The relationship between Perceived Servant Leadership and Knowledge Hiding: a multilevel study of the moderating role of Mastery Climate

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Abstract

Knowledge remains a central issue in organizational viability, consequently, knowledge hiding can be detrimental. Knowledge hiding is a concept that has been prevalent in organizations but only recently studied in the academic world. Servant leadership has to date not been investigated in combination with knowledge hiding, thus, drawing on social exchange theory, perceived servant leadership has been researched in a motivational context, i.e., mastery climate, in order to investigate the relationships. A cross-sectional multilevel research was conducted via aggregation of the team members' perceptions of mastery climate. In addition, based on convenience sampling, the sample comprised of 270 respondents nested in 49 teams from 34 organizations. Results indicate that perceptions of servant leadership in the team are negatively related to knowledge hiding. Moreover, when low level of mastery climate is salient, it has a positive interplay with perceived servant leadership and it may reduce knowledge hiding. Finally, the current research sheds more light into the research of knowledge hiding by discussing future directions and practical implications.

Keywords: perceived servant leadership, knowledge hiding, mastery climate, motivational climate, social exchange theory

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Thanks to human progress in technology, the economy has seen increased complexity and knowledge management has been playing a crucial role; in the eastern and western knowledge-based economy (Nonaka & Takeuchi, 1995; Peng, 2013). Knowledge is according to Tsoukas and Vladimirou (2001), "the individual ability to draw distinctions within a collective domain of action, based on an appreciation of context or theory, or both" (p. 979). Knowledge management is paramount for the success of organizations after all it could be seen as a competitive advantage in the resource-based view; non-substitutable, unique, valuable, and inimitable (Arshad & Ismail, 2016; Barney, 1991; Matusik & Hill, 1998). According to Witherspoon, Bergner, Cockrell, and Stone (2013), knowledge can be valued as a crucial factor for achieving organizational growth and performance. Therefore, it is paramount for organizations to create an environment wherein individuals are motivated to share knowledge in order to achieve organizational goals and be able to compete with the competition (Connelly & Kelloway, 2003; Jarvenpaa & Staples, 2001; Kelloway & Barling, 2000).

Management support is an aspect that has been shown to be positively associated with a knowledge sharing climate because leadership can motivate via feedback and incentives to behave in a specific manner (Connelly & Kelloway, 2003; Lin, 2007). In addition, organizations have focused on more various methods to achieve knowledge sharing between employees; psychological contract maintenance (Scarborough & Carter, 2000), fairness (Bouty, 2002), incentives (Bartol & Srivastava, 2002), and trust (Jarvenpaa & Majchrzak, 2008; Kankahalli, Tan, & Wei, 2005).

Nevertheless, employees in organizations do sometimes refuse to share knowledge with their colleagues; this intentional behavior is related to counterproductive work behavior and is referred to as knowledge hiding (Connelly, Zweig, Webster, & Trougakos, 2012; Spector & Fox, 2005). This concept of knowledge hiding has seen limited amount of attention in academic literature (Connelly et al., 2012). Because knowledge sharing is fundamental for the success of organizations, as abovementioned, knowledge hiding is an interesting concept to research in order to find antecedents that could minimize this intentional behavior. Connelly and colleagues (2012) developed a construct to measure knowledge hiding and Černe, Nerstad, Dysvik, and Škerlavaj (2014) linked knowledge hiding to creativity and motivational climate in the organization. In addition, Connelly and Zweig (2015) researched the impact of knowledge hiding on collegial relationships. Apart from these researches there is no explanatory research on knowledge hiding that concentrates on servant leadership in combination with a mastery climate in the organization, therefore, the current research will investigate these relationships.

In the field of positive organizational behavior, it has been suggested that leadership could play a paramount role for engaged employees and thriving organizations (Luthans, 2002; Macik-Frey, Quick, & Cooper, 2009). An intriguing, non-ego driven and idealistic leadership theory that particularly prioritizes the needs of followers (Patterson, 2003) and includes a moral element (Graham, 1991) is servant leadership what has been written about by Greenleaf in the 1970's. Servant-leaders concentrate more on concern for their followers by facilitating a shared vision, creating conditions to enhance followers' well-being and functioning; servant-leaders take care of their subordinates in order that they do what is necessary for the organization (Stone, Russell, & Patterson, 2004). In addition, they empower and develop followers; provide direction, show humility, are authentic, accept people for who they are, coach, and are stewards who work

for the good of the whole (van Dierendonck & Nuijten, 2011). By serving followers, servant-leaders create a series of interactions that generate obligations; known as reciprocity (Emerson, 1976). Within social exchange theory (SET), these interactions are often regarded as interdependent and contingent on the actions of the other party (Blau, 1964).

The abovementioned interaction between leader(s) and subordinate(s) take place in an organizational climate, one of such climates is a mastery climate, which is part of the motivational climate. In a mastery climate there is emphasis on learning, skill development, effort, cooperation, and mastery (Ames, 1992b; Nicholls, 1989). In addition, a mastery climate should create a perception of shared fate and stimulate supportive behavior such as knowledge sharing (Černe et al., 2014). The introduction of a mastery climate as a relevant moderator helps with insight into knowledge hiding by not only considering an individuals' personal dispositions (Matzler & Müller, 2011) but in addition considering them in context (Johnson, 2006). A work climate is important because it enables organizations and leaders to influence behavior via the facilitation of a desired motivational climate (cf. Pearce & Huang, 2012). Černe and colleagues (2014) have studied the mastery climate in relationship with creativity and this is to date the only research into motivational climate in relationship to knowledge hiding, therefore, the current research wants to add to their insight.

First, the aim of this research is to contribute to knowledge hiding research by empirically investigating servant leadership as a possible variable that could attenuate or strengthen knowledge hiding behavior. This type of leadership has not been researched in relation to knowledge hiding, therefore, it should give novel insight from a theoretical and practical perspective. Second, a mastery climate as a possible explanatory moderating mechanism in combination with knowledge hiding has been investigated by Černe and

colleagues (2014), but their results were not consistent across both of their studies. Third, the interaction of mastery climate with servant leadership has yet to date not been investigated. In this regard the current research could give more explanation about the influence of a mastery climate on the relationship between perceived servant leadership and knowledge hiding behavior. Fourth, calls for more multilevel research on contextual factors in predicting knowledge hiding is answered by exploring mastery climate at the team level (Connelly et al., 2012). Finally, this research could help practice by explaining possible manners to diminish the prevalence of knowledge hiding behavior in organizations. For these reasons, the research question of this study is:

To what extent does perceived servant leadership relate to knowledge hiding, and to what extent is this relationship moderated by a mastery climate?

Literature Review

Perceived servant leadership and knowledge hiding

Greenleaf had not given an accurate definition of servant leadership because his manner of writing about the subject was an idealistic perspective of the role a leader should portray in the organization (van Dierendonck, 2011). Consequently, it gave researchers who wanted to research servant leadership empirically, such as Laub (1999), Russell and Stone (2002), Patterson (2003), Reinke (2004), van Dierendonck and Nuijten (2011), and Liden and colleagues (2015) room to interpret Greenleaf's perspective into their own definition. Indeed, the abovementioned researchers have constructed their own method of measuring servant leadership in the organization by interpreting it into a wide range of behaviors in the form of distinct models.

These behaviors, such as supportive behavior towards employees, overlap with other leadership theories such as transformational leadership (Bass, 1985; Burns, 1978), authentic

leadership (Avolio & Gardner, 2005), and ethical leadership (Brown, Trevino, & Harrison, 2005). Servant leadership is compared to these leadership styles because they are well known in the leadership theory and have shared behavior, which makes it in addition easier to relate to in practice (van Dierendonck, 2011). Nevertheless, they do differ in some important manner. Firstly, servant leadership is divergent from transformational leadership by emphasizing on the needs of the followers (Greenleaf, 1977), while transformational leadership focuses on organizational objectives (Graham, 1991). Secondly, the essence of authentic leadership is the expression of the "true self" (Ladkin & Taylor, 2010), which could mean that the leader, from the perspective of agency theory (Eisenhardt, 1989), may believe that increasing shareholder value is the moral responsibility of a leader (van Dierendonck, 2011). Finally, ethical leadership emphasizes the directive and normative behavior of followers, by contrast, servant leadership focuses more on the developmental aspect of the followers (van Dierendonck, 2011). As aforementioned, it may be that servant leadership is an idealistic leadership theory by focusing more on the follower compared to other leadership theories, it is however remarkable that it gets popular after an economic crisis because most often the employees get the short end of the stick (Reinke, 2004).

Furthermore, servant leadership separates itself from other leadership styles in the way that a servant-leader is motivated to create opportunities in the organization for followers to grow because "going beyond one's self-interest" is a fundamental characteristic of servant leadership (Luthans & Avolio, 2003). In comparison to other leadership theories wherein the prosperity of the organization is central, the servant-leader is genuinely involved with caring for followers (Greenleaf, 1977; Stone et al., 2004). Followers trust these servant-leaders because they are committed to their well-being and this relationship helps to create an atmosphere wherein one

can become the very best they can (Greenleaf, 1998). The commitment of the leader is to increase the autonomy and responsibility of the followers, to create a learning organization wherein individuals think for themselves and add unique value to the group (Bowie, 2000). In addition, the facilitation of a shared vision guides everyone in the same direction and because the followers feel safe and taken cared for by servant-leaders, the trust is in the followers to do what is necessary for the organization (Sinek, 2009; Stone et al., 2004). Furthermore, according to the servant leadership theory, the servant-leader in the role of steward holds the organization in trust (Reinke, 2004), motivated by the need to serve (Luthans & Avolio, 2003), and be concerned not only with employees but in addition with the survival of the organization, and responsibility to the community (Reinke, 2004). Moreover, according to Greenleaf (1977), the servant-leader is "primus inter pares" (i.e., first among equals), who uses persuasion and influence as a mean to convince his followers instead of hierarchical power. In concordance with Greenleaf, Nair (1994) agrees that in order to move toward a higher standard of leadership, one should associate power with leadership in order to serve in the organization. Thus, servant leadership is for most concerned with personal growth of their followers through self-actualization (Maslow, 1965); becoming wiser, healthier, and more autonomous in accordance of positive job attitudes; and employees becoming servants themselves for the people they interact with in and outside the organization (van Dierendonck, 2011; van Dierendonck & Nuijten, 2011).

