been successfully captured by using self-reports.

The questionnaire was pre-tested with managers and management scholars to ensure the clarity of the questions and to avoid problems with the interpretation of the items, being distributed to employees from the selected departments in February 2007. Social desirability bias (Tsai & Ghoshal, 1998) was reduced by informing the respondents that answers would be fully anonymous in all cases and that the data would be collected by an external server independent of the company. We obtained data from 263 employees of the 505 invitations that we sent out, providing an overall response rate of 52%. However, because of missing values for some items we eventually used 176 responses for the data analysis. This provides a highly satisfactory response rate of 35%.

Research Instrument

The data was collected using a web-based questionnaire, which was built from a comprehensive literature review. It was distributed to employees through a firm representative, who mediated in the distribution of the questionnaires and in the collection of responses. Common method bias might be a methodological concern as a consequence of the use of self-reports (Podsakoff & Organ, 1986; Spector, 2006). To diminish the risk of this bias, we reversed some of the scales of our questionnaire (Rust & Cooil, 1994). Furthermore, according to Evans (1985), models with interaction effects mitigate the risk of common method bias. We also drew on Siemsen *et al.* (2010) which stated that “[c]ommon method bias can be effectively controlled by including other independent variables, which exhibit small bivariate correlation (< 0.3) among each other and those measures that suffer from CMV. Thus, CMV is less of a problem in OLS models with many independent variables, especially if these variables are not highly correlated.”

In fact, our model includes nine continuous independent variables. As expected, the only correlation above 0, 3 is obtained between tenure and age (See table 1). Additionally, we performed a Harman's one-factor test on the items to assess the severity of the common method bias. Harman's one-factor test is recognized as the most widely known approach for assessing CMV in a single-method research design (Podsakoff, MacKenzie, Podsakoff, & Lee, 2003). According to the test, CMV is assumed to exist if (1) a single factor emerges from unrotated factor solutions, or (2) a first factor explains the majority of the variance in the variables (Podsakoff & Organ, 1986: 536). In our model, we tested that our first two factors only capture 20% and 14% of the total variance, respectively. Furthermore, we conducted an analysis following marker variables (Lindell & Whitney, 2001; Podsakoff et al., 2003). While these marker variables did in some cases have separate explanatory power, they did not remove the significance of the key variables. Although the statistical tests do not eliminate the threads of CMV, they show that results are not highly affected by CMV. The high response rate (33%) makes non-response bias a minor concern. Nevertheless, we compared the demographic variables (age, tenure and level of education) between the early and late respondents (wave analysis) and tested the assumption that the group of late respondents with missing values is closer to the non-responding group than the group of early respondents (Rogelberg and Stanton, 2007). We performed an ANOVA-analysis of the differences in means for the two groups for the demographic variables in order to test the mentioned assumption. According to the results, the hypotheses of differences in the means are all rejected (with F-values < 2). This leads us to believe that our data does not suffer from major problems of non-response bias.

Dependent Variable: Knowledge Sharing Behavior

The *acquisition of knowledge* was measured by asking individual respondents to indicate the extent to which they have received/used knowledge from colleagues in their own department

(2 items). Similarly, to assess the *provision of knowledge* we asked individual respondents to indicate to what extent colleagues from the same department have received and used the respondent's knowledge (2 items). The four items were measured on a seven-point Likert scale, where 1 = "no or very little extent" and 7 = "very large extent." The construct shows satisfactory reliability and validity (alpha-value=0.74, AVE=0.57, Composite reliability=0.84). The construct of knowledge sharing behavior was calculated as the average of the four items.

