AUTHENTIC LEADERSHIP PROMOTING STORES’ PERFORMANCE: AN EMPIRICAL STUDY

Arménio Rego
Universidade de Aveiro, Campus de Santiago, 3810-193 Aveiro, Portugal
and
Business Research Unit (UNIDE-IUL), Instituto Universitário de Lisboa, Portugal
armenio.rego@ua.pt

Dálcio Reis Júnior
Universidade de Aveiro, Campus de Santiago, 3810-193 Aveiro, Portugal
dalcio.junior@gmail.com

Miguel Pina e Cunha
Nova School of Business and Economics, Rua Marquês de Fronteira, 20; 1099-038 Lisboa, Portugal
mpc@novasbe.pt

ABSTRACT

The study aims to show how authentic leadership (AL) predicts stores’ sales achievement through the mediating role of store virtuousness and store potency. Sixty eight stores of a retail chain were used for testing the model. Employees reported AL, store virtuousness, and store potency. The main findings are the following: (a) AL predicts store potency through the mediating role of store virtuousness; (b) store virtuousness predicts sales achievement through the mediating role of store potency; (c) AL predicts sales achievement via the mediating role of both store virtuousness and store potency. By focusing on three positive constructs, whose interrelations have scarcely been explored, and relating them to store performance, the study enriches the Positive Organizational Scholarship movement, and suggests that AL and virtuousness are good in themselves and also potential facilitators of group success.

Keywords: Authentic leadership, Group performance, Group potency, Group virtuousness

INTRODUCTION

Authentic leadership (AL) has been a subject of growing interest over the last decade, among scholars (Avolio, & Mhatre, 2012) and practitioners (e.g., George, 2003). However, although several empirical studies have been conducted for predicting individual level outcomes (Peterson et al., 2012; Rego, Sousa, Marques, & Cunha, 2012; Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008; Walumbwa, Wang, Wang, Schaubroeck, & Avolio, 2010), studies are scarce in predicting group level outcomes (Rego, Vitória, Magalhães, Ribeiro, & Cunha, forthcoming; Walumbwa, Luthans, Avey, & Oke, 2011). Studies relating AL with objective group performance are even scarcer.

Answering to a call by Avolio and Mhatre (2012) for more empirical research in diverse cultures, we test how AL predicts sales achievement of organizational units of a Brazilian retail chain. Two mediating mechanisms are considered: group/store virtuousness and group/store potency, because some literature suggests that both predict group performance (Palanski, Kahai, & Yammarino, 2011; Stajkovic, Lee, & Nyberg, 2009). In this way, we answer to Walumbwa et al. (2011), who argued that little empirical research has been conducted about the mechanisms by which authentic leaders influence follower effectiveness. In consonance with Avolio, Gardner, Walumbwa, Luthans, and May (2004), we consider that AL, although important, is not sufficient to achieve
positive group outcomes. There is a process linking AL to group performance, and we suggest that
group virtuousness and group potency may be part of such a process. Although research has explored
the mediating role of group potency in the relationship between leadership and group performance
(Lee, Farh, & Chen, 2011; Lester, Meglino, & Koorsgaard, 2002; Sivasubramaniam, Murry, Avolio,
& Jung, 2002), to our knowledge no study has considered both group virtuousness and group potency
as mediators of the relationship between AL and group performance.

Group potency, the collectively-shared belief of a group that it can be effective (Lester et al.,
2002; Shea & Guzzo, 1987), can be a very powerful motivator (Gibson & Earley, 2007). Group
potency relates to variables such as group problem solving, group learning, service performance, and
group performance (e.g., Bandura, 1997; de Jong, Ruyter, & Wetzels, 2005; Howell & Shea, 2005;
Kirkman & Rosen, 1999; Lester et al., 2002; Shea & Guzzo, 1987; Sivasubramanian et al., 2002; see
Stajkovic et al., 2009 for a synthesis). However, little is known about the factors promoting group
potency (Gibson & Earley, 2007; Lester et al., 2002). In this paper, we test empirically if AL
influences group potency via the mediating role of group virtuousness, and if group potency
influences the group/store objective performance.

Group virtuousness refers to group contexts where positive habits, desires, and actions (e.g.,
integrity, forgiveness, trust) are practiced, nourished, and disseminated, at both the individual and
collective levels (Cameron, Bright, & Caza, 2004). A few empirical studies have been conducted on
group virtuousness (Bright, Cameron, & Caza, 2006; Cameron et al., 2004; Rego et al., 2010; Rego,
Ribeiro, Cunha, & Jesuino, 2011), but to our knowledge just one study has focused on both AL and
group virtuousness (Rego et al., forthcoming) and none has focused on both constructs as predictors
of group performance.

We hypothesize that AL nurtures group virtuousness, which in turn promotes group potency
and, in this way, group performance (Figure 1). For example, because authentic leaders set high
standards for moral and ethical behavior, they cultivate honesty, integrity, and trust within the group,
developing positive/upward spirals within the group, and thus making the group more virtuous.
Group virtuousness, in turn, leads the group to feel more potent. For example, when working in a
virtuous group, individuals develop stronger group identification (Lee et al., 2011), leading them to
converge with the group goals and to contribute to its success and, thus, to believe that the group will
be able to reach its goals. The collectively-shared belief of the group to reach the group’s goals (i.e.,
group potency), in turn, facilitates better group performance (Bandura, 1997), and as this author
pointed out (p. 470), “the higher the sense of collective efficacy, the better the team performance.”

THE MAIN CONSTRUCTS OF THE HYPOTHESESIZED MODEL

Authentic Leadership

AL can be defined as “a pattern of leader behavior that draws upon and promotes both positive
psychological capacities and a positive ethical climate, to foster greater self-awareness, an
internalized moral perspective, balanced processing of information, and relational transparency on
the part of leaders working with followers, fostering positive self-development” (Walumbwa et al.,
2008, p. 94). Empirical and theoretical evidence (Gardner, Avolio, Luthans, May, & Walumbwa,
2005; Kernis & Goldman, 2005; Rego et al., 2012, forthcoming; Walumbwa et al., 2008, 2011)
suggests that AL can best be conceptualized as a higher order core construct embracing four inter-
related dimensions: self-awareness, balanced processing, internalized moral perspective, and
relational transparency. Self-awareness reflects the degree to which the leader understands his or her
strengths, weaknesses, limitations, and motives, how others view his/her leadership, and how (s)he
impacts others (Walumbwa et al., 2008). Balanced processing represents the degree to which the
leader objectively analyzes all relevant data before coming to a decision and solicits views that
challenge deeply-held positions (Gardner et al., 2005; Walumbwa et al., 2008). Leaders characterized
by strong balanced processing are less inclined to form biased interpretations about others’ opinions and suggestions, and less susceptible to denials, distortions, and exaggerations (Walumbwa et al., 2011). Internalized moral perspective reflects the degree to which the leader guides actions by high internal moral standards and values (versus team, organizational, and societal pressures), and expresses decision-making and behavior consistent with such an internal compass (Avolio & Gardner, 2005; Gardner et al., 2005; Walumbwa et al., 2008). Relational transparency refers to the degree to which the leader expresses his/her true thoughts, feelings, and actions, and openly shares information with others, thus cultivating an environment of openness with others that leads them to express their true ideas and to feel safe in proposing challenging opinions and suggestions.

Walumbwa et al. (2008, 2011) presented several differences between AL theory and transformational and ethical theories, having found incremental validity of AL beyond ethical and transformational leadership. Avolio and Gardner (2005) also advanced several differences between AL theory and transformational, charismatic, servant, and spiritual leadership theories. Although some overlap exists between AL and other leadership theories, AL has unique components. Research also suggests that AL represents a root construct underlying other positive forms of leadership (Avolio & Gardner, 2005; Avolio & Mhatre, 2012). Authentic leaders may thus be transformational, directive, participative, or even authoritarian. What differentiates authentic leaders is not the degree to which they are more or less transformational, directive, or participative, but how they act “in accordance with their core personal values and beliefs in order to build credibility and earn the respect and trust of their followers through the process of actively encouraging diverse viewpoints and building transparent and collaborative relationships with them” (Avolio & Mhatre, 2012, p. 775).