In an organization leadership is critical, but so is knowledge, which can be shared or kept (partially) hidden from colleagues. This intentional act is a new concept in the academic research first empirically studied by Connelly et al. (2012) and further investigated by other researchers (Černe et al., 2014; Connelly & Zweig, 2015; Peng, 2013). The definition of knowledge hiding is according to Connelly and colleagues (2012) the "intentional attempt by an individual

to withhold or conceal knowledge that has been requested by another person" (p. 65). Thus, it is a dyadic relationship between a requester and knowledge holder who intentionally chooses to withhold sharing knowledge or information. Their research unveiled that knowledge sharing and hiding represent different constructs and should be studied separately because lack of knowledge sharing could be caused by the absence of knowledge, whereas knowledge hiding is partly driven by the superordinate construct of counterproductive workplace behaviors (Connelly et al., 2012; Peng, 2013). It should be distinguished that not sharing knowledge out of ignorance or by accident is not part of the construct knowledge hiding because this construct is an intentional act and the perpetrator can choose to share none or partial knowledge (Ford & Staples, 2008). In contrast, participants of knowledge sharing are willing to share their attained information in the organization (Bock, Zmud, Kim, & Lee, 2005).

Knowledge owners evaluate the returns they can get when one requests for their knowledge and in the absence of favorable benefits, e.g., intellectual rewards, organizational compensation, and gifts, one may choose to withhold knowledge (Boer, Berends, & Baalen, 2011; Connelly et al., 2012). Albeit the perpetrator of knowledge hiding may have positive intentions, e.g., protect other's feelings, keep confidential information, it is generally perceived as an act that is not contributing to the expected positive organizational climate (Peng, 2013). Furthermore, knowledge hiding may be an under-reported low-base-rate event because it is a socially undesirable act and thus could be more common behavior in organizations (Connelly et al., 2012).

Social exchange theory is a well-known theory in the social sciences and despite its name it consists out of multiple coherent conceptual models (Cropanzano & Mitchell, 2005). All social exchange theories comprise a series of sequential transactions between two or more parties

(Mitchell, Cropanzano, & Quisenberry, 2012). These exchanges are a process of reciprocity; one party is likely to repay the good or the bad deeds of the other party (Gergen, 1969; Gouldner, 1960). The relationship between the parties does have occasionally influence on the quality of the exchanges and these interdependent exchanges are a defining characteristic of social exchange (Molm, 1994) and could generate high-quality relationships (Blau, 1964). Individuals in a high-quality relationship with the organization for instance, could become affectively committed to the organization (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002), more trusting (Konovsky & Pugh, 1994), and so forth.

Aforementioned high-quality relationships evolve over time; there will be more loyal, trusting, and mutual commitments (Cropanzano & Mitchell, 2005). However, parties have to abide certain exchange rules that are normative and are formed among or are adopted by the participants as guidelines in the exchange relationship (Emerson, 1976). The actions of one party are contingent on the other's behavior, this interdependency decreases risk and stimulates cooperation (Molm, 1994); which may translate into receiving a kind response for a given benefit (Gergen, 1969).

In contrast, a negative reciprocity orientation may comprise the return of a negative response for a negative treatment (Eisenberger, Lynch, Aselage, & Rohdieck, 2004; Uhl-Bien & Maslyn, 2003). Bishop, Scott, and Burroughs (2000) argue that these created relationships with others, as abovementioned, have the potential to become stronger thanks to the reciprocal transactions and may in consequence affect an individual's social behavior. Thus, this may apply too for the negative reciprocal transactions between parties whereby with every transaction there is loss of trust. In addition, this returning of "harms" to the perpetrators is a manner to help the stability of social systems because it may discourage future negative actions (Gouldner, 1960).

As abovementioned in the paragraph about servant leadership, the creation of an atmosphere of trust where followers feel accepted, can make mistakes, and feel safe is a leading concern for servant-leaders (Ferch, 2005; van Dierendonck, 2011). In this regard servant leadership is in harmony with SET in that by serving the employees in the organization and creating trusting environments the employees can have reciprocal social exchanges that can evolve into high-quality relations. In contrast, distrust is the expectation that others will not act in one's best interest and even do harm (Grovier, 1994). For instance, when an employee requests assistance from a colleague or their leader and the request is rejected, it could lead to feelings of distrust and harm the relationship, which consequently could lead to knowledge hiding (Černe et al., 2014; Connelly et al., 2012). The presence of servant leadership may lead to decreased levels of knowledge hiding because it is a leadership style that concerns itself in serving the employees in the organization (Greenleaf, 1977; Laub, 1999; Patterson, 2003) and via social exchanges the employees feel obligated to reciprocate toward the reciprocal party, which could be the organization, the leader, and their colleagues who serve them positive transactions (Blau, 1964; Emerson, 1976; Gouldner, 1960). In this regard, organizational objectives are reachable (Eisenberger, Armeli, Rexwinkel, Lynch, & Rhoades, 2001) by sharing knowledge and exert great effort (Tsay, Lin, Yoon, & Huang, 2014). Furthermore, because the philosophy of servant leadership is to serve followers in order that they themselves become servants in terms of organizational citizenship behavior (OCB; Smith, Organ, & Near, 1983) for the people they interact with (Greenleaf, 1977, 1998; van Dierendonck, 2011), knowledge sharing by the followers can be seen as a manner to serve others in order to achieve objectives. According to Graham (1995), servant leadership positively affects OCB because it encourages followers to adopt a higher level of moral reasoning.

In conclusion, when followers feel served, safe, and trusted in the organization and experience more servant leadership, there could be more high-quality relationships in concordance with SET. Consequently, these evolved reciprocal relationships may lead to less knowledge hiding because knowledge hiding is an intentional behavior, which could reduce the trust between parties. This leads to the first hypothesis:

H1: Perceived servant leadership is negatively related to knowledge hiding.

The moderating role of mastery climate

The organizational climate known as the motivational climate as defined by achievement goal theory (AGT) consists out of two dimensions: mastery and performance structures (Ames, 1992b; Ames & Archer, 1988; Nicholls, 1989; Roberts, 2012). The existence of one of these climates has influence on the relationship between servant leadership and knowledge hiding behavior because the interpretation of the existing criteria of success and failure, i.e., policies, practices, and procedures, is incorporated in the environment; the behaviors essential to avoid failure and or achieve success (Nerstad, Roberts, & Richardsen, 2013; Roberts, 2012). Mastery climate, known as task-involving climate, is perceived by individuals as a climate that values cooperation, learning, sharing, mastery of skill, and demonstrated effort (Ames, 1992b). There is no perception of normative criteria and no comparison processes are emphasized; instead individuals distinguish achievement when their current level of performance surpasses previous achievements (Ames & Ames, 1984a, 1984b). Thus, the focus is on self-development and building competence.

In contrast, performance climate is an ego-involving climate wherein the perception of the individual is that demonstrated superiority and favorable comparisons are made by the concentration on social comparison, intrateam competition, internal rivalry, and public

acknowledgement of the demonstration of ability (Ames & Archer, 1988; Roberts, Treasure & Conroy, 2007). Thus, achieving outcomes and normative competence is seen as important and those top achievers are seen as successful (Ames, 1984; Ames & Ames, 1984b). Such a structure may influence the interdependency between co-workers in a negative manner and may influence the behavior of individuals in such way that they hide knowledge from each other (Černe et al., 2014). Performance climate is left out of the current research because it is negatively loaded and the goal of the current research is to investigate a positive predictor within a positive context in order to see if there is a strengthening interplay.

On the contrary, mastery climate encourages and rewards, in addition to the abovementioned characteristics, individual improvement and employee equality because a cooperative climate stimulates positive interdependence among employees and helps with achieving goals, resolving issues, and information sharing (Černe et al., 2014; Chen, Tjosvold, & Liu, 2006; Nerstad et al., 2013; Tjosvold, 1995). Furthermore, higher mastery climate is usually related to adaptive outcomes, for instance less knowledge hiding, resilience, positive affect, intrinsic motivation, well-being, higher work performance, engagement, and more creativity (Černe et al., 2014; Lau & Nie, 2008; Nerstad et al., 2013; Ntoumanis & Biddle, 1999; Valentini & Rudisill, 2006). Thus, the organizational climate is a paramount aspect for actual knowledge transfer and whether co-workers choose to reciprocate in concordance with SET by behaving positive or negative, sharing or withholding knowledge, may be affected by the extant criteria of success and failure in the work climate (Ames, 1992b; Černe et al., 2014).

Cable and Edwards (2004) concluded that the climate is more dominant than person effects because it changes more frequently than personal needs and therefore in a mastery climate co-workers might perceive reciprocal knowledge hiding as a detrimental behavior, which

impedes the shared benefit of knowledge exchange (Černe et al., 2014). In a mastery climate there are norms of knowledge sharing and cooperation because of an increased knowledge-sharing motivation (Ames, 1992b; Černe et al., 2014) and characterized by an atmosphere of trust (Ommundsen, Roberts, Lemyre, & Treasure, 2003). Knowledge hiding behavior is not in concordance with behavior necessary for success in a mastery climate. In a high mastery climate the perception of a shared fate and promotion of supportive behavior is more salient and thus employees are more inclined to share knowledge (Černe et al., 2014; Johnson, 2006). In addition, servant leadership helps to create this trusting environment by focusing on the followers needs and creating an atmosphere wherein followers are allowed to make mistakes in order to become the very best they can (Greenleaf, 1998). When followers adopt servant leadership characteristics from their leader by serving other colleagues, they may be less inclined to take part in negative behavior because they are participating in positive leadership behavior. In conclusion, the existence of a mastery climate may decrease the level of knowledge hiding and this leads to the second hypothesis:

H2: Mastery climate moderates the relationship between perceived servant leadership and knowledge hiding, in such a way that this negative relationship is stronger under higher levels of mastery climate.