Independent Variables

Cooperative climate. Our items for the measurement of the cooperative climate are derived from Husted & Michailova (2002) and Michailova & Husted (2004). Although in their work they do not explicitly use the construct of "cooperative climate," they explicitly focus on the determinants of knowledge hostility. Further, similar constructs were used by Bock et al. (2005) and Collins & Smith (2006) to assess the influence of a cooperative climate in the exchange of knowledge among employees. We specifically asked employees to indicate to what extent they agreed with the following statements: "Employees in my department cooperate well with each other", "Employees in my department prefer to create own knowledge rather than reusing others" and "Employees in my department perceive each other as competitors". All items were measured on a seven-point Likert scale ranging from 1="strongly disagree" to 7="strongly agree", and the last two items were reverse-coded for the statistical analysis. The values of the construct reliability and AVE are 0.84 and 0.64, which are both highly satisfactory. The Alpha-value of the construct is 0.72, which denotes a high level of internal consistency.

Job autonomy. We measured job autonomy by adapting measures of job characteristics from Sims, Szilagyi, & Keller (1976). This measurement for job autonomy has showed adequate functioning in previous studies (Foss et al., 2009). Specifically, the variable was assessed by asking respondents to what extent their job is characterized by "the freedom to carry out my job

the way I want to”, “the opportunity for independent initiative” and “high levels of variety in the job”. The four items were measured by using a seven-point Likert scale ranging from 1= “strongly disagree” to 7 =“strongly agree”, and the construct was calculated as the average of the three items. The Alpha-value for the construct is 0.74 and the composite reliability is 0.85. The AVE-value also shows a satisfactory value of 0.66.

Intrinsic motivation. To assess the intrinsic motivation to share knowledge, we adopted the scales from the Self-Regulatory Questionnaire (Ryan & Connell, 1989). We adapted the intrinsic motivation questionnaire in order to create the construct that captures the intrinsic motivation to share knowledge. To operationalize it, we asked respondents to answer three items: “I share knowledge because I enjoy doing so”, “I share knowledge because I like it” and “I share knowledge because I find it personally satisfying”. All three items were measured with a seven-point Likert scale ranging from 1=“strongly disagree” to 7=“strongly agree”, and the construct of intrinsic motivation was calculated as the average of the three items. Furthermore, the obtained Alpha-value for the construct is 0.75, and it also shows satisfactory levels of reliability with values of for variance extracted (AVE) of 0.66 and composite reliability of 0.85.

Control variables. Because employees can use both formal and informal channel to share knowledge (Stevenson & Gilly, 1991), those employees with more informal contacts may have more opportunities to share knowledge. To control for this, we asked respondents: “how often do you have the opportunity to talk informally with colleagues?” We also controlled for the extent employees are included in job rotation activities, because job rotation may represent a potential opportunity to share knowledge with colleagues. Further, we controlled for employees’ education level. Since long tenured employees are expected to have greater work background, we also controlled for this by asking respondents the number of years they were employed in. Similarly,

we controlled for the respondent's age. Finally, we included the external motivation to share knowledge as a control variable.

Table 1 shows zero-order correlations among the variables used in the regression analyses. None of the correlation coefficients exceeds the threshold of 0.3, which indicates that multicollinearity is a minor concern in the data. The mean value for the dependent variable (knowledge sharing) is 5.76 (on a seven-point Likert scale). It is remarkable that the level of intrinsic motivation to share knowledge is 5.54 (on a seven-point Likert scale), showing that on average, individuals are rather highly motivated to share knowledge. Furthermore, significant positive correlations existed between job autonomy and cooperative climate. It appears that, on average, individuals under a cooperative climate also have high levels of job autonomy in the organization.

TABLE 1: CORRELATION MATRIX (N=170)

	1	2	3	4	5	6	7	8	9	10
1.Knowledge sharing	1,00									
2.Cooperative climate	0,29* *	1,00	0,12							
3.Intrinsic motivation	0,37* *	0,12	1,00							
4.Job autonomy	0,33* *	0,18* *	0,23* *	1,00						
5.Age	-0,03	0,03	0,00	0,03	1,00					
6.Education	0,01	-0,14* *	0,17* *	0,09	0,02	1,00				
7.Tenure	0,03	0,08	-0,02	0,17* *	0,67* *	-0,10	1,00			
8.Extrinsic motivation	-0,02	0,03	0,19* *	0,14* *	-0,07	0,16* *	-0,02	1,00		
9.Informal contacts	0,32* *	0,21* *	0,08	0,09	0,04	-0,12	0,08	-0,18** **	1,00	
10.Job rotation	0,13	0,22* *	0,03	0,02	-0,10	-0,08	-0,05	0,19** **	0,11	1,00
Mean	5,76	5,39	5,54	5,69	2,42	3,32	13,7	3,29	5,96	2,83