Literature has suggested that AL predicts several positive attitudes and behaviors, at both the individual (e.g., psychological capital, creativity, organizational citizenship behaviors, work engagement; Avolio, Gardner, et al., 2004; Rego et al., 2012; Walumbwa et al., 2010) and collective levels (e.g., group trust, collective psychological capital, group citizenship behavior, team affective commitment, and group performance; Clapp-Smith, Vogelgesang, & Avey, 2009; Rego et al., forthcoming; Walumbwa et al., 2011). However, empirical studies at the collective/group level are scarce. We consider that, in line with other leadership constructs (Yammarino, Dionne., Chun, & Dansereau, 2005), AL may emerge as a collective phenomenon (Walumbwa et al., 2011), when, through ongoing interactions and social contagion effects (Clapp-Smith et al., 2009; Meindl, 1995), group members share similar perceptions about the group leader’s authentic behaviors (Biemann, Cole, & Voelpel, 2012; Waldman & Yammarino, 1999).

Group Virtuousness

The relevance of virtues and virtuousness in organizations has been acknowledged in recent years. However, empirical research is still scarce (Cameron et al., 2004, 2011). Virtues are habits, desires, and actions that produce personal and social good (Cameron & Winn, 2012). They can be defined as “core characteristics valued by moral philosophers and religious thinkers” (Peterson & Seligman, 2004, p. 13). These include six broad categories: wisdom, courage, humanity, justice, temperance, and transcendence (Peterson & Seligman, 2004). Virtuousness refers to the pursuit of the highest aspirations in the human condition. Group virtuousness refers to group contexts where the “good” habits, desires, and actions (e.g., humanity, integrity, forgiveness, and trust) are practiced, supported, nourished, disseminated, and sustained, at both the individual and collective levels (Cameron et al., 2004; Cameron, Mora, Leutscher, & Calarco, 2011). Although virtuousness is “inherently valuable, apart from any benefit that may accrue” (Cameron et al., 2011, p. 269), it is unlikely that it captures much interest among organizational researchers and practitioners unless its relationship with “pragmatic outcomes” is demonstrated (Cameron et al., 2004, p. 770).

Cameron et al. (2004) developed and validated an instrument for measuring (the perceptions of) organizational virtuousness. Five dimensions were considered: optimism, forgiveness, trust, compassion, and integrity. Organizational optimism refers to the degree to which employees develop
a belief that they will succeed in doing well and doing good, even when faced with major challenges. Organizational forgiveness means that people avoid blaming others, and mistakes are quickly forgiven and used as opportunities for learning in a context characterized by high standards of performance. Organizational trust reflects the degree to which courtesy, consideration, and respect govern the organization and how employees interact and relate with their leaders. Organizational compassion represents the degree to which people provide support to each other, and express kindness and compassion when others are experiencing difficulties or problems. Organizational integrity means that honesty, trustworthiness, and honor pervade the organization and govern personal and institutional interactions.

Empirical research has suggested that a core organizational virtuousness factor can be extracted from the relationships among the five dimensions (Rego et al., 2010, 2011, forthcoming). Statistically significant relationships between (perceived) organizational virtuousness and performance have been found (Cameron et al., 2004). By using a virtuousness construct different from that of Cameron et al. (2004), Palanski et al. (2011) also found positive relationships between team virtuousness and team performance. Studies also suggest that perceptions of organizational virtuousness predict organizational citizenship behaviors and affective commitment, both directly and through the mediating effect of happiness at work (Rego et al., 2010, 2011). However, empirical studies at the group level are scarce, and still scarcer are studies relating group virtuousness with group potency and group objective performance (Palanski et al., 2011). Taking into account that our study focuses on group performance as outcome, and on group potency as predictor, we consider that group virtuousness is a more plausible mediator than organizational virtuousness (Neininger, Lehmann-Willenbrock, Kauffelda, & Henschela, 2010). We consider (see the “Hypotheses” section) that group virtuousness predicts group performance (i.e., store’s sales achievement) via the mediating effect of group potency. We next explain this construct.

**Group Potency**

Group potency has its foundations on efficacy beliefs, as explained by social cognition researchers (Bandura, 1997; Goddard & Salloum, 2012). At the individual level, self-efficacy may be defined as people’s beliefs in their capabilities to organize and perform actions necessary to achieve a goal or an outcome, with these beliefs predicting variables such as job satisfaction and job performance (Judge & Bono, 2001; Stajkovic & Luthans, 1998). The expression “collective efficacy” (“a group’s shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainments”; Bandura, 1997, p. 447) was introduced by Bandura (1982) as a part of social cognitive theory’s extension to the group level of analysis. Collective efficacy is more than the sum of its parts (Gibson & Earley, 2007), developing independently from individual self-efficacy (Hu & Liden, 2011) as a distinct collective phenomenon. Literature is inconsistent regarding the use of expressions such as collective efficacy and group/team potency. In this paper we consider that while collective efficacy refers to group beliefs about its perceived capability to perform a specific task or demand, group potency refers to cognitions about the general effectiveness (i.e., the group believes that it may confront any task or demand successfully; Gibson & Earley, 2007; Jung & Sosik, 2003; Stajkovic et al., 2009). This paper focuses on group potency. Increased research attention has been paid to group potency because it relates positively with group effectiveness (de Jong et al., 2005; Jund & Sosik, 2003; Lee et al., 2011; Stajkovic et al., 2009). Jung & Sosik (2003) argued that group potency is a relevant alternative variable to traditional group cognitive variables such as group cohesiveness to better predict group performance. However, in spite of that link between group potency and group performance, little is known about the factors promoting, and the processes underlying, group potency (Gibson & Earley, 2007; Lester et al., 2002). We hypothesize that group potency (a) is predicted by AL through the mediating role of group virtuousness, and that it (b) predicts stores’ sales performance. Next, hypotheses are discussed.
HYPOTHESES

AL Predicting Stores’ Sales Achievement

Walumbwa et al. (2011) argued that authentic leaders have an especially positive influence on group performance because they foster group members’ self-determination (Illies, Morgeson, & Nahrgang, 2005), a construct that has been linked to performance (Decy & Ryan, 2000). Other mechanisms may also intervene. For example, relational transparency and balanced processing that characterize authentic leaders facilitates rapid and accurate transfer of information about group members, which in turn results in trusting relationships, better work coordination within the group, and more frequent organizational citizenship behaviors (e.g., helping) that, in the aggregate, promote collective performance (Podsakoff & Mackenzie, 1997; Rego & Cunha, 2008).

Authentic leaders may also promote individuals’ personal identification with the leader and social identification with the group (Avolio, Gardner, et al., 2004). Both personal and social identification may make individuals more inclined to identify with and accept the group’s goals, and persevere in pursuing them – instead of engaging in social loafing, a behavior that can be caused by low identification with collective goals (Hu & Liden, 2011). Considering the repeated behavioral interactions (that tend to be positive and trustful when individuals feel they work in a trustful and psychological safe climate nurtured by an authentic leader) and social contagion effects within the group (Meindl, 1995), one may expect that positive effects at the individual level reverberate over other group members, in this way promoting group performance.

Such positive effects may occur within stores in retail chain organizations because employees tend to develop better efforts for reaching the store’s sales targets when they feel that they are working for an authentic leader. They develop better identification with the leader and the store/group (Avolio, Gardner, et al., 2004), which makes them identify with and accept the group’s sales target, and persevere in pursuing it. Within a psychologically-safe climate supported by an authentic leader, group members feel freer to improvise in dealing with customers’ complaints (Cunha et al., 2009), to satisfy their idiosyncratic needs, and to provide customized services (Gwinner, Bittner, Brown, & Kumar, 2005). They are also more motivated to (a) propose new products and services, (b) suggest creative merchandizing techniques, spaces, and “atmospheres” (Kent, 2007), (c) help their managers to develop new and more effective marketing strategies, and (d) help colleagues deal with problematic customers or customers who present important business opportunities. Considering the repeated behavioral interactions and the social contagion mentioned above, one may expect that positive effects at the individual level will reverberate with other group members, thus promoting group performance. Hence:

Hypothesis 1: AL predicts store’s sales achievement.