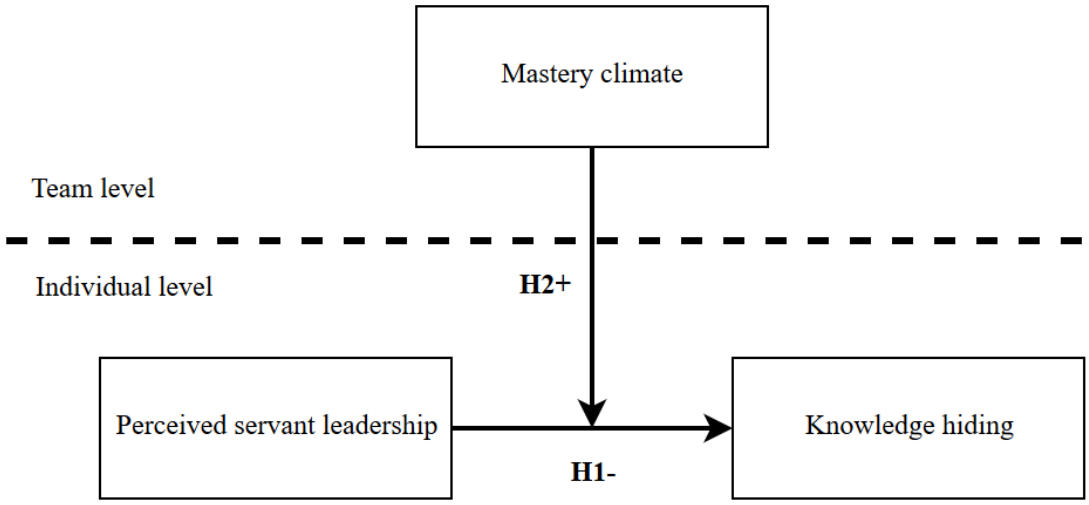

Figure 1. A multilevel conceptual model with the proposed interactions that will be tested in the current research.

Method

Research design

The current research has a quantitative cross-sectional design because the data collection took place once by six human resource students of Tilburg University who were writing their master theses about the concept of knowledge hiding. Because of this cooperation the questionnaire consisted out of more items than needed for the current research. Convenience sampling (Ritchie, Lewis, Nicholls, & Ormston, 2013) took place in the current research because students had to approach in their own network at least ten teams to participate in the study.

Sample

The sample consisted out of 347 participants, from 38 organizations. Because the line managers and HR professionals helped with the distribution of the questionnaire, it is unknown what the response rate for the team members is. However, 64 out of 93 teams did respond, which translates into a response rate of 68.8 percent. Nevertheless, after cleaning up the dataset via multiple procedures, see Appendix C, 270 respondents nested in 49 teams from 34 organizations were left over, however, the response rate cannot be calculated because some participants could not be linked to a team because team leader's initials were missing. Teams consisted out of 3 to 15 members, with an average of 5.5 per team. The sample consist of 171 male participants, 63.3 percent, and 99 female respondents with an average age of 37.8 years (SD = 10.8). The respondents average tenure was 7.9 years (SD = 8.4). The organizations who participated varied enormously from the construction sector to IT services.

According to Browne and Draper (2000) with 48 groups, full maximum likelihood (FML) estimation can provide reasonable variance estimates. Maas and Hox (2001) note that with as low as 30 groups, restricted maximum likelihood (RML) produces accurate variance

estimates. Hox (2002) mentions that for cross-level interactions a 50/20 rule is advisable; 50 groups with 20 individuals per group. There is little to no effect to biasing the estimates of the fixed effects when using small sample sizes for the level one and two of multi-level modeling (Bell, Ferron, & Kromrey, 2008; Clarke, 2008; Clarke & Wheaton, 2007).

In conclusion, the sample has enough teams for FML estimation and one team short for the advised 50/20 rule. The average of 5.5 per team is on the low side compared to the 20 that Hox (2002) advises for cross-level interactions.

Measures

Previous published scales have been used in this research to measure servant leadership, mastery climate and knowledge hiding. The reliability of the scales was tested via Cronbach's alpha (Cronbach, 1951), which tests for internal consistency between the items of the construct. Servant leadership and knowledge hiding were measured at the individual level and mastery climate at team level via aggregation of the team members' data. This has been done in order to be able to make statements about the difference of perception of mastery climate between the groups.

Servant leadership. The construct of servant leadership was measured with seven items, including three sub-dimensions openness, vision, and stewardship (Reinke, 2004). An example of an item is: "My supervisor emphasizes doing the right thing for the long-term benefit of all". The fourth item "My supervisor never puts things in perspective—we're always reinventing the wheel around here" is reversed. All seven items were measured by using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The Cronbach's alpha coefficient was .72, which is acceptable.

Knowledge hiding. The construct of knowledge hiding was measured with twelve items (Connelly et al., 2012). All the questions open up with "In this specific situation I…". An example of an item is: "Said that I did not know, even though I did". All twelve items were measured by using a 7-point Likert-type scale ranging from 1 (*not at all*) to 7 (*to a very great extent*). The Cronbach's alpha coefficient was .94, which is excellent.

Mastery climate. The construct of mastery climate was measured by the employee questionnaire (level 1) with six items (Nerstad et al., 2013) and ratings from team members who belonged to the same team were aggregated at the team level and averaged to obtain a single score for each team (level 2). All the questions open up with "In my department/work group …". An example of an item is: "In my department/work group, one is encouraged to cooperate and exchange thoughts and ideas mutually". All six items were measured by using a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (strongly agree). The Cronbach's alpha coefficient was .88, which is good.

Control variables. The control variables included in the current study were age, gender, and job tenure because there were some significant demographical differences in previous research (Murcia, Gimeno, & Coll, 2008; Nerstad et al., 2013).

Procedure

Beforehand was agreed upon that a team would consist out of a minimal of five team members, a team leader, and an HR professional of the organization because the data would be used for multi-level studies too. The organization's representatives were contacted via e-mail to distribute the anonymous online questionnaire links, which were made via the Web-based survey tool Qualtrics, to the appropriate participants. Anonymous questionnaires give the notion that the answers are of value and not who has given them, this awakens a feeling of distancing from the

answers and thus identification possibility of the participant. In addition, the online possibility to fill in the questionnaire increases the perceived anonymity of the participants because they do not have to hand in the questionnaire with their colleague for collection (Webster et al., 2008). Undesired work behaviors are underreported in social research and because knowledge hiding is an undesired behavior, participants are possibly inclined to underreport their knowledge hiding (Connelly et al., 2012). In addition, Podsakoff, MacKenzie, Lee, and Podsakoff (2003) mention that respondents could "edit their responses to be more socially desirable, lenient, acquiescent, and consistent with how they think the researcher wants them to respond" (p. 888), therefore, perceived anonymity is helpful. However, the team members did have to type their team leaders' initials in order that the researchers would be able to afterward distinguish the teams from each other.

The participants could choose between English and the Dutch language because all the questionnaires were available in the original language English and were translated into Dutch and later translated back into English via backward translation method (Brislin, 1970). The first page of the questionnaire consisted out of a cover letter; explaining the purpose, emphasizing confidentiality, and to provide an explanation of the questionnaire, see Appendix A. The team members' questionnaire consisted out of 77 items, see Appendix B, team leaders' 64 items, HR professionals' 34 items, and the output of the questionnaire could be downloaded in the SPSS format for further analysis.

Analysis

Because the scales used in the current research were from previously published research, the psychometric properties as well as the discriminant validity of them were tested via confirmatory factor analysis (CFA) with maximum likelihood estimation in order to confirm the

factors via the AMOS24 software (Farrell, 2010; SPSS Inc., Chicago, IL, USA). The purpose of this analysis is to make sure that the variables in the sample load onto the factors in the manner of the previous research. The work of Hu and Bentler (1999) and their cut-off criteria have been leading in evaluating the results of the CFA. The factors and the overall model fit was probed in the first place and after the use of modification indices the best model fit was found, see Appendix D. The chi-square that is sensitive to sample size and variables in the model resulted in $\chi^2(263) = 426.79$, *CMIN/DF* = 1.62, $p < .01$, which signifies an insufficient model fit. Other results were Comparative Fit Index (CFI) = .96 (> .95), Tucker-Lewis Index (TLI) = .96 (> .95), Adjusted Goodness-of-Fit Index (AGFI) = .87 (> .80), standardized root mean square residual (SRMR) = .05 (< .08), root mean squared error of approximation (RMSEA) = .05 (< .06), PCLOSE = .64 (> .05). In addition, factor loadings were sufficiently high, ranging from .72 to 1.96, exceeding .50 (Nunnally & Bernstein, 1994), however, item four of servant leadership loaded with .05. An explanation for this could be that because the question is formulated negatively, the respondents did not understand it correctly or presumed like previous questions that it was stated positively and thus scored it not fully conscious of this fact (Podsakoff et al., 2003). Deleting the item would change the construct of servant leadership because previous research validated with this question included (Reinke, 2004), therefore, it was decided to leave the item in. In conclusion, the proposed model accounts for the correlations between the variables in the sample and thus has a good fit.