Std. Dev	0,93	1,09	0,91	1,01	1,02	1,24	10,62	1,26	1,09	1,82
Min. values	2,50	2,00	1,33	1,00	0	1	0	1	1	1
Max. Values	7	7	7	7	4	5	49	6,25	7	7

** and * indicates a significance level of 1% and 5% respectively

RESULTS

In order to test the hypotheses we used a hierarchical regression model. The independent variables were mean-centered before creating the interaction term (Aiken & West, 1991). Further, the Variance Inflation Factor (VIF) was calculated in order to detect potential problems of multicollinearity. The highest VIF value is 1.97 (Tenure, Table 2, Model 3), indicating no concerns regarding multicollinearity (Hair, Black, Babin, Anderson & Tatham, 2006). The results of the regression are reported in table 2.

TABLE 2: HIERARCHICAL MODERATED REGRESSION MODELS (N=170)

	Knowledge Sharing			
	Model 0 Control variables	Model 1 Hypthosis 1	Model 2 Hyphthesis 2	Model 3 Hyphthesis 3
Intercept	5,74*** (0,07)	5,71*** (0,06)	5,73*** (0,06)	5,70*** (0,06)
Cooperative climate		0,15* (0,07) <i>1,15</i>	0,15* (0,07) <i>1,15</i>	0,15* (0,06) <i>1,15</i>
Intrinsic motivation		0,28*** (0,07) <i>1,13</i>	0,29*** (0,07) <i>1,13</i>	0,25*** (0,07) <i>1,24</i>
Job autonomy		0,23** (0,07) <i>1,16</i>	0,27*** (0,07) <i>1,21</i>	0,32*** (0,07) <i>1,33</i>
Cooperative climate * Intrinsic motivation			-0,20** (0,06) <i>1,10</i>	-0,20** (0,06) <i>1,10</i>
Cooperative climate * Job autonomy				0,12* (0,05) <i>1,20</i>
- Age	-0,08 (0,09) <i>1,86</i>	-0,05 (0,08) <i>1,89</i>	-0,03 (0,08) <i>1,91</i>	-0,03 (0,08) <i>1,91</i>
- Education	0,06 (0,07) <i>1,07</i>	0,01 (0,07) <i>1,13</i>	0,00 (0,07) <i>1,13</i>	0,00 (0,07) <i>1,13</i>
- Tenure	0,07 (0,10) <i>1,88</i>	0,01 (0,09) <i>1,96</i>	0,01 (0,08) <i>1,96</i>	0,00 (0,08) <i>1,97</i>
- Extrinsic motivation	0,01 (0,08) <i>1,12</i>	-0,09 (0,07) <i>1,18</i>	-0,07 (0,07) <i>1,19</i>	-0,05 (0,07) <i>1,21</i>
- Informal contacts	0,32*** (0,08) <i>1,07</i>	0,22** (0,07) <i>1,13</i>	0,21** (0,07) <i>1,13</i>	0,22** (0,07) <i>1,13</i>
- Job rotation	0,09 (0,07) <i>1,08</i>	0,07 (0,06) <i>1,12</i>	0,07 (0,06) <i>1,12</i>	0,08 (0,06) <i>1,12</i>
N	170	170	170	170
F-value	3,71	8,07***	8,70***	8,55***
R-square	0,12	0,31	0,35	0,37
Adjusted R-square	0,09	0,27	0,31	0,33
F-test for increment in R ²		14,89***	10,18**	4,93*