In addition to the mechanisms referred to above, two other possible mediators of the relationship between AL and store’s sales achievement are group/store virtuousness and group/store potency. We hypothesize that AL promotes group/store virtuousness, which in turn leads the group/store to feel more potent and, as a consequence, to reach better sales performance. Next, we discuss why group potency influences sales achievement.

Group Potency Predicting Stores’ Sales Achievement

Theoretical and empirical evidence suggests that group potency predicts group performance (Akgün, Keskin, Byrne, & Imamoglu, 2007; Jung & Sosik, 2003; Lee et al., 2011; Sivasubramanian et al., 2002; Stajkovic et al., 2009). The relationship may be explained by social-cognitive theory (Bandura, 1997), which suggests that forethought gives rise to action, collective experiences, and results (Lee et al., 2011; Lester et al., 2002). Within more potent groups, individuals are more motivated to coordinate efforts in pursuing the group’s goals (Bandura, 1997; de Jong et al., 2005) and, as argued by Bandura (1997), a higher sense of collective efficacy tends to result in better collective performance. Thus, one might expect that group potency impacts stores’ sales
performance. Group potency leads employees to develop efforts to reach the store’s sales target, and to coordinate their work better to provide better service to customers (de Jong et al., 2005; Shea & Guzzo, 1987). As a consequence, customers’ satisfaction and loyalty increase, which in turn favors sales performance (Gelade & Young, 2005; Gómez, McLaughlin, & Wittink, 2004; Heskett, Sasser, & Schlesinger, 1997; Leung, 1997). The cooperative dynamics that occur within stores characterized by high group potency may also increase employees’ positive affect (Stephens, Heaphy, & Dutton, 2012), and these positive feelings may radiate and be absorbed, through emotional contagion (Pugh, 2001) by customers, who thus experience more pleasant service encounters and are more inclined to purchase more and be more loyal. Research suggests that customer satisfaction is a significant predictor of sales performance (Gelade & Young, 2005). Thus, we hypothesize:

Hypothesis 2: Group potency predicts stores’ sales achievement.

Group Virtuousness Predicting Stores’ Sales Achievement Through the Mediating Role of Group Potency

One possible predictor of group potency is group virtuousness. When working in a virtuous store, employees develop stronger identification with the store (Lee et al., 2011), thus basing their self-value partially on their store membership, and on their store’s successes and failures (Ashforth & Mael, 1989; Mael & Ashforth, 1992). Identification with the store encourages employees to contribute to the success of the store by cooperating with each other and acting in ways that benefit the store, thus leading employees to believe that the store will be able to reach higher performance, including sales targets (Hu & Liden, 2011; Janssen & Huang, 2008; Lee et al., 2011). Employees working in virtuous stores may also develop a sense of relatedness (Hu & Liden, 2011), as well as gratitude and pride for belonging to a virtuous store, and experience positive affect. Due to repeated interactions (Ilies et al., 2005; Walumbwa et al., 2011) and mood and emotional contagion (Pugh, 2001), intragroup cooperation develops (Neininger et al., 2010), which in turn helps to integrate members’ tasks and increases the store’s belief that the store will achieve collective goals (Gibson & Earley, 2007; Hu & Liden, 2011; Schaubroeck, Lam, & Cha, 2007). Thus, we hypothesize:

Hypothesis 3: Group virtuousness predicts group potency.

Considering that group potency facilitates store’s sales achievement, and that group virtuousness predicts group potency, one may hypothesize that employees working in virtuous stores develop stronger group potency, thus leading the store to make efforts to achieve sales targets, which in turn results in more sales. Hence:

Hypothesis 4: Group virtuousness predicts stores’ sales achievement through the mediating role of group potency.

AL Predicting Stores’ Sales Performance Through the Mediating Role of Group Virtuousness and Group Potency

Group virtuousness may be influenced by AL, several reasons supporting the prediction (see Rego et al. forthcoming). For example, store members who wish to behave ethically feel safe to adopt ethical actions if they perceive that their leaders are honest and will support them (George, 2003) even if behaving ethically is not accompanied by an “immediate monetary victory” (Damon, 2004, p. 31). By adopting and promoting ethical actions, adopting a balanced processing of information, and being relationally transparent, authentic leaders also promote trust and positive interactions within the store (Avolio, Gardner, et al., 2004; George, 2003; Walumbwa et al., 2011; Webber, 2002). Considering such effects and that role modeling processes tend to develop within the store (Avolio, Gardner, et al., 2004; George, 2003), one may expect that integrity and trust flourish, and upward spirals of trust and integrity emerge at the store level (Walter & Bruch, 2008; Walumbwa et al., 2011).
Authentic leaders are also guided by the “qualities of the heart”, such as passion and compassion (George, 2003, p. 12). Considering that they are role models, one may expect that they elevate the positive affective tone within the store (Avolio, Gardner, et al., 2004) and promote high quality connections among the store’s members (Stephens et al., 2012). As a consequence, positive affect spirals take place (Walter & Bruch, 2008), and dynamics of reciprocated positive acts occur at the store level (Avolio, Gardner, et al., 2004; Dirks & Ferrin, 2002). A possible effect of such dynamics is greater compassion, forgiveness, and trust at the store level. Being self-confident, optimistic, hopeful, and resilient (Gardner et al., 2005), and through role modeling (Avolio, Gardner, et al., 2004), authentic leaders lead the store members to feel optimistic about succeeding, even when faced with major difficulties and challenges. The repeated behavioral interactions within the stores (Ilies et al., 2005; Walumbwa et al., 2011) and the positive dynamics and upward spirals mentioned above also make authentic leaders more able to promote optimism at the store level. In short, one may expect that when stores’ leaders behave authentically, stores’ virtuousness (i.e., integrity, trust, forgiveness, compassion, and optimism) increases. From this we derive the following hypothesis:

**Hypothesis 5**: AL predicts group/store virtuousness.

Considering that group virtuousness predicts stores’ sales achievement through the mediating role of group potency (H4), and that AL predicts group virtuousness (H5), one may hypothesize that the AL predicts stores’ sales achievement through the mediating role of group virtuousness and group potency: AL fosters group virtuousness, which makes the group feel more potent and, as a consequence, be more effective. Partial mediation effects are hypothesized because mechanisms other than group virtuousness and group potency (arguments supporting H1) may operate. Hence:

**Hypothesis 6**: the relationship between AL and stores’ sales achievement is partially mediated by group virtuousness and group potency.

**Alternative Models**

The six hypotheses give rise to the hypothesized model depicted in Figure 1. Following Iacobucci, Saldanha, and Deng’s (2007, pp. 152-153) suggestion (“The researcher should acknowledge the possibility of rival models, and test several, at least one in which the causal direction is completely reversed”), four alternative models are tested (Figure 2). The first alternative model differs from the hypothesized one in that it does not include the path between AL and sales achievement. Several studies (including research about AL; e.g., Walumbwa et al., 2010) suggest that the impact of leadership on employees/group outcomes may be fully mediated by other variables (e.g., Wang, Law, Hackett, Wang, & Chen, 2005).