Common method variance (CMV) is a known problem in the behavioral sciences, according to Podsakoff and colleagues (2003), it is unnecessary to deploy additional statistical remedies when the predictor and criterion variables can be measured from different sources because this method will control for a possible variance in the scores (Podsakoff & Organ,

1986). However, because knowledge hiding has been only assessed on the individual level, controlling for the effects of an unmeasured latent methods factor in the form of single-common-method-factor has been conducted in AMOS24, via the plugin of Gaskin and Lim (2017), to test whether the shared variance across all the items is significantly different from zero via chi-square difference test between the unconstrained model and a model wherein all paths are constrained to zero (Gaskin & Lim, 2017; Podsakoff et al., 2003). The zero constraint test resulted in $\chi^2(102) = 68$, $p > .99$, thus the constrained and unconstrained models are invariant. In conclusion, the test was not able to detect any specific response bias affecting the model under research.

The aggregation of mastery climate can be validated by calculating the intra-class correlations (ICCs) – ICC1, ICC2 and inter-rater agreement $r_{wg(j)}$ (James, 1982). ICC1 measures the proportion of variance due to group variability while ICC2 evaluates the extent to that groups can be used to differentiate in terms of individual ratings, and $r_{wg(j)}$ measures the level of agreement among all raters in a specific group (Raudenbush & Bryk, 2002; Shen, 2016). It is recommended for $r_{wg(j)}$ a value greater than .70 (James, 1982; Lance, Butts, & Michels, 2006). Bliese (2000) suggested for ICC1 values different from zero are preferable, with values close to .20 to be high scores for group-level analysis. With regard to ICC2 a value greater than .60 is preferable (Glick, 1985). The numbers have been determined via an Excel file developed by Biemann, Cole, and Voelpel (2012).

The results for the sample of 270 team members nested in 49 groups presented for mastery climate $r_{wg(6)}$ ranged from .49 to 1.00 and the average was $r_{wg(6)} = .88$, whereas ICC1 = .12 and ICC2 = .44 ($F = 1.77$, $p < .01$). According to James (1982) ICC1 generally ranges from 0 to .50 with a median of .12. It would have been preferable in concordance with Glick's (1985) recommendation if ICC2 was greater than .60, however, ICC2 is a function of group size (Bliese,

2000), and as previously mentioned the team size in the current research is smaller compared to those in the research used in recommending the cutoff criteria. The study of Černe and colleagues (2014) produced an ICC2 of .45, in line with the current research ICC2 of .44. No definite guidelines exist for what determines acceptable values (Černe et al., 2014). Therefore, the values obtained indicate significant between-group variance and allows to aggregate measures of perceived mastery climate.

To test the hypotheses in the current research the incremental improvement procedure that Hox (2010) illustrated has been conducted in order to test a set of multilevel models based on theoretical predictions. Hierarchical linear modeling (random coefficient modeling) with FML in HLM7 student version (Raudenbush, Bryk, & Congdon, 2017) was conducted. The first hierarchical level consisted out of 270 team members, and 49 teams for the second hierarchical level. First, the intercept model was tested to evaluate the existence of multilevel structure. Second, the level one model to test the connection between all the first hierarchical level variables and knowledge hiding (Hypothesis 1). Third, the cross-level model to test mastery climate direct effect on knowledge hiding, holding other variables constant. Finally, the interaction model to test the moderation of mastery climate on perceived servant leadership towards knowledge hiding (Hypothesis 2).

Results

Descriptive statistics

The descriptives and correlations of the variables used in the current research are depicted in Table 1. Perceived servant leadership and mastery climate correlate positively (r = .50, p < .01), thus they increase in tandem. Contrary an inverse relationship is seen between

knowledge hiding and age (r = -.15, p < .05), when age increases knowledge hiding decreases. Finally, employees who have a higher job tenure tend to be male (r = -.19, p < .01).

Table 1

Descriptive statistics, scale reliabilities, and correlations

Variable	*M*	*SD*	1	2	3	4	5	6
Level 1 (individual level)								
1. Perceived servant leadership	3.68	0.52	(.72)					
2. Knowledge hiding	1.52	0.85	-.08	(.94)				
3. Mastery climate[a]	3.64	0.72	.50**	-.09	(.88)			
4. Gender[b]	1.37	0.48	-.01	-.01	.07	-		
5. Age	37.77	10.78	-.04	-.15*	.01	-.25**	-	
6. Job tenure	7.95	8.36	.04	-.11	.06	-.19**	.65**	-
Level 2 (team level)								
1. Mastery climate	3.64	0.38	(.88)					

Note. *N* (level 1) = 270, *N* (level 2) = 49. Coefficient alphas are on the diagonal in parentheses.

[a]Mastery climate at level 1 denotes employee perceptions, whereas at level 2 it denotes aggregated scores at the team level. [b]For gender: 1 = male, 2 = female.

*$p < .05$, two-tailed. **$p < .01$, two-tailed.

Multilevel analysis results

Hierarchical linear modeling (random coefficient modeling) was used to examine whether perceived servant leadership and mastery climate were predictive of a team members' knowledge hiding. As mentioned in the analysis section, the four models for hypothesis testing were analyzed via HLM7 student version (Raudenbush, Bryk, & Congdon, 2017) with FML in predicting knowledge hiding as depicted in Table 2. In addition, pseudo-R^2 by Snijders and Bosker (2012) and deviance are represented at the bottom of the table.

In the first model only knowledge hiding was present as an outcome variable in order to evaluate the intercept and test if there was any difference at the group level to confirm the necessity of multilevel modeling. The result was $\chi^2(48) = 117.11$, $p < .01$, thus there was a significant variance in knowledge hiding by the higher level grouping and multilevel modeling could be used. In addition, by calculating the proportion of level one variance to the total variance of two levels, one can calculate the ICC, which was 20%, thus 20% variance of level one resides at level two of analysis (Snijders & Bosker, 2012).

In the second model servant leadership was added (group mean centered; in order to improve the interpretation of the main effect) as level one predictor with the control variables gender, age, and job tenure (grand mean centered) to knowledge hiding. In Hypothesis 1 it was proposed that perceived servant leadership is negatively related to knowledge hiding. All the level one variables showed no significant results, however, the outcome of perceived servant leadership on knowledge hiding was significant $\gamma = -.30$, $SE = .12$, $p = .01$, thus H1 was supported.

In the third model mastery climate was added (grand mean centered) to evaluate the cross-level effect of mastery climate towards knowledge hiding. The outcome showed no significant result of any direct cross-level relationship γ = -.09, *SE* = .17, *p* = .61.

In the fourth and last model it was evaluated if there would be any interaction of perceived servant leadership with mastery climate towards knowledge hiding, see Appendix E. In Hypothesis 2 it was proposed that mastery climate moderates the relationship between perceived servant leadership and knowledge hiding, in such a way that this negative relationship is stronger under higher levels of mastery climate. The interaction term between perceived servant leadership and mastery climate was statistically significant γ = .62, *SE* = .29, *p* = .04, hence, to see if H2 is supported the interaction pattern was explored.

Accordingly, to investigate the form of the statistically significant interaction (Aiken & West, 1991), a simple slope test was conducted by using the coefficient variance matrix output of the model four analysis and an online calculating tool for HLM 2-way interactions developed by Preacher, Curran, and Bauer (2006). The lower and upper values were set at 1 standard deviation above and below the means using unstandardized scores. The result of the simple slope test for mastery climate was at lower bound $\gamma_{SL|low\ MC}$ = -0.89, *SD* = 0.37, *p* = .02 and at upper bound $\gamma_{SL|high\ MC}$ = 0.35, *SD* = 0.42, *p* = .40. Therefore, at the low mastery climate the slope is significant, however, at high mastery climate it is not, depicted in Figure 2.

In conclusion, firstly the relationship between perceived servant leadership and knowledge hiding is always negative, more so for team members under low mastery climate. Secondly, because the slope test for low mastery climate is significant, for team members under low mastery climate there is evidence that high perceptions of servant leadership could be beneficial for lower knowledge hiding in the team. However, the second part of Hypothesis 2

stated that at higher levels of mastery climate it could have a strengthening effect, nonetheless, the results are non-significant and thus it has not been supported.

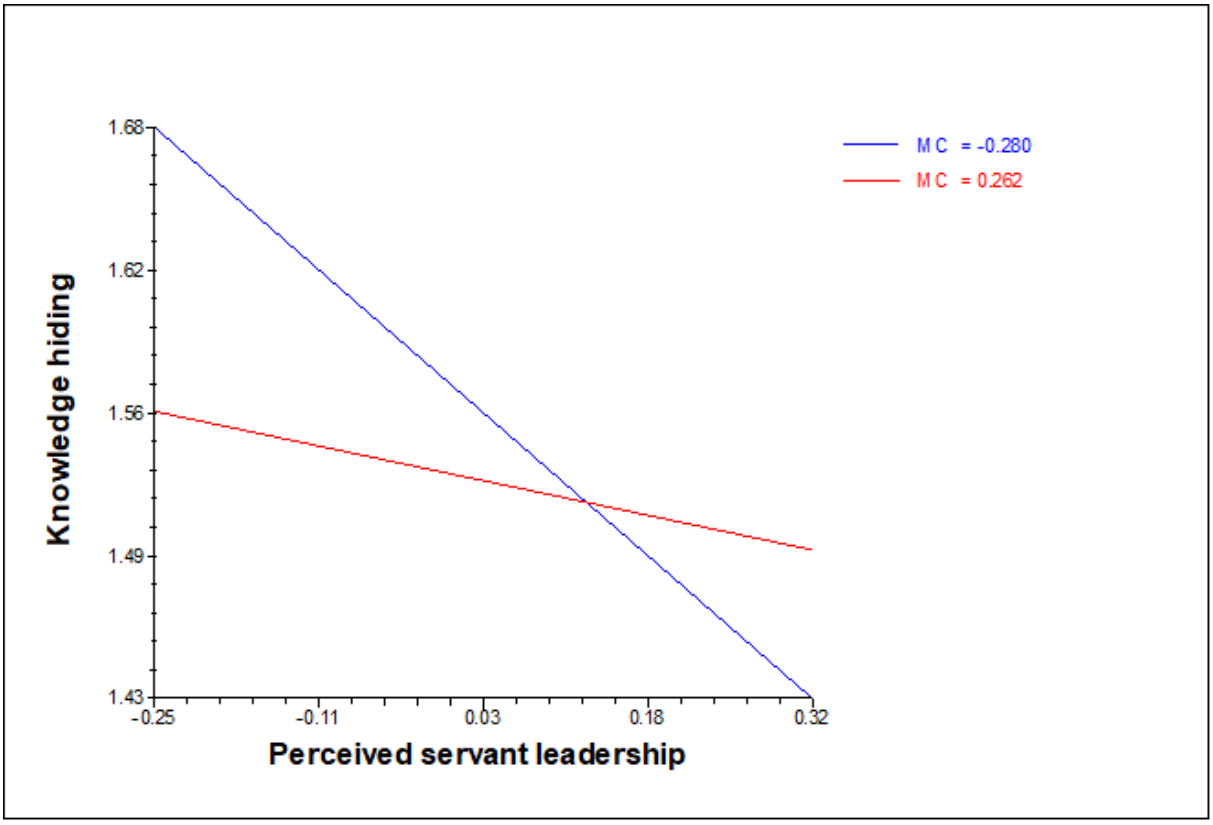

Figure 2. Simple slopes for moderating effect of mastery climate on perceived servant leadership-knowledge hiding relationship at the individual level.