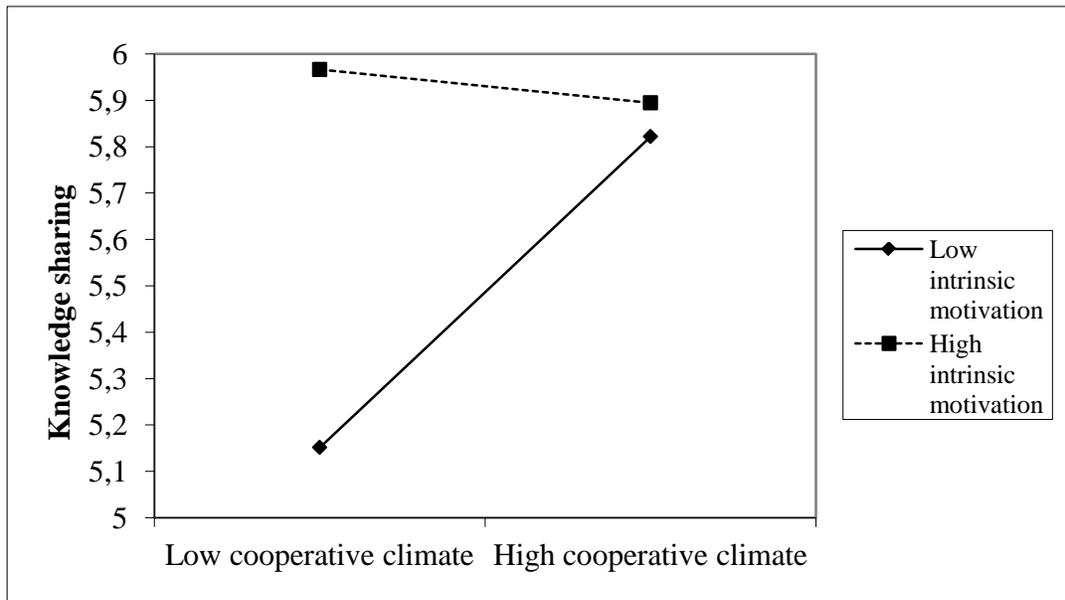
(Standard errors are listed in parentheses and the VIF-values in italics)***, **, and * indicates a significance level of 0.1%, 1%, and 5%, respectively.)

^a All independent variables are standardized.

At the first step (Model 0) we entered the control variables related to personal characteristics (age, education and tenure), opportunities to engage in knowledge sharing (job rotation and informal contacts) and extrinsic motivation. The explanatory power of the control variables is here limited (R-square = 0.12, $p < .01$) and only the variable “informal contacts” is significant ($\beta = .32$, $p < .001$). At the second step (Model 1) we included the three independent variables (cooperative climate, intrinsic motivation and job autonomy) to test the first-order association. All three variables are significant in the model which obtains an R-square of 0.31 ($p < .001$). The results provide support for hypothesis 1, confirming that cooperative climate positively influences knowledge sharing ($\beta = .15$, $p < .05$).

As the third step (Model 2), we added the moderating effect of intrinsic motivation over cooperative climate. By adding the interaction, the explanatory power of the model reaches an overall R-square of 0.35. The significance of this increase is tested by the F-test ($F = 10.18$, $p < .01$). As suggested in hypothesis 2, the interaction between cooperative climate and intrinsic motivation is negative and significant ($\beta = -.20$, $p < .01$). To facilitate the interpretation of the interaction and following the recommendations of Aiken & West (1991), we plotted the simple slopes for the relationship between cooperative climate and knowledge sharing at one standard deviation above and below the mean of intrinsic motivation (Figure 2).

FIGURE 2: TWO-WAY INTERACTION BETWEEN COOPERATIVE CLIMATE AND INTRINSIC MOTIVATION



Regression slopes for the interaction of cooperative climate and intrinsic motivation predicting knowledge sharing behavior.