The second alternative model differs from the hypothesized one in that it does not include the path between AL and store’s sales achievement, and includes (a) a direct path between group virtuousness and sales achievement, and (b) a direct path between AL and group potency. Regarding the path group virtuousness \(\rightarrow\) sales achievement, studies suggest that favorable employees’ experiences, as reflected by positive evaluations of organizational climate, are associated with higher levels of customer satisfaction (Gelade & Young, 2005; Heskett et al., 1997; Rucci, Kirk, & Quinn, 1998), customer satisfaction being a significant precursor of sales performance (Gelade & Young, 2005). Several reasons also support the path AL \(\rightarrow\) group potency. Authentic leaders seek the followers’ inputs for decision making and solicit views that may challenge deeply-held positions (Walumbwa et al., 2008, 2011). They also openly share that information with the whole group, and use it to strengthen the group (Gardner et al., 2005). Walumbwa et al. (2011, p. 8) argued that “leaders sharing information provides team members with opportunities to develop collective intuition, expand their knowledge, learn from each other, and acquire new skills. This in turn raises team members’ individual and in turn collective efficacy”.

The third alternative model does not include the path between AL and store’s sales achievement, and considers (a) AL as predictor of group potency (second alternative model) and (b) group virtuousness as predictor of AL. A virtuous context may promote or facilitate authenticity in
leaders (Cooper, Scandura, & Schriesheim, 2005; May, Chan, Hodges, & Avolio, 2003; Luthans & Avolio, 2003), “repel” non-authentic leaders, and attract authentic ones. Gardner et al. (2005, p. 348) pointed out the “role that an inclusive, caring, ethical and strength-based organizational climate can play in the development of authentic leaders”.

The fourth alternative model represents a partial reversion of the hypothesized model. The complete reversion (suggested by Iacobucci et al., 2007) was not tested because sales achievement refers to a period subsequent to collecting data about independent and mediating variables. The rationale underlying this model can be summarized as follows. First, the path AL → sales achievement, and the path group potency → sales achievement, were discussed when arguments supporting H1 were presented. Second, the path group virtuousness → AL represents the third alternative model discussed above. Third, the path group potency → group virtuousness is based on the expectation that within groups with high potency, individuals develop perceived group support (Sheldon, Waite, & Makela, 2010) and other positive attitudes (e.g., they identify more strongly with a group they believe will succeed). As a consequence, they reciprocate with stronger affective commitment toward the group. Individuals highly committed to their groups develop more positive affect and high quality connections (Stephens et al., 2012), thus positive group affect spirals take place (Walter & Bruch, 2008) and dynamics of reciprocated positive acts occur at the group level (Avolio, Gardner, et al., 2004), a possible consequence of such dynamics being greater compassion, forgiveness, and trust (i.e., more virtuousness) at the group level.

**METHOD**

**Sample and Procedures**

The study was carried out in a Brazilian retail organization (appliances sector), comprising by 157 stores employing 1765 individuals (55% female; $M_{\text{age}}$: 29.5, $SD$: 7.9; $M_{\text{group tenure}}$: 1.6, $SD$: 2.1; 5.5% had nine or fewer schooling years, 71.9% had 12 years, 13.5% had a university degree, and 9.1% had a graduate degree). Stores (average size: 11.2) are located in different locations across the country, and are managed by a supervisor who coordinates sales clerks, administrative officers, and stock clerks. Task interdependence was not measured directly, but observation as well as conversations with store and corporate managers allows considering that task interdependence was moderate/high (sales achievement requires a store’s employees to interact in a collaborative way; Stajkovic et al., 2009). Job rotation among employees with different tasks within stores is common.

After obtaining permission from the organization’s top management, supervisors of each store were invited (at the beginning of a formal meeting in which all stores’ supervisors take part) to participate in the study by delivering the questionnaires to their store’s employees. The questionnaire asked employees to report (anonymously) their perceptions of AL, group virtuousness and group potency, and to send their answers directly to the researcher through the post. Seven hundred and one employees (from 96 stores) participated, 63.9% being female (55% in the whole organization), the $M_{\text{age}}$ being 27.4 ($SD$: 7.8), and the $M_{\text{group tenure}}$ being 1.7 ($SD$: 2.2). Regarding schooling, 5.6% had nine or fewer schooling years, 73.3% had 12 years, 13.1% had a university degree, and 8.0% had a graduate degree. These data suggest that the characteristics of the participants in the study are
similar to the characteristics of the organization’s population, although participants in the study are somewhat younger, and females are overrepresented.

For 14 stores six employees participated, for 13 stores seven employees participated, for nine stores nine employees participated, and for 21 stores at least nine employees participated. As mentioned above, different individuals were used for measuring different independent/mediating variables (at least two individuals for each variable). Whenever possible (i.e., the number of participants in the store is a multiple of 3), an equal number of individuals was ascribed to each variable. When this was impossible, the higher number of employees was ascribed to variables with lower aggregation indices (Table 3): first, group potency and, second, group virtuousness. For example, for stores with ten participants, four were used for measuring group potency, and three for measuring both group virtuousness and AL. For stores with eight participants, three participants were used for measuring both group potency and group virtuousness, and two for measuring AL.

Measures

As in the majority of studies (Biemann et al., 2012), we relied on survey data gathered from group members and then aggregated these to the group level of analysis for measuring AL, group virtuousness and group potency, thereby adopting a referent-shift consensus composition model (Chan, 1998).

**Authentic leadership.** Perceptions of AL were measured with the 16 five-point items of the Authentic Leadership Questionnaire (Copyright © 2007 Authentic Leadership Questionnaire (ALQ) by Bruce J. Avolio, William L. Gardner, and Fred O. Walumbwa. All rights reserved in all media. Distributed by Mind Garden, Inc. www.mindgarden.com). The questionnaire measures four dimensions: self-awareness, relational transparency, internalized moral perspective, and balanced processing. Sample items are: (a) “Seeks feedback to improve interactions with others” (self-awareness); (b) “Says exactly what he or she means” (relational transparency); (c) “Demonstrates beliefs that are consistent with actions” (internalized moral perspective); (d) “Listens carefully to different points of view before coming to conclusions” (balanced processing). The Portuguese version as translated and back translated by Rego et al. (2012) was used. Individuals reported the frequency (0: *not at all*; 4: *frequently, if not always*) with which their supervisors adopted the 16 behaviors/attitudes.

Confirmatory factor analysis (using LISREL with the maximum likelihood estimation method; covariance matrix as input; items loading only on one latent variable; the latent variables being allowed to correlate) tested the four-factor model, first at the individual level. A well-fitted model (e.g., RMSEA: .08; GFI: .91; CFI and IFI: .92) emerged, all Lambdas being equal or higher than .50, and all Cronbach Alphas being higher than .70 (Table 1). A second-order factor model, where the four AL dimensions loaded onto a higher AL factor, also fitted the data well, the fit indices being very similar to those of the first-order model (Table 1). Considering the parsimony of this second-order model, as well as earlier empirical evidence (e.g., Rego et al., 2012; Walumbwa et al., 2010), we consider AL as a core construct. To obtain a composite AL score: (1) we averaged the items for each of the four subscales to arrive at a composite average for each subscale; (2) then, we averaged the averages for each of the four subscales (*Cronbach Alpha*: .93). Individuals’ scores were then aggregated at the group level.

Confirmatory factor analysis was also carried out upon group-level data (see the “Aggregating data at the group level” sub-section, below), for testing the four-factor model. Taking into account the small sample size (n=68), Root Mean Square Residual (RMR), CFI, and IFI were considered for assessing fit. Fit indices (RMR: .02; CFI: .90; IFI: .91) suggest that the model fits the data reasonably well. Lambdas range between .65 and .96, and Cronbach Alphas are higher than .80 (relational transparency: .88; internalized moral perspective: .92; balanced processing: .89; self-awareness: .96).
RMR, CFI and IFI indices of the second-order factor model are equal to those of the first-factor model. Cronbach Alpha for AL at the group-level is .94.