Table 2

Results of hierarchical moderated regression analysis

Variable	Model 1 β	Model 2 β	Model 3 β	Model 4 β
Level 1				
Intercept	1.56** (.07)	1.55** (.07)	1.55** (.07)	1.55** (.07)
Gender		-.10 (.11)	-.10 (.11)	-.12 (.11)
Age		-.01 (.01)	-.01 (.01)	-.01 (.01)
Job tenure		-.01 (.01)	.01 (.01)	-.01 (.01)
Perceived servant leadership		-.30* (.12)	-.30* (.12)	-.27† (.14)
Level 2				
Mastery climate			-.09 (.17)	-.08 (.16)
Level 2 Interaction effect (interplay)				
Perceived servant leadership × mastery climate				.62* (.29)
Pseudo-R^2		.05	.05	.11
Deviance	660.49	651.72	651.49	645.09

Note. *N* (level 1) = 270, *N* (level 2) = 49 in all models. Entries are estimations of fixed effects with robust standard errors.

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

Discussion

Drawing on social exchange theory (SET; Blau, 1964), the current research set out to investigate the perception of servant leadership in a team and the sort of relationship it could have with team members' knowledge hiding behavior. Moreover, what role would a context as mastery climate play in the team? Therefore, the research question was *"To what extent does perceived servant leadership relate to knowledge hiding, and to what extent is this relationship moderated by a mastery climate?"* In order to answer this question, a cross-sectional multilevel study was designed and the sample that was constructed via an online questionnaire comprised of 270 participants in 49 teams within 34 organizations. The results indicate that indeed there is a significant negative relationship between perceived servant leadership and knowledge hiding. Moreover, the abovementioned relationship is moderated by a mastery climate, however, only when low level of mastery climate is salient.

Theoretical contributions

As aforementioned, knowledge hiding does not contribute to a knowledge sharing atmosphere and instead could create a negative dyadic reciprocal distrust relationship between colleagues, which hurts for instance, individual creativity (Černe et al., 2014; Connelly et al., 2012). Therefore, research into knowledge hiding is crucial and the theoretical contribution of the current study into this intentional behavior is fourfold.

The first contribution is the identification of perceived servant leadership as a possible antecedent of knowledge hiding. This style of leadership offers an intriguing area of exploration because prior research has not, to the best of the researchers' knowledge, explored it in conjunction with knowledge hiding. Preceding research has shown that servant leader's authenticity manifests itself in the form of being visible in the organization, keeping promises,

and honesty (Russell & Stone, 2002). In addition, because these leaders are genuinely concerned with the well-being of their followers, they create an atmosphere of trust for becoming the very best one can be: self-actualized (Greenleaf, 1998; Maslow, 1965). Moreover, thanks to social exchanges and reciprocity that the leaders invoke by performing a serving role and expecting this from their followers; they create interdependency and stimulate cooperation (Molm, 1994; van Dierendonck, 2011).

Therefore, perceived servant leadership could have a negative relationship with knowledge hiding. Indeed, the result was significant for the direct interaction between perceived servant leadership and knowledge hiding. As depicted in Figure 2, at low and high levels of servant leadership there is a negative relationship with knowledge hiding because the graph displays a downward slope.

The second contribution is by conceptualizing the motivational climate as a contextual factor and a compositional team-level construct. To be more specific, the exploration of mastery climate in conjunction with servant leadership is too, to the best of the researchers' knowledge, an unexplored field that could clarify knowledge hiding behavior. By focusing on mastery climate, the current research extends prior studies that promotes the examination of social and contextual influences (Škerlavaj, Černe, Dysvik, Nerstad, & Su, 2017). Nerstad and colleagues (2013) have uncovered that employers can overcome negative predispositions, e.g., knowledge hiding behavior, by way of improving the criteria of a mastery climate. Their finding is in concordance with prior research, for instance, in the domain of education and sports (Harwood, Spray, & Keegan, 2008; Lau & Nie, 2008), implying that the context could have more influence on individuals' behavior than their personal disposition and that it may be able to shape the dispositional orientation of workers (Maehr & Zusho, 2009; Nerstad et al., 2013).

Consequently, it was presumed that a mastery climate would moderate the relationship between perceived servant leadership and knowledge hiding, indeed, the results displayed this relationship. However, the moderation effect applies for individuals under low mastery climate.

In contrast, the simple slope test for the high level of mastery climate was not significant. An explanation for this non-significant result could be that the two motivational climates, mastery and performance, could be jointly dependent and interact in a multiplicative manner when predicting outcomes (Ames, 1992b). In other words, the mastery climate tasks, e.g., facilitating challenge and personal choice, could be weakened by systems that value end results and social comparison (Buch, Nerstad, & Säfenbom, 2017). According to Ames (1992b), if these two climates were in fact reciprocal, they would not be able to offset for each other. Thus, it should not come as a surprise, that outside the academic thinking paradigm, in an organization a mastery climate focusing on e.g., continuous self-exploration, learning, and skill mastery could exist, but in addition a performance climate emphasizing on end results (DeShon & Gillespie, 2005). Therefore, the non-significant result could be explained by the existing performance climate, which could have influenced the results but was not taken in consideration at the time the current study was designed.

The third contribution is in the form of a multilevel study design in order to explore how individual contextual perspective, via aggregation of individuals' perspective, holds itself in a team environment. In addition, if it varies from one team to another, and if team variables influence individual variables. Duda (2001) argues that multilevel research is desired to explore the effects of individuals in teams. Moreover, Papaioannou, Marsh, and Theodorakis (2004) argue for exploring what the effects of the team is on the individual, in concordance, to have a more in-depth understanding of the construct under investigation. In the current research the

team members' perspective has been aggregated into a team's perspective and the needed analyses performed in order to answer the research question. Thus, the request to explore the effect of motivational climate in teams (Stangeland, & Thoresen, 2016), and the relationship it may have with knowledge hiding behavior has been answered (Connelly et al., 2012).

The final contribution is the outcome of the variable correlations with demographics. Prior research into knowledge hiding by Connelly and colleagues (2012) and Peng (2013) did not result into any correlations between knowledge hiding and the variables gender, age, and job tenure, however, in the current research there were some significant results. Knowledge hiding and age show an inverse relationship, thus, an increase in age will result in a decrease in knowledge hiding. This finding is in concordance with previous studies in counterproductive work behavior (CWB) in that older individuals are less inclined to participate in various negative behaviors (Gruys & Sackett, 2003; Hollinger & Clark, 1983). Some researchers have argued that age can be seen as a reliable indicator of self-control and self-discipline, which appears that older employees, those over 40 years, are good self-monitors of their emotions and social behaviors (Chapman & Hayslip, 2006; Gross et al., 1997; Siu, Spector, Cooper, & Donald, 2001). In addition, older employees tend to be in the maintenance stage of their career, are more open to fulfil a coaching role, and share their expertise compared to younger starting employees who tend to be more focused on the self when they start with their career (e.g., Maskit, 2011). Moreover, in line with the finding that older employees tend to have a higher job tenure, older employees engaging in CWB tend to be fired over time, because their negative behavior is not tolerated for a leadership position where one has an exemplary role. In contrast, their remaining colleagues who display positive behaviors could be promoted to manager positions (Conway, 1999).

Limitations and future research

Even though the current research has novel and valuable theoretical contributions, it is not exempt of limitations. When interpreting the findings, the following limitations should be taken into consideration.

First, the existence of a performance climate could have existed in the organizations of the sample that may have interfered and led to a non-significant result when high mastery climate in conjunction with perceived servant leadership was explored. Although mastery climate is advocated in the literature (e.g., DeShon & Gillespie 2005; Van Yperen, Hamstra, & van der Klauw, 2011) and is the only contextual element investigated in the current research; the interaction between both of the motivational climates is interesting to explore. For instance, research in creativity has demonstrated that when both climates are high, it displays a beneficial three-way interaction for individual creative-idea generation and idea implementation behaviors (Škerlavaj et al., 2017). Future research can control for the existence of a performance climate and explore the interplay and impact of both motivational climates on knowledge hiding.

Second, the current research uses a cross-sectional study design and thus the questionnaire results could have been affected by temporary individual and organizational determinants. Consequently, the research cannot demonstrate causality or dismiss reverse causality (Shadish, Cook, & Campbell, 2002). In addition, the bivariate analysis discloses relationships, however one cannot extract causality from it (Bryman & Bell, 2015). In order to overcome these problems, future research could perform a three-wave longitudinal study or an experimental study (Ployhart & Vandenberg, 2010; Webster et al., 2008).