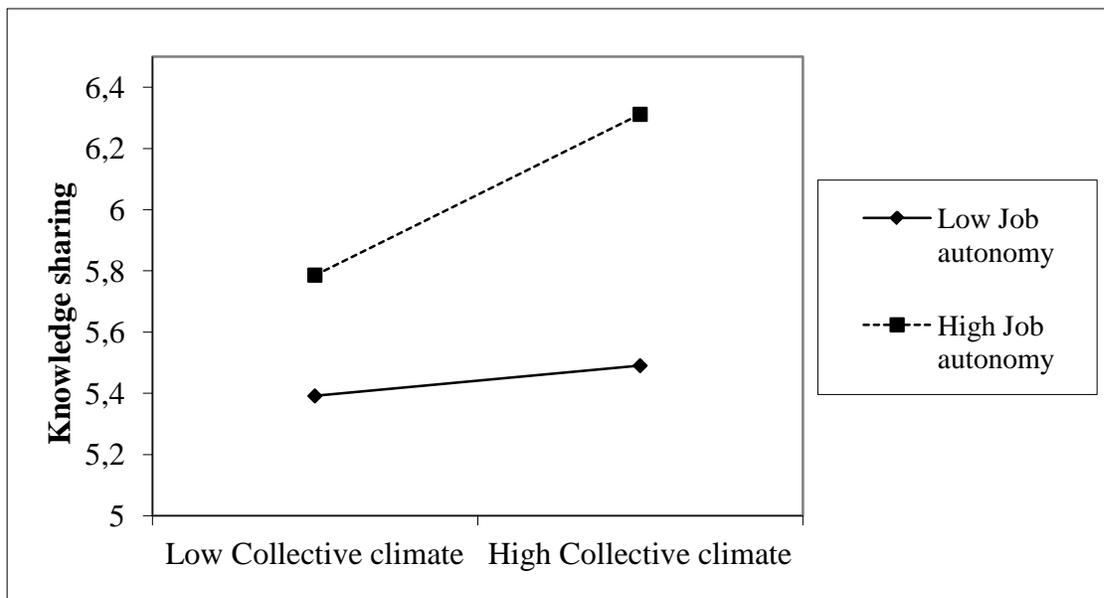
As shown in the figure, for highly intrinsically motivated employees, the impact of the cooperative climate into knowledge sharing is weak (dotted line). Conversely, employees with low levels of intrinsic motivation are more likely to be positively influenced by a cooperative climate to share knowledge.

In order to test hypothesis 3, in the fourth step (Model 3) we included the interaction effect between cooperative climate and job autonomy. The F-test shows a significant increase in R-square ($F = 4,93$ $p < .05$) which jumps up to 0.37. In support of hypothesis 3, we found a statistically significant interaction between cooperative climate and job autonomy ($\beta = .12$, $p <$

.05) showing that the positive effect of a cooperative climate over knowledge sharing is stronger when employees have high levels of job autonomy.

As with intrinsic motivation, we plotted the simple slopes for the relationship between cooperative climate and knowledge sharing at one standard deviation above and below the mean of job autonomy (Figure 3).

FIGURE 3: TWO-WAY INTERACTION BETWEEN COOPERATIVE CLIMATE AND JOB AUTONOMY



Regression slopes for the interaction of cooperative climate and job autonomy predicting knowledge sharing behavior.

Employees with high levels of autonomy are more influenced by a cooperative climate (dotted line). For these employees with low levels of job autonomy, the effect of a cooperative climate is weaker.

DISCUSSION

Theoretical implications

This research seeks to expand our understanding of the relation between a climate characterized by cooperation and employee knowledge sharing behaviors. To do so, we developed and tested a model of how a cooperative climate affects knowledge sharing. We first conceptually and empirically connected a cooperative climate to the knowledge sharing behavior showed by employees. We also introduced two sources of individual heterogeneity: intrinsic motivation and job autonomy, arguing that the moderating effects of both variables would increase the explanatory power of a cooperative climate over knowledge sharing. The obtained results supported our hypotheses, showing two main findings. The first finding of our analysis indicate that a cooperative climate is particularly effective in fostering knowledge sharing when employees are low intrinsically motivated to do so. Therefore we suggest that a cooperative climate can supply a complementary source of motivation for these employees not inherently motivated to share knowledge. We also built and tested the argument that providing employees increased levels of autonomy will strength the positive influence of a cooperative climate in their decision to share knowledge. Employees with greater discretion about how to perform their tasks will be more likely to accrue the social cues provided by a cooperative climate. As a result, they will show higher levels of knowledge sharing behavior.