### Table 1

Authentic Leadership: Confirmatory Factor Analysis (Completely Standardized Solution)

<table>
<thead>
<tr>
<th></th>
<th>1st-order factor model</th>
<th>2nd-order factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lambdas*</td>
<td>Cronbach Alphas</td>
</tr>
<tr>
<td>Relational transparency*</td>
<td>.59</td>
<td>.76</td>
</tr>
<tr>
<td>Item # 1</td>
<td>.67</td>
<td>.68</td>
</tr>
<tr>
<td>Item # 2</td>
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<td>Item # 3</td>
<td>.68</td>
<td>.68</td>
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<tr>
<td>Item # 4</td>
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<td>.75</td>
</tr>
<tr>
<td>Item # 5</td>
<td>.57</td>
<td>.67</td>
</tr>
<tr>
<td>Internalized moral perspective*</td>
<td>.67</td>
<td>.68</td>
</tr>
<tr>
<td>Item # 6</td>
<td>.75</td>
<td>.75</td>
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<td>Item # 7</td>
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<td>.68</td>
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<tr>
<td>Item # 8</td>
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<td>.75</td>
</tr>
<tr>
<td>Item # 9</td>
<td>.57</td>
<td>.57</td>
</tr>
<tr>
<td>Balanced processing*</td>
<td>.81</td>
<td>.93</td>
</tr>
<tr>
<td>Item # 10</td>
<td>.79</td>
<td>.79</td>
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<td>Item # 11</td>
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<tr>
<td>Item # 12</td>
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<tr>
<td>Self-awareness*</td>
<td>.86</td>
<td>.95</td>
</tr>
<tr>
<td>Item # 13</td>
<td>.81</td>
<td>.93</td>
</tr>
<tr>
<td>Item # 14</td>
<td>.71</td>
<td>.87</td>
</tr>
<tr>
<td>Item # 15</td>
<td>.71</td>
<td>.91</td>
</tr>
<tr>
<td>Item # 16</td>
<td>.71</td>
<td>.92</td>
</tr>
<tr>
<td></td>
<td>.88</td>
<td>.88</td>
</tr>
</tbody>
</table>

* Item numbers are those of ALQ.

**Group’s virtuousness.** Perceptions of group virtuousness were measured with the 15 items proposed by Cameron et al. (2004), after adapting them to the group/store level. The Portuguese version translated and back-translated by Rego et al. (2010) was used. Respondents were asked to report the degree to which the statements were false (0) or true (4). A confirmatory factor analysis (the procedures used to test the AL data were considered at this stage) upon the individual-level data was carried out for testing the five-factor model (Cameron et al., 2004). A well-fitted model (e.g., RMSEA: .08; GFI: .92; CFI and IFI: .92) emerged, all Lambdas being higher than .50 (Table 2). Three Cronbach Alphas are higher than the threshold value of .70, and one is very close to that value (.68). The reliability of the trust dimension is .59, a low but close to .60 value, which is considered acceptable by some authors (Price & Mueller 1986). The dimension was kept for further analysis because its removal could affect the content coverage of the group virtuousness’ construct domain.
Table 2
Group Virtuousness: Confirmatory Factor Analysis (Completely Standardized Solution)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1st-order factor model</th>
<th>2nd-order factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lambda</td>
<td>Cronbach Alphas</td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees trust one another in this store</td>
<td>.52</td>
<td>.59</td>
</tr>
<tr>
<td>People are treated with courtesy, consideration, and respect in this store</td>
<td>.74</td>
<td>.73</td>
</tr>
<tr>
<td>People trust the leadership of this store</td>
<td>.72</td>
<td>.72</td>
</tr>
<tr>
<td><strong>Compassion</strong></td>
<td></td>
<td>.71</td>
</tr>
<tr>
<td>Acts of compassion are common here</td>
<td>.60</td>
<td>.58</td>
</tr>
<tr>
<td>This store is characterized by many acts of concern and caring for other people</td>
<td>.61</td>
<td>.62</td>
</tr>
<tr>
<td>Many stories of compassion and concern circulate among store members</td>
<td>.53</td>
<td>.54</td>
</tr>
<tr>
<td><strong>Integrity</strong></td>
<td></td>
<td>.74</td>
</tr>
<tr>
<td>This store demonstrates the highest levels of integrity</td>
<td>.69</td>
<td>.69</td>
</tr>
<tr>
<td>This store would be described as virtuous and honorable</td>
<td>.76</td>
<td>.76</td>
</tr>
<tr>
<td>Honesty and trustworthiness are hallmarks of this store</td>
<td>.56</td>
<td>.56</td>
</tr>
<tr>
<td><strong>Forgiveness</strong></td>
<td></td>
<td>.71</td>
</tr>
<tr>
<td>We have very high standards of performance, yet we forgive mistakes when they are acknowledged and corrected</td>
<td>.61</td>
<td>.61</td>
</tr>
<tr>
<td>We try to learn from our mistakes here, consequently, missteps are quickly forgiven</td>
<td>.72</td>
<td>.73</td>
</tr>
<tr>
<td>This is a forgiving, compassionate store in which to work</td>
<td>.76</td>
<td>.56</td>
</tr>
<tr>
<td><strong>Optimism</strong></td>
<td></td>
<td>.68</td>
</tr>
<tr>
<td>We are optimistic that we will succeed, even when faced with major challenges</td>
<td>.55</td>
<td>.57</td>
</tr>
<tr>
<td>In this store we are dedicated to doing good in addition to doing well</td>
<td>.68</td>
<td>.68</td>
</tr>
<tr>
<td>A sense of profound purpose is associated with what we do here</td>
<td>.79</td>
<td>.77</td>
</tr>
<tr>
<td><strong>Group virtuousness</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td>.88</td>
<td></td>
</tr>
<tr>
<td>Trust</td>
<td>.100</td>
<td></td>
</tr>
<tr>
<td>Compassion</td>
<td>.90</td>
<td></td>
</tr>
<tr>
<td>Integrity</td>
<td>.91</td>
<td></td>
</tr>
<tr>
<td>Forgiveness</td>
<td>.98</td>
<td></td>
</tr>
</tbody>
</table>

A second-order factor model also fits the data adequately (e.g., RMSEA: .08; GFI: .91; CFI and IFI: .90). Considering the parsimony of this second-order model, as well as earlier empirical evidence (Rego et al., 2010, 2011), we consider group virtuousness as a core construct. To obtain a composite group virtuousness score (Alpha: .87), the items for each of the five dimensions were
averaged to obtain a composite average for each of the five dimensions. Then, the averages for each of the five dimensions were averaged in turn to arrive at a composite group virtuousness score for each employee. Individual scores were then aggregated at the group level.

Confirmatory factor analysis was also carried out upon group-level data, for testing the five-factor model. Fit indices ($RMR: .02; CFI: .85; IFI: .86$) suggest that the model fits the data appropriately. Lambdas range between .53 and .84, and Cronbach Alphas are above .70 (range: .78-.84), except for trust (.59). The fit indices of the second-order factor model ($RMR: .02; CFI: .84; IFI: .84$) are similar to those of the first-factor model. Cronbach Alpha for group virtuousness at the group-level is .92.

**Group potency.** Group potency ($\text{Alpha: .81, individual-level data; .88, group-level data}$) was measured with six items adapted from de Jong et al. (2005), who adapted them from Guzzo et al. (1993). The items were: (1) “Our store has confidence in performing the job requirements”; (2) “Our store believes it can become unusually good at” [performing their tasks]; (3) “Our store expects to be known as a high-performing team”; (4) “Our store feels it can solve any problem it encounters”; (5) “No task is too tough for our store”; (6) “Our store can get a lot done when it works hard”. The item “Our team believes it can become unusually good at self-managing” was not considered. Participants were asked to report the degree to which each statement was true/false, on a 6-point scale (0: completely false; 5: completely true). Individual scores were then aggregated at the group/store level. Several authors (Bandura, 1997; Gibson & Earley, 2007; Stajkovic et al., 2009) have suggested that aggregation of individual assessment is the preferred way of assessing group potency.

**Aggregating Data at the Group/Store Level**

Aggregation of employees’ scores at the store level seems appropriate because the store is a discrete business unit, with its own management and supervisory structure (Gelade & Young, 2005). Moreover, employees within the store interact on a daily basis and are encouraged by their supervisors to interact and cooperate in order to reach sales targets. Therefore, store level variables emerging from the aggregated individual scores are meaningful psychological constructs reflecting common experiences and shared perceptions within each store. However, statistical analysis is necessary to justify aggregation. For testing if this was appropriate (Biemann et al., 2012; Bliese, 2000; LeBreton & Senter, 2008), we estimated $ICC(1)$, $ICC(2)$, and $r_{WG(J)}$. $ICC(1)$ is a measure of within-group consensus, representing the proportion of total variance that can be explained by group membership. $ICC(2)$ is an indicator of the reliability of the group mean differences, providing an estimate of the degree to which the mean accurately represents the group. While $ICC(1)$ refers to the level of agreement among ratings from members of the same group, $ICC(2)$ suggests whether groups can be differentiated with regard to the variables under study. $r_{WG(J)}$ is a measure of inter-rater agreement that calls for comparing the observed variances to the variance expected when there is complete lack of agreement between raters (i.e., random response).

Although no absolute standard value for aggregation based on these measures has been established (Biemann et al., 2012), Avolio, Zhu, Kho, and Bhatia (2004, p. 959) argued that “an $r_{WG}$ equal to or greater than .70 and $ICC(1)$ values exceeding .05 (Bliese, 2000) is considered sufficient to warrant aggregation” (see also Gelfand et al., 2011; James, Demaree, & Wolf, 1984). For $ICC(2)$, values greater than .60 are usually considered to be sufficient (Bliese, 2000; Chern, Mathieu, & Blies, 2004; Glick, 1985; Detert, Treviño, & Burris, 2007; Kenny & la Voie, 1985). Other authors have used different thresholds. For example, Michel, Lyons, and Cho (2011, p. 498) noted that: “Although there are no definitive cutoffs for these statistics, some general rules commonly used by organizational researchers include an $ICC(1)$ value of at least .12, $r_{WG}$ value of at least .60 (James, 1982), and an $ICC(2)$ value of at least .60 (Glick, 1985).” Zellmer-Bruhn (2003) also considered .60 as the cutoff value for $r_{WG}$.

For computing the expected variances that allow calculating $r_{WG(J)}$ values, several authors (e.g., Biemann et al., 2012; LeBreton & Senter, 2008) recommend using several defensible null
distributions. Thus, expected variances of AL and group virtuousness were estimated, assuming both a uniform (rectangular) null distribution (“the most natural candidate to represent nonagreement”; Cohen, Doveh, & Nahum-Shani, 2009, p. 149) and a slightly skewed distribution. We considered slightly skewed distribution based on earlier studies where measures of perceptions of organizational virtuousness (Rego et al., 2010, 2011), and AL (Rego et al., 2012) were included. For group potency, we also considered it reasonable to expect a slightly skewed distribution, because of a possible leniency bias on the part of the employees when describing their stores.

Table 3 depicts the results according to a template suggested by Biemann et al. (2012) to report aggregation results for consensus composition models. F ratios indicate that for the three independent/mediating variables of the study, group membership is statistically significant (Biemann et al., 2012), a finding indicating that aggregation is justified. All $r_{WG(J)}$ values relative to the uniform distribution (range: .83-.89) are higher than the cutoff value of .70 suggested by other authors (Avolio, Zhu, et al., 2004; Bieman et al., 2012; LeBreton & Senter, 2008). Using the “revised standards” suggested by LeBreton and Senter (2008, Table 3, p. 836), a strong inter-rater agreement is found for the three variables. The percentage of $r_{WG(J)}$ values that exceed the cutoff value of .70 is 91.3%, 97.1%, and 94.2%, respectively for AL, group virtuousness, and group potency.

Table 3
Aggregating Data at the Store Level

<table>
<thead>
<tr>
<th>Measures</th>
<th>$F$ ratio</th>
<th>$r_{WG(J)}$: uniform $\text{Mean}$</th>
<th>$SD$</th>
<th>$r_{WG(J)}$: slight skew $\text{Mean}$</th>
<th>$SD$</th>
<th>Variance of the alternative null distribution*</th>
<th>$ICC(1)$</th>
<th>$ICC(2)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentic leadership (5)$^b$</td>
<td>5.37**</td>
<td>.88</td>
<td>.10</td>
<td>1.34</td>
<td>.17</td>
<td>.34</td>
<td>.81</td>
<td></td>
</tr>
<tr>
<td>Group/store virtuousness (5)$^b$</td>
<td>2.90**</td>
<td>.89</td>
<td>.04</td>
<td>1.34</td>
<td>.07</td>
<td>.18</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>Group/store potency (6)$^b$</td>
<td>2.09**</td>
<td>.83</td>
<td>.12</td>
<td>1.85</td>
<td>.24</td>
<td>.11</td>
<td>.52</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
SD: standard deviation of $r_{WG(J)}$ values.
*aVariance estimates for the measure-specific null distributions were taken from LeBreton and Senter (2008, Table 2, p. 832).
*bNumbers represent the number or response options.
*p < .05  **p < .01

When the slightly skewed distribution is considered, all $r_{WG(J)}$ values are greater than the cutoff value of .70. Using the “revised standards” suggested by LeBreton and Senter (2008), inter-rater agreement is strong for the three variables. The percentage of $r_{WG(J)}$ values that exceed the cutoff value of .70 is 85.5%, 95.7%, and 73.9%, respectively for AL, virtuousness, and potency.

All $ICC(1)$ values are greater than the cutoff value of .06 (Avolio, Zhu, et al., 2004; Gelfand et al., 2011; James et al., 1984), all also being greater than or close to the cutoff value of .12 (James, 1982; Michel et al., 2011). Taking LeBreton and Senter (2008) into account, $ICC(1)$ values may be considered medium for group potency, medium/large for group virtuousness, and large for AL (LeBreton & Senter, 2008; Murphy & Myors, 1998). The $ICC(2)$ values of AL and group virtuousness are greater than .60 (the lowest cutoff identified in literature), with the value for group potency being more modest (.52). Although the results related to $ICC(2)$ for group potency make the adequacy of aggregating data somewhat problematic, we consider that the findings regarding $ICC(1)$ and the inter-rater agreement indices clearly justify aggregation.

Considering that the absolute values of skewness regarding AL, group virtuousness and group potency (at the group-level) were less than or close to 1 (-1.1, -.5, -.4, respectively) and all absolute values of kurtosis were lower than 3 (1.7, -.2, -.2, respectively), the data appear to be approximately normally distributed (Curran et al., 1996; Hair et al., 2007).
Testing Discriminant Validity

We conducted a series of dimension-level confirmatory factor analyses to examine whether the three independent/mediating variables of the study (at the group-level) capture distinct constructs versus common source effects. The three-factor model includes four indicators loading on the AL factor, five indicators loading on the group virtuousness factor, and six items loading on the group potency factor. The model fits the data well ($RMR: .02; CFI: .94; IFI: .94$). A two-factor model, where AL and group virtuousness merge into a single factor, does not fit the data well (e.g., $CFI: .71; IFI: .72$). Another two-factor model, where group virtuousness and group potency merge into a single factor, also shows a poor fit (e.g., $CFI: .72; IFI: .73$). The single factor model also does not fit the data satisfactorily (e.g., $CFI: .49; IFI: .51$). These findings provide support for the discriminant validity of AL, group virtuousness, and group potency. When data at the individual level are considered, the empirical pattern is very similar, only the three-factor model fitting the data satisfactorily (e.g., both $CFI$ and $IFI$ are .96).

Stores’ Sales Achievement

Sales achievement represents the degree to which a store reaches its monthly sales target, the target being determined by the firm management according to the store’s size and location, and to the store manager’s experience. Sales achievement is defined in terms of the percentage of the target. Gelade and Young (2005) argued that, although setting targets involves subjective judgment, an important advantage of the indicator is that performance measured this way compensates for differences in store characteristics (e.g., location, differences in the local economy). The company top management agreed to provide the stores’ sales performance over the four months subsequent to collecting data about the AL, group virtuousness, and group potency. Thus, we created four sales achievement indicators: over the subsequent month, over the subsequent two months, over the subsequent three months, and over the subsequent four months.

Control Variables

Age, tenure, and schooling were included as controls because studies have shown that they relate to several dependent and independent variables, at both the individual and collective levels (e.g., Foote & Tang, 2008). The mean length of the supervisor-employee working relationship was also included as control because it can influence, or even reflect, the quality of the leader-member exchanges, and thus impact the way that individuals relate with their leaders and describe them. Store size was also included for control because it associates with satisfaction, participation, commitment, cooperation, and performance (Akgün et al., 2007; Cosse, Ashworth, & Weisenberger, 1999; Gelade & Young, 2005; LePine, Piccolo, Jackson, Mathieu, & Saul, 2008).

FINDINGS

Table 4 presents means, standard deviations, and correlations at the store level. Mean tenure, mean schooling and the mean length of supervisor-subordinate working relationship correlate significantly with sales achievement in some periods. AL, group virtuousness, and group potency intercorrelate positively. Correlations between these three variables are greater (data not presented in Table 4) when data about the three variables proceed from the same source/employees (AL-group virtuousness: $55, p<.01$ versus $44, p<.01$; AL-group potency: $30, p<.05$ versus $27, p<.05$; group virtuousness-group potency: $63, p<.01$ versus $31, p<.01$). This finding suggests that using different individuals for measuring each independent/mediating variable is adequate. AL and group virtuousness do not correlate with sales achievement. Group potency correlates with sales achievement over the subsequent three and four month periods.
Table 4
Means, Standard Deviations, and Correlations (Store Level)

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Store size (number</td>
<td>13.72</td>
<td>8.39</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>of employees)</td>
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</tr>
<tr>
<td>2. Mean age (years)</td>
<td>27.7</td>
<td>3.25</td>
<td>.10</td>
<td></td>
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</tr>
<tr>
<td>3. Mean tenure on store</td>
<td>1.63</td>
<td>1.14</td>
<td>.03</td>
<td>.12</td>
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<td>(years)</td>
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</tr>
<tr>
<td>4. Mean schooling (a)</td>
<td>2.24</td>
<td>.32</td>
<td>.05</td>
<td>-.21</td>
<td>-.08</td>
<td></td>
<td></td>
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<tr>
<td>5. Mean length of the</td>
<td>0.76</td>
<td>.59</td>
<td>.02</td>
<td>-.01</td>
<td>.37</td>
<td>.13</td>
<td></td>
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<tr>
<td>supervisor-employee</td>
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<tr>
<td>working relationship</td>
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<tr>
<td>on store (years)</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Authentic leadership</td>
<td>2.96</td>
<td>.52</td>
<td>.08</td>
<td>.16</td>
<td>.00</td>
<td>-.22</td>
<td>-.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Group/store virtuous</td>
<td>2.87</td>
<td>.40</td>
<td>-.09</td>
<td>-.02</td>
<td>.03</td>
<td>-.15</td>
<td>.09</td>
<td>.44</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. Group/store potency</td>
<td>4.16</td>
<td>.42</td>
<td>.02</td>
<td>-.08</td>
<td>.08</td>
<td>-.06</td>
<td>.15</td>
<td>.27*</td>
<td>.31</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Sales achievement</td>
<td>78</td>
<td>0.10</td>
<td>.08</td>
<td>.14</td>
<td>.33</td>
<td>.13</td>
<td>.14</td>
<td>.06</td>
<td>-.15</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>– subsequent month (%)</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>10. Sales achievement</td>
<td>82</td>
<td>9.10</td>
<td>.04</td>
<td>.34</td>
<td>.17</td>
<td>.24</td>
<td>.00</td>
<td>-.11</td>
<td>.22</td>
<td>.69</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– subsequent 2 months (%)</td>
<td>**</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Sales achievement</td>
<td>81</td>
<td>9.02</td>
<td>-.19</td>
<td>.25</td>
<td>.27</td>
<td>.28</td>
<td>.03</td>
<td>.09</td>
<td>.31</td>
<td>.57</td>
<td>.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– subsequent 3 months (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Sales achievement</td>
<td>79</td>
<td>8.02</td>
<td>-.18</td>
<td>.06</td>
<td>.25*</td>
<td>.16</td>
<td>.14</td>
<td>.12</td>
<td>.32</td>
<td>.52</td>
<td>.73</td>
<td>.93</td>
<td></td>
</tr>
<tr>
<td>– subsequent 4 months (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Note:
(a) 1: nine or fewer schooling years; 2: 12 years; 3: university degree; 4: graduate degree.
*p < .05  **p < .01

Structural equation modeling (SEM, via LISREL) is “a superior technology to regressions” (Iacobucci et al., 2007, p. 140), even for small sample sizes (see also, Goodhue, Lewis, & Thompson, 2012, for comparing PLS with LISREL). This approach was used for testing the hypothesized model. Considering the small sample size (Marsh & Hau, 1999), the composite measures for AL, group virtuousness, and group potency were used (i.e., scores in the respective items were averaged to form a score measuring each construct). Control variables (store size, mean age, mean tenure, mean schooling, mean length of supervisor-employee working relationship) were included, paths not being represented in Figure 1. The hypothesized paths between AL and group virtuousness, and between group virtuousness and group potency, are significant. The path between group potency and sales achievement is also significant when sales performance for the three and four months period is considered. As the time period widens, the relationship between group potency and sales achievement also increases.

We also tested the model with data about the three independent/mediating variables collected from the same source/employees (data not depicted in Figure 1). The path between AL and sales achievement is not significant, regardless of the sales period considered. The path between group potency and sales achievement increases as the sales period also increases, being significant only for the three- and four-month periods. That pattern is very similar to the one depicted in Figure 1. However, the paths between AL and group virtuousness (.65), and between group virtuousness and group potency (.53) are greater than those seen there. The findings show that relationships between variables whose data are collected from the same source are inflated, and suggest that our decision to use data from different sources for measuring AL, group virtuousness, and group potency was adequate.
Four alternative models (Figure 2) were tested. Considering the findings previously reported, only the sales achievement for the three and four months periods were considered. Because the empirical pattern is similar for both periods, we next present the findings relative to the longer period. The first alternative model differs from the hypothesized one in that it does not include the path between AL and store’s sales achievement (emerging as non-significant in the test of the hypothesized model). All paths are significant and the model fits the data reasonably well.

Considering the change in $\chi^2$ relative to the difference in degrees of freedom, this alternative model does not significantly differ from the hypothesized one, although it is more parsimonious. Below, models are compared with this alternative model.

The second alternative model differs from the first in that it includes the paths between group virtuousness and sales achievement, and between AL and group potency. This model does not significantly differ from the hypothesized one, although it is more parsimonious. Below, models are compared with this alternative model.

The third alternative model differs from the first in that it includes the paths between group virtuousness and sales achievement, and between AL and group potency. This model does not significantly differ from the first alternative model. However, both added paths are non-significant, and the path between group virtuousness and group potency becomes non-significant.

The fourth alternative model differs from the first in that it considers (a) AL as predictor of group potency, and (b) group virtuousness as predictor of AL. This model does not differ significantly from the first alternative model. However, the path group virtuousness $\rightarrow$ group potency, and the path AL $\rightarrow$ group potency are not significant. The fourth alternative model represents a partial reversion of the hypothesized model. This model does not differ significantly

### Figure 1
Testing the Hypothesized Model (Standardized Path Coefficients)

<table>
<thead>
<tr>
<th>Model</th>
<th>Path</th>
<th>$R^2$</th>
<th>$\Delta R^2$</th>
<th>Significance</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL $\rightarrow$ Group virtuousness</td>
<td>.51**</td>
<td>.24</td>
<td>.27*</td>
<td>.51**</td>
<td>$1^{st}$ row: subsequent month</td>
</tr>
<tr>
<td>Group virtuousness $\rightarrow$ Group potency</td>
<td>.27*</td>
<td>.27</td>
<td>.27*</td>
<td>.27</td>
<td>$2^{nd}$ row: subsequent 2 months</td>
</tr>
<tr>
<td>Group potency $\rightarrow$ Sales achievement</td>
<td>.23*</td>
<td>.27</td>
<td>.30*</td>
<td>.27</td>
<td>$3^{rd}$ row: subsequent 3 months</td>
</tr>
<tr>
<td>AL $\rightarrow$ Group potency</td>
<td>.27*</td>
<td>.27</td>
<td>.30*</td>
<td>.27</td>
<td>$4^{th}$ row: subsequent 4 months</td>
</tr>
</tbody>
</table>

$\Delta R^2$ means change in $R^2$ after controlling the effects of store size, mean age, mean tenure, mean schooling, and the mean length of the supervisor-employee working relationship. For AL, $R^2$ values represent variance explained by the control variables.

ns: non-significant  *p < .05  **p < .01
from the first alternative model, although the path AL → sales achievement is not significant. These findings point out several relevant features. First, although all tested models fit the data well, only in the first alternative model, the most parsimonious, are all paths significant. Second, group potency is the single variable that predicts sales performance directly, even when the effects of other variables are controlled (alternative models #2 and #4). Third, AL predicts sales achievement only through the mediating role of both group virtuousness and group potency. Direct paths between AL and sales achievement are not significant (hypothesized model; fourth alternative model). Fourth, the direct path between group virtuousness and sales performance (alternative models #2) is not significant.

**Figure 2**

Testing Alternative Models Through Structural Equation Modeling (Standardized Path Coefficients)

<table>
<thead>
<tr>
<th>Alternative model #1</th>
<th>Alternative model #2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group virtuousness → .27* Group potency</td>
<td>Group virtuousness → .19ns Group potency</td>
</tr>
<tr>
<td>Group potency → .34** Group virtuousness</td>
<td>Group virtuousness → .51** Group potency</td>
</tr>
<tr>
<td>Sales achievement → .51**</td>
<td>Sales achievement → .21ns</td>
</tr>
<tr>
<td>Authentic leadership</td>
<td>Authentic leadership</td>
</tr>
<tr>
<td>R²: .26</td>
<td>R²: .26</td>
</tr>
</tbody>
</table>

RMR: .01; CFI: .99; IFI: .99
Δχ²(1) = 1.29; p = .26 (versus the hypothesized model)

<table>
<thead>
<tr>
<th>Alternative model #3</th>
<th>Alternative model #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authentic leadership → .21ns Group potency</td>
<td>Group virtuousness → .40** Authentic leadership</td>
</tr>
<tr>
<td>Group virtuousness → .40** Group potency</td>
<td>Group virtuousness → .34** Group potency</td>
</tr>
<tr>
<td>Sales achievement → .34**</td>
<td>Sales achievement</td>
</tr>
<tr>
<td>Group virtuousness</td>
<td>Authentic leadership</td>
</tr>
<tr>
<td>R²: .05</td>
<td>R²: .20</td>
</tr>
</tbody>
</table>

RMR: .01; CFI: 1.00; IFI: 1.00
Δχ²(2) = 2.48; p = .29 (versus the 1st alternative model)

<table>
<thead>
<tr>
<th>Alternative model #3</th>
<th>Alternative model #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group virtuousness → .21ns Group potency</td>
<td>Group virtuousness → .40** Authentic leadership</td>
</tr>
<tr>
<td>Group potency → .40** Group virtuousness</td>
<td>Group virtuousness → .34** Group potency</td>
</tr>
<tr>
<td>Sales achievement → .34**</td>
<td>Sales achievement</td>
</tr>
<tr>
<td>Group virtuousness</td>
<td>Authentic leadership</td>
</tr>
<tr>
<td>R²: .24</td>
<td>R²: .29</td>
</tr>
</tbody>
</table>

RMR: .01; CFI: 1.00; IFI: 1.00
Δχ²(2) = 2.34; p = .31 (versus the 1st alternative model)

<table>
<thead>
<tr>
<th>Alternative model #3</th>
<th>Alternative model #4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group virtuousness → .21ns Group potency</td>
<td>Group virtuousness → .40** Authentic leadership</td>
</tr>
<tr>
<td>Group potency → .40** Group virtuousness</td>
<td>Group virtuousness → .34** Group potency</td>
</tr>
<tr>
<td>Sales achievement → .34**</td>
<td>Sales achievement</td>
</tr>
<tr>
<td>Group virtuousness</td>
<td>Authentic leadership</td>
</tr>
<tr>
<td>R²: .24</td>
<td>R²: .29</td>
</tr>
</tbody>
</table>

RMR: .01; CFI: 1.00; IFI: 1.00
Δχ²(1) = 1.29; p = .26 (versus the 1st alternative model)

ns: non significant; *p < .05 **p < .01

**ANALYSIS, DISCUSSION, AND CONCLUSIONS**

**Discussing the Main Findings**

The study suggests that, as hypothesized, AL predicts sales achievement through the mediating role of group/store virtuousness and group/store potency. Contrary to our hypothesis, no direct relationship between AL and sales achievement was found. Thus, the relationship between AL and sales achievement is fully mediated by group virtuousness and group potency. Authentic leaders
increase group virtuousness, increasing potency and effectiveness. Alternatively, one may consider that the non-significance of the path results from the small sample size. Future studies should include a larger sample of teams to clarify this issue.

Interestingly, the findings suggest that the impact of group potency (and indirectly the impact of AL and group virtuousness) on group performance increases as the time span also increases (Figure 1): the relationship between group potency and sales achievement is stronger for the subsequent three- and four-month periods than for the first two months subsequent to measuring AL, group virtuousness, and group potency. The finding corroborates literature (e.g., de Jong et al., 2005), calling attention to taking the time frame into account when relating group potency and group performance, and suggests that the positive impact of group potency on performance may increase with time. Gelade and Young (2005, p. 17) suggest that the impact of customer satisfaction on sales may increase with time, several reasons existing (see arguments supporting H2) for supposing that potent stores make more effort to increase service quality and satisfy customers.

Before proceeding, it is important to note that our model was tested with data about AL, group virtuousness, and group potency collected from different sources. We found that when the same employees are used to measure these three variables, the relations between them are greater than when different employees are used for measuring each variable. The finding is consistent with Podsakoff et al. (2012), who found that collecting data about different variables in the same source may inflate the relationships between such variables.

The empirical pattern found here is consistent with studies suggesting that the impact of leadership on employees/group outcomes may be fully mediated by other variables (e.g., Walumbwa et al., 2010; Wang et al., 2005). The finding is also consistent with Hu and Liden (2011), who suggested that group-level leadership may facilitate social integration, efficient processes, and smooth communication within the group, enhancing group motivation and potency and, in this way, group effectiveness. The finding enriches literature about how AL may emerge as a collective phenomenon and influence pertinent variables at the collective level, including group performance.

The literature on the impact of group potency on group performance is rich (e.g., in a meta-analysis, Gully, Joshi, Incalcaterra, and Beaubien (2002) found significant relationships between group potency and group performance across 29 studies), but studies investigating the antecedents of group potency are scarcer (Gibson & Earley, 2007; Lester et al., 2002). Even scarcer are studies integrating AL and group virtuousness as antecedents of group potency and, subsequently, group performance. By showing that group potency may be influenced by AL and group virtuousness, this study not only helps to understand how group potency emerges, it also shows that AL and group virtuousness, in addition to being positive (in the sense given by the Positive Organizational Scholarship movement; Cameron & Spreitzer, 2012), also catalyze “pragmatic outcomes” (Cameron et al., 2004, p. 770). This finding helps to legitimize the adoption of virtuous/positive practices in organizations, a necessary endeavor in times of crisis of confidence in