Third, because the organizations in the current research have been approached via the network of the students, convenient sampling is applicable (Ritchie et al., 2013). The sample

consists out of 38 organizations from the Netherlands and Germany, thus it could lack representativeness and it needs to be investigated further if the results can be generalized to other organizations and countries (Bryman & Bell, 2015). Future research could make use of random sampling in order to have a more representative sample (Bryman & Bell, 2015).

Fourth, the place of the questionnaire items, e.g., beginning or the end of the survey, and how they are formulated plays a role in the eventual result. Knowledge hiding items were presented at the end of the survey, with a total of 77 items for the employee's questionnaire and an average of 32 minutes for completion; it may have been mentally taxing. Future research could investigate the order of the constructs in the questionnaire to explore the effects it has on the results. In addition, knowledge hiding with a scale range of 1 to 7, scored in the current research $M = 1.52$, which is at the lower end of the scale. Explanation for this could be that it was clear to the participants, after reading all the positively formulated questions, that knowledge hiding is a socially undesirable behavior and thus may have been under-reported (Bogilović, Černe, & Škerlavaj, 2017). According to Connelly and colleagues knowledge hiding is a relatively under-reported low-base-rate event (Connelly et al., 2012). Future research could overcome possible social desirable responses by constructing or using a different knowledge hiding scale that has a more balanced indicative and contra-indicative questions (Mellenbergh, 2008; Ritchie et al., 2013).

Fifth, there are other leadership styles that were excluded from the study such as transformational leadership (Bass, 1985; Burns, 1978), authentic leadership (Avolio & Gardner, 2005), and ethical leadership (Brown, Trevino, & Harrison, 2005). Leaders play a significant role in the employees' perspective of job engagement and satisfaction (Mester, Visser, Roodt, & Kellerman, 2003), because a leaders' approach can impact employees' perspective on how one

should behave in order to meet the criteria of success. Therefore, future research can investigate other leadership styles to see what sort of relationship they could have with knowledge hiding, in addition, exploring which leadership style has the most impact on knowledge hiding, because that is unknown to date.

Sixth, knowledge hiding as an entire construct has been the main focus in the current research because it has not been researched before in combination with servant leadership. However, knowledge hiding as researched by Connelly and colleagues (2012) consists out of three dimensions, i.e., playing dumb, evasive hiding, and rationalized hiding, and it is in addition intriguing to uncover to what extent the different types of knowledge hiding interplay with servant leadership and or mastery climate. Organizations can reside in different branches and or countries and the external influence, such as national culture, could influence the employees to choose a specific type of knowledge hiding over the other when one hides knowledge. Future research could investigate if a specific leadership style, e.g., servant leadership, could have a greater effect on a specific knowledge hiding dimension.

Finally, the question remains to what sort of influence the knowledge hiding dimensions, i.e., playing dumb, evasive hiding, and rationalized hiding, have on interpersonal relationship. The philosophy and the focus of the current research has been that in concordance with SET the construct of knowledge hiding could create a negative dyadic reciprocal distrust relationship between colleagues that can hurt, for instance, individual and team creativity (Bogilović et al., 2017; Černe et al., 2014). However, evasive hiding could have a greater impact on the dyadic relationship of employees compared to rationalized hiding because it lacks an explanation for not providing the desired knowledge. In contract, playing dumb could preserve the dyadic relationship because the intent of knowledge hiding is less noticeable to the knowledge requester.

Future research could investigate what sort of interplay there is between the dimensions of knowledge hiding and the dyadic relationship employees create in the organization.

Practical implications

Better understanding of how contemporary organizations can further improve their performance may lead to increased productivity and competitive advantage (Dysvik, Kuvaas, & Buch, 2016; Vadera, Pratt, & Mishra, 2013). As mentioned throughout the current research, use of knowledge and in the same regard knowledge sharing is crucial for organizational viability, growth, and competitive advantage (Bock et al., 2005; Witherspoon et al., 2013). In contrast, knowledge hiding behavior, similar to lying, occurs in every team and organization and hinders the creation of an engaging and productive work climate (Connelly et al., 2012). The results of the current research could provide practitioners insight into how to affect this possible socially undesirable behavior in teams in order to give more space for knowledge sharing behavior.

First, it is advised to practitioners to investigate servant leadership as a possible leadership style that may help the organization to become more conscious of knowledge hiding behavior and possibly reduce it within teams. It could not only decrease knowledge hiding behavior, but it impacts employee behavior in multiple manners, for instance, by stimulating cooperation between individuals (van Dierendonck, 2015). Organizational leaders should serve and lead the followers they are assigned to by creating a climate where followers feel safe, accepted, and can make mistakes. Accordingly, followers might sway away from knowledge hiding behavior and more candidly share their knowledge.

Second, understanding the organizational context, e.g., mastery climate, is paramount for leaders: i.e., “climate architects”. Leaders affect employees by the signals they send about valued attitudes, behaviors, and how the work atmosphere defines success. Therefore, the leaders in the

organization should take their role serious and give the right signals in order that the followers can adopt these behaviors and the potential future leaders can become champions in the organizations. These champions in the organization can further be assigned leadership responsibility in teams because the predominant prominence in a mastery climate is self-actualization (Maslow, 1965); becoming the best version of oneself. In this regard, servant leadership and mastery climate could work in synergy, because both emphasis individual growth, collaborative cultural values, norms and behaviors. Consequently, it should lead to employees perceiving knowledge sharing as beneficial and the right thing to do, accordingly, conceivably guide employees away from knowledge hiding behavior.

Finally, results of the current research indicate a reverse relationship between knowledge hiding and age. Older employees in the organization could be more interested to share their knowledge with their colleagues. As aforementioned, if older employees are in their maintenance stage of their career and are open to fulfil a coaching role, they could be a valuable team member to have. Therefore, these type of team members should be distributed among the available teams and if needed trained into better coaches. Employees with a coaching role fit the servant leadership philosophy because these followers serve others by possibly duplicating behaviors that they see in their own servant-leaders. Moreover, it is in line with the aforementioned remark of becoming a champion in the organization by displaying exemplary behavior. In addition, employees who coach fit the mastery climate philosophy because by sharing, coaching, and teaching one may get better in their own job. Consequently, there may be a synergistic interplay between older team members with a coaching role, servant leadership, and mastery climate in an organization that practitioners could take into consideration in order to diminish knowledge hiding behavior.

In conclusion, practitioners should be aware that the interaction of servant leadership and mastery climate affects a numerous behavioral and predispositional aspects (e.g., knowledge hiding, proactive behavior, knowledge sharing) of employees, and all may affect an organizations' essence and profit. Consequently, it is recommended that leaders display empowering behavior instead of commanding, serving instead of being served in order to create an atmosphere that is in concordance to what employees want; productive and pleasant climate to work (Paauwe, 2004). Simon Sinek, the author of *Start With Why* (2009) has envisioned it wonderfully: "Leaders should build an organizational climate where the vast majority of people wake up every single morning inspired to go to work, feel safe when they are there, and go home fulfilled at the end of the day".

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Appendix A

Cover Letter

Dear Sir / Madam,

We are students from Tilburg University who are conducting research about knowledge management in organizations. You are being approached to participate in this research together with other colleagues from your organization.

For us as students, collecting and analyzing data is a compulsory part of our MSc in Human Resource Studies. Strict anonymity of your answers is guaranteed. Nobody other than the research team of Tilburg University will have access to your answers. Your (team) name will not be identified anywhere. The data will be used for education and research purposes only.

In the questionnaire you will find statements about your work and some general questions. Please choose the answer which best represents your opinion and carefully read the instruction with each set of questions before filling out your answers. It will take you approximately 15 minutes to complete the questionnaire.

Thank you very much for your participation!

Kind regards,

The research team

Appendix B

Questionnaire

Q1 Please provide us with the first two initials of your supervisor name and surname (e.g., for John Doe, put JODO): _ _ _ _. We need this information to be able to compare and link answers. No one, including your supervisor, will get to see your answers (except the Tilburg University research team).

Q1 Geef ons alstublieft de eerste twee initialen van de naam en achternaam van uw leidinggevende (bijv. voor John Doe, JODO): _ _ _ _. We hebben deze informatie nodig om antwoorden te kunnen vergelijken en koppelen. Niemand, inclusief uw leidinggevende, krijgt uw antwoorden te zien (behalve het onderzoeksteam van de Universiteit Tilburg).

Q7 *Work climate*

Please rate the following options on a range of (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) strongly agree.

1. In my department/work group, one is encouraged to cooperate and exchange thoughts and ideas mutually.
2. In my department/work group, each individual's learning and development is emphasized.
3. In my department/work group, cooperation and mutual exchange of knowledge are encouraged.
4. In my department/work group, employees are encouraged to try new solution methods throughout the work process.

5. In my department/work group, one of the goals is to make each individual feel that he/she has an important role in the work process.
6. In my department/work group, everybody has an important and clear task throughout the work process.

V7 *Werkklimaat*

Geef alstublieft een score aan de volgende stellingen, variërend van (1) zeer mee oneens, (2) mee oneens, (3) neutraal, (4) mee eens, (5) zeer mee eens.

1. In mijn afdeling/werkgroep wordt men aangemoedigd om samen te werken en onderling gedachten en ideeën uit te wisselen.
2. In mijn afdeling/werkgroep wordt de nadruk gelegd op ieders leren en ontwikkeling.
3. In mijn afdeling/werkgroep wordt samenwerking en onderlinge kennisuitwisseling gestimuleerd.
4. In mijn afdeling/werkgroep worden medewerkers aangemoedigd om gedurende het werkproces nieuwe oplossingsmethoden uit te proberen.
5. In mijn afdeling/werkgroep is een van de doelen om ieder individu het gevoel te geven dat hij/zij een belangrijke rol speelt in het werkproces.
6. In mijn afdeling/werkgroep heeft iedereen tijdens het werkproces een belangrijke en duidelijke taak.

Q8 *Management style, part I*

Please rate the following options on a range of (1) strongly disagree, (2) disagree, (3) neither agree nor disagree, (4) agree, (5) strongly agree.

1. I feel comfortable telling my supervisor about departmental problems.

2. My supervisor listens to what employees have to say.
3. My supervisor emphasizes doing the right thing for the long-term benefit of all.
4. My supervisor never puts things in perspective—we're always reinventing the wheel around here.
5. My supervisor is committed to helping employees grow and progress.
6. My supervisor puts employee needs first—before looking out for him or herself.
7. My supervisor puts the needs of the organization first—before looking out for him or herself.

V8 *Managementstijl, deel 1*

Geef alstublieft een score aan de volgende stellingen, variërend van (1) zeer mee oneens, (2) mee oneens, (3) neutraal, (4) mee eens, (5) zeer mee eens.

1. Ik heb er geen problemen mee om mijn leidinggevende te vertellen over afdelingsproblemen.
2. Mijn leidinggevende luistert naar wat medewerkers te zeggen hebben.
3. Mijn leidinggevende benadrukt het doen van het juiste voor het lange-termijnvoordeel van iedereen.
4. Mijn leidinggevende plaatst zaken nooit in perspectief - we vinden hier het wiel altijd opnieuw uit.
5. Mijn leidinggevende zet zich in om medewerkers te helpen groeien en vooruit te komen.
6. Mijn leidinggevende stelt de behoeften van de werknemer voorop, voordat hij of zij aan zichzelf denkt.
7. Mijn leidinggevende stelt de behoeften van de organisatie voorop, voordat hij of zij aan zichzelf denkt.

Q11 *Knowledge management*

Please rate the following options on a range of (1) not at all (2) to a very small extent (3) to a small extent (4) to a moderate extent (5) to a fairly great extent (6) to a great extent (7) to a very great extent.

Please think of a recent episode in which a specific co-worker requested knowledge from you and you declined to share your knowledge or expertise with him/her or did not give all of the information needed.

In this instance I:

1. Agreed to help him/her but never really intended to.
2. Agreed to help him/her but instead gave him/her information different from what she/he wanted.
3. Told him/her that I would help him/her out later but stalled as much as possible.
4. Offered him/her some other information instead of what he/she really wanted.
5. Pretended that I did not know the information.
6. Said that I did not know, even though I did.
7. Pretended I did not know what she/he was talking about.
8. Said that I was not knowledgeable about the topic.
9. Explained that I would like to tell him/her, but was not supposed to.
10. Explained that the information is confidential and only available to people on particular project.
11. Told him/her that my boss would not let anyone share this knowledge.
12. Said that I would not answer his/her questions.

V11 *Kennismanagement*

Geef alstublieft een score aan de volgende opties, waarin u aangeeft hoe u reageerde in een situatie. De antwoordmogelijkheden variëren van (1) helemaal niet, (2), (3), (4) In gemiddelde mate, (5) (6) (7) in grote mate.

Denkt u alstublieft aan een recente situatie waarin een collega u om kennis verzocht en u weigerde uw kennis/expertise met hem/haar te delen of u niet al de informatie gaf die u heeft. Tijdens deze situatie...

1. Beloofde ik hem/haar te helpen zonder dat ik dit daadwerkelijk meende.
2. Beloofde ik hem/haar te helpen, maar deelde ik in plaats daarvan andere informatie dan hij/zij nodig had.
3. Vertelde ik hem/haar dat ik hem/haar later zou helpen, maar bleef ik dit zo lang mogelijk uitstellen.
4. Gaf ik andere informatie dan hij/zij nodig had.
5. Deed ik alsof ik de kennis niet had.
6. Zei ik dat ik het niet wist, hoewel ik het wel wist.
7. Deed ik alsof ik niet wist waarover hij/zij het had.
8. Zei ik dat ik niets van het onderwerp afwist.
9. Legde ik uit dat ik het hem/haar wel zou willen vertellen, maar dat dit niet de bedoeling was.
10. Legde ik uit dat de informatie vertrouwelijk is en alleen beschikbaar voor mensen uit een bepaald project.
11. Vertelde ik hem/haar dat mijn baas die kennis met niemand wilde laten delen.

12. Zei ik dat ik zijn/haar vragen niet zou beantwoorden.

Appendix C

Dataset Evaluation

For the current research only the questionnaire of the team members had been analyzed because this data has been aggregated to the team level. The missing data of the team members' questionnaire was analyzed via Little's (1988) Missing Completely At Random (MCAR) procedure and it resulted in $\chi^2(164) = 183.30$, $p = .14$, thus, the data is missing in a random manner, which allows the researcher to transform the missing data appropriately. 64 Cases had all the data missing for servant leadership, mastery climate, and knowledge hiding variables, thus got deleted from the database. 17 Cases were deleted because they could not be assigned to any team. In order to be able to have sufficient power for the multi-level analysis (Hox, 2002), it is more beneficial to increase the number of groups instead of the individuals per group (Bassiri, 1988; Hofmann, 1997). A team consisting out of two members is different from a team of three in that a team member can be influenced by two information sources and thus has more choice in choosing the right information in a particular context. Therefore, it was decided to delete teams that had fewer than three members with usable data in order to maximize the number of teams in the sample, in line with the research of Černe et al. (2014). Four cases had less than three team members, hence got deleted. The missing data for the remaining cases were transformed, 12 cases for gender at random via the website of Haahr, M. (2018). 13 cases for nationality, the respondents who selected the Dutch language got a one (Dutch), the others got at random a number assigned from two to seven via the website of Haahr, M. (2018). The missing data for age were 25 cases and job tenure 29 cases and got transformed to the mean of the database, which was 37.8 and 7.9 years. For 19 cases the missing data of knowledge hiding were

transformed to the median of the corresponding team. Servant leadership and mastery climate did not have any missing data after the deletion of the abovementioned cases.

The procedure of Mahalanobis (1936) resulted into 7 outliers and these got deleted. This resulted further into one team with two members, which got deleted because a team would consist out of a minimum of three members.

Violation of the assumption of normality has been present, servant leadership skewness = -.42, kurtosis = .47, *Md* = 3.71 (*IQR:* 3.43, 4.00), knowledge hiding skewness = 1.97, kurtosis = 2.99, *Md* = 1.08 (*IQR:* 1.00, 1.60), mastery climate skewness = -.54, kurtosis = .25, *Md* = 3.83 (*IQR:* 3.17, 4.00). Because knowledge hiding is the only endogenous variable and could be transformed to normal distribution, for interpretation sake and because it is a nominal scale, it has been decided not to transform the data.

Deviation from linearity test in SPSS25 (SPSS Inc., Chicago, IL, USA) resulted for KH*SL $p = .16$, KH*MC $p = .44$, thus the relationships are linear. Homoscedasticity seemed fine between the variables under research.

Multicollinearity test in SPSS25 resulted for servant leadership *VIF* = 1.01, knowledge hiding *VIF* = 1.33, mastery climate *VIF* = 1.01, thus because they are all below *VIF* = 10, there is no issue with multicollinearity (Bowerman & O'connell, 1990; Myers, 1990)

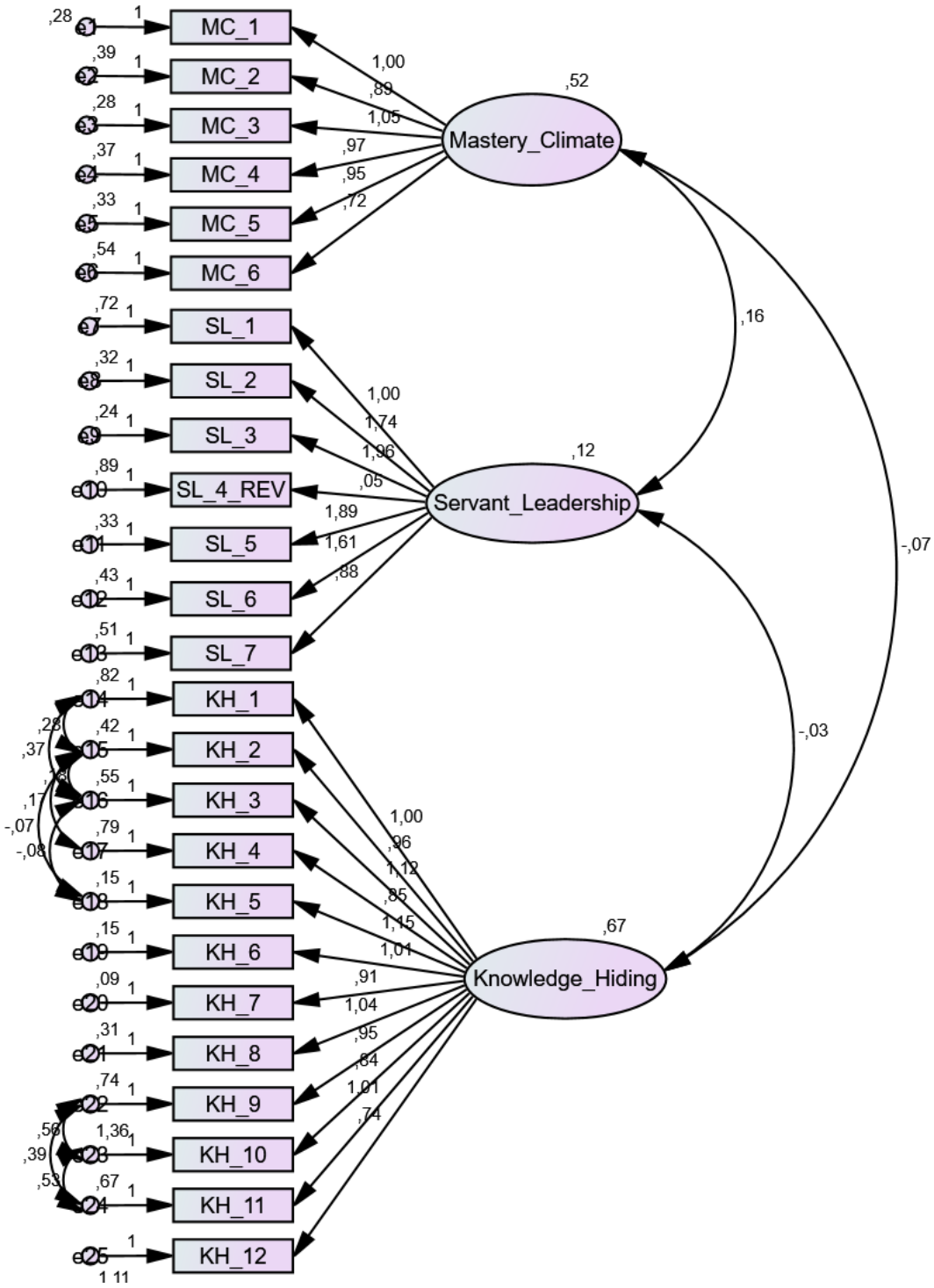
Nonparametric Levene's test via the procedure of Nordstokke and Zumbo (2010) was used to test for homogeneity for variance because the data of knowledge hiding is skewed. This procedure is different from the traditional Levene's test and it reduces type one and two errors. The results for this method is servant leadership $p < .01$, knowledge hiding $p < .01$, mastery climate $p = .07$. Significant result means that the variances between the groups are different from

each other. Because mastery climate is slightly skewed, the traditional Levene's test was performed and this resulted in a $p < .01$ (Levene, 1960).

Appendix D

Confirmatory Factor Analysis

D.1 AMOS Best Model Fit



D.2 Modification Indices

The model in Appendix D.1 has been constructed in AMOS24 software in order to find the best fit. In order to evaluate the model fit, the cut-off criteria of Hu and Bentler (1999) were used to evaluate the baseline model. In the first place the modification indices (MI) were not applied and it resulted in an insufficient model fit. CFA results prior to MI displayed a chi-square of $\chi^2(272) = 879.09$, $CMIN/DF = 3.23$, $p < .01$. In addition, Comparative Fit Index (CFI) = .85 (> .95), Tucker-Lewis Index (TLI) = .84 (> .95), Adjusted Goodness-of-Fit Index (AGFI) = .73 (> .80), standardized root mean square residual (SRMR) = .06 (< .08), root mean squared error of approximation (RMSEA) = .09 (< .06), PCLOSE = .01 (> .05). Moreover, factor loadings were ranging from .73 to 1.96, exceeding .50 (Nunnally & Bernstein, 1994), however, item four of servant leadership loaded with .05. A possible explanation can be found in the analysis section.

Table 3 depicts the knowledge hiding items that were correlated with each other, left column item with right column item(s), in order to find a model fit.

Table D1

Knowledge hiding item correlations for improving model fit

14. Agreed to help him/her but instead gave him/her information different from what she/he wanted.	15. Told him/her that I would help him/her out later but stalled as much as possible. 16. Offered him/her some other information instead of what he/she really wanted.
15. Told him/her that I would help him/her out later but stalled as much as possible.	16. Offered him/her some other information instead of what he/she really wanted. 17. Pretended that I did not know the information. 18. Said that I did not know, even though I did.
16. Offered him/her some other information instead of what he/she really wanted.	18. Said that I did not know, even though I did.
22. Told him/her that my boss would not let anyone share this knowledge.	23. Told him/her that my boss would not let anyone share this knowledge. 24. Said that I would not answer his/her questions.
23. Told him/her that my boss would not let anyone share this knowledge.	24. Said that I would not answer his/her questions.

Note. left column item has been correlated with right column item(s).

D.3 Model Fit Summary

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	62	**426,790**	**263**	**,000**	**1,623**
Saturated model	325	,000	0		
Independence model	25	4439,453	300	,000	14,798

RMR, GFI

Model	RMR	GFI	AGFI	PGFI
Default model	,056	,891	**,866**	,721
Saturated model	,000	1,000		
Independence model	,347	,268	,207	,247

Baseline Comparisons

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	,904	,890	,961	**,955**	**,960**
Saturated model	1,000		1,000		1,000
Independence model	,000	,000	,000	,000	,000

Parsimony-Adjusted Measures

Model	PRATIO	PNFI	PCFI
Default model	,877	,792	,842
Saturated model	,000	,000	,000
Independence model	1,000	,000	,000

NCP

Model	NCP	LO 90	HI 90
Default model	163,790	111,178	224,313
Saturated model	,000	,000	,000
Independence model	4139,453	3927,553	4358,636

FMIN

Model	FMIN	F0	LO 90	HI 90
Default model	1,587	,609	,413	,834
Saturated model	,000	,000	,000	,000
Independence model	16,504	15,388	14,601	16,203

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	**,048**	,040	,056	**,637**
Independence model	,226	,221	,232	,000

AIC

Model	AIC	BCC	BIC	CAIC
Default model	550,790	564,058	773,892	835,892
Saturated model	650,000	719,547	1819,487	2144,487
Independence model	4489,453	4494,803	4579,413	4604,413

ECVI

Model	ECVI	LO 90	HI 90	MECVI
Default model	2,048	1,852	2,273	2,097
Saturated model	2,416	2,416	2,416	2,675
Independence model	16,689	15,902	17,504	16,709

HOELTER

Model	HOELTER .05	HOELTER .01
Default model	191	202
Independence model	21	22

Appendix E

Hierarchical Linear Modeling

The maximum number of level-1 units = 270
The maximum number of level-2 units = 49
The maximum number of iterations = 100

Method of estimation: full maximum likelihood

The outcome variable is KH

Summary of the model specified

Level-1 Model

$$KH_{ij} = \beta_{0j} + \beta_{1j}*(GE_{ij}) + \beta_{2j}*(AG_{ij}) + \beta_{3j}*(JT_{ij}) + \beta_{4j}*(SL_{ij}) + r_{ij}$$

Level-2 Model

$$\beta_{0j} = \gamma_{00} + \gamma_{01}*(MC_j) + u_{0j}$$
$$\beta_{1j} = \gamma_{10}$$
$$\beta_{2j} = \gamma_{20}$$
$$\beta_{3j} = \gamma_{30}$$
$$\beta_{4j} = \gamma_{40} + \gamma_{41}*(MC_j) + u_{4j}$$

SL has been centered around the group mean.

GE AG JT have been centered around the grand mean.

MC has been centered around the grand mean.

Mixed Model

$$KH_{ij} = \gamma_{00} + \gamma_{01}*MC_j + \gamma_{10}*GE_{ij} + \gamma_{20}*AG_{ij} + \gamma_{30}*JT_{ij} + \gamma_{40}*SL_{ij} + \gamma_{41}*MC_j*SL_{ij} + u_{0j} + u_{4j}*SL_{ij} + r_{ij}$$

Final Results - Iteration 47

Iterations stopped due to small change in likelihood function

$\sigma^2 = 0.50775$

Standard error of $\sigma^2 = 0.05246$

τ

INTRCPT1,β_0	0.13925	-0.04212
SL,β_4	-0.04212	0.28468

Standard errors of τ

INTRCPT1,β_0	0.04933	0.06773
SL,β_4	0.06773	0.17207

τ (as correlations)

INTRCPT1,β_0	1.000	-0.212
SL,β_4	-0.212	1.000

Random level-1 coefficient	Reliability estimate
INTRCPT1,β_0	0.575
SL,β_4	0.292

The value of the log-likelihood function at iteration 47 = -3.225462E+002

Final estimation of fixed effects:

Fixed Effect	Coefficient	Standard error	*t*-ratio	Approx. *d.f.*	*p*-value
For INTRCPT1, β_0					
INTRCPT2, γ_{00}	1.551255	0.070481	22.010	47	<0.001
MC, γ_{01}	-0.076075	0.176470	-0.431	47	0.668
For GE slope, β_1					
INTRCPT2, γ_{10}	-0.117422	0.107873	-1.089	169	0.278
For AG slope, β_2					
INTRCPT2, γ_{20}	-0.006816	0.006408	-1.064	169	0.289
For JT slope, β_3					
INTRCPT2, γ_{30}	-0.002514	0.007817	-0.322	169	0.748
For SL slope, β_4					
INTRCPT2, γ_{40}	-0.269662	0.144597	-1.865	47	0.068
MC, γ_{41}	0.619725	0.364731	1.699	47	0.096

Final estimation of fixed effects
(with robust standard errors)

Fixed Effect	Coefficient	Standard error	*t*-ratio	Approx. *d.f.*	*p*-value
For INTRCPT1, β_0					

INTRCPT2, γ_{00}	1.551255	0.068901	22.514	47	<0.001
MC, γ_{01}	-0.076075	0.161898	-0.470	47	0.641
For GE slope, β_1					
INTRCPT2, γ_{10}	-0.117422	0.106940	-1.098	169	0.274
For AG slope, β_2					
INTRCPT2, γ_{20}	-0.006816	0.005707	-1.194	169	0.234
For JT slope, β_3					
INTRCPT2, γ_{30}	-0.002514	0.006558	-0.383	169	0.702
For SL slope, β_4					
INTRCPT2, γ_{40}	-0.269662	0.141281	-1.909	47	*0.062*
MC, γ_{41}	0.619725	0.286718	2.161	47	**0.036**

Final estimation of variance components

Random Effect	Standard Deviation	Variance Component	*d.f.*	χ^2	*p*-value
INTRCPT1, u_0	0.37317	0.13925	47	120.35019	<0.001
SL slope, u_4	0.53355	0.28468	47	86.97304	<0.001
level-1, r	0.71257	0.50775			

Statistics for the current model

Deviance = **645.092436**

Number of estimated parameters = 11