The results yield a number of theoretical implications that build upon and clarify prior research. First, they add to our understanding of the factors that are important for greater levels of intraorganizational knowledge sharing. By considering knowledge sharing as a source itself of intrinsic motivation, we have shown that a cooperative climate becomes crucial when individuals does not conceive the activity itself as intrinsically motivating. These finding are important because although there has been considerable research into the social drivers of knowledge

sharing, our research suggests that its explanatory power is not homogeneously dispersed across all individuals. Second, the finding that job autonomy moderates the link between a cooperative climate and knowledge sharing provides insight into how job design features can be managed to take advantage from a favorable climate towards knowledge sharing. By integrating job autonomy and cooperative climate, we view job autonomy as a source of heterogeneity that helps to explain why some individuals will be more affected by a cooperative climate while others not.

Limitations and Future Research

Notwithstanding the mentioned contributions, our research is subject to a number of limitations. First, although our study suggests a causality relation between organizational climate and knowledge sharing, our cross-sectional data do not rule out the possibility of alternative causal pathways. For example, some studies on organizational climate suggest that the perception of the climate is affected by individual's prior level of motivation (Parker et al., 2003). Hence, future research using experimental or longitudinal designs is recommended to examine the direction of causality.

Furthermore, researchers have emphasized that climate can take multiple forms in the organization (e.g.: Kuenzi & Schminke, 2009; Schneider, 1975), but we focused only on cooperative climate. Therefore we encourage researchers to investigate how other types of organizational climates interact with employee's level of intrinsic motivation and job design. A more normative climate may have negative effects for intrinsic motivation employees due to crowding-out effects (Lam & Lambermont-Ford, 2010). With regard to job autonomy, we hope researchers to explore the interactive nature of autonomy under different types of organizational climates. Additionally, in focusing on job autonomy, we did not examine other characteristics of the job that can affect the relationship between climate and behavior. We believe that human

resource management researchers can move to a broader examination of different job designs and their interaction with the climate.

Managerial Implications

The effects we discovered are also meaningful from a managerial standpoint. Given the strategic importance of knowledge sharing for organizations, the creation and maintenance of a cooperative climate has become an increasingly important objective for management. However, this paper shows that the relevance of a cooperative climate is neither homogeneous nor necessary for all employees. Rather, our finding suggests that managers can achieve employees to share knowledge not only by promoting a cooperative climate, but also by conceiving voluntary knowledge sharing as a way to fulfill employees' primary needs. Further, intrinsically driven behaviors may be compromised by a normative environment (Deci & Ryan, 1985; Harackiewicz & Manderlink, 1984). Given this fragile nature of intrinsic motivation, managers should consider whether encouraging a cooperative climate may derive for some employees in a perceived norm to share and thus, reduce their natural tendency to do it. By developing the idea that knowledge sharing can be an stimulating activity *per se*, we also provide managers an indication of the clear importance of promoting ways to share knowledge in the organization that can be viewed intrinsically motivating.

Moreover, our research suggest that management can directly strengthen the impact of a cooperative climate on knowledge sharing by providing employees with high levels of job autonomy. Our research shows that increased levels of discretion about how to perform tasks permits employees to be more engaged in knowledge sharing activities. Given the extrarole nature of engaging in knowledge sharing, job autonomy allows employees to have an opportunity to benefit from a cooperative climate by engaging in knowledge sharing. To the extent that providing employees higher levels of autonomy is likely to be easier than shaping the

organizational climate, managers should make sure that enough autonomy are given to employees to benefit from a cooperative climate. Thus, jobs may be designed to let employees to take advantage of being in a cooperative group. For example, by providing employees with little specific instructions to perform their job, they will be implicitly obligated to engage in knowledge sharing practices to find efficient ways to complete their tasks (Cabrera et al., 2006).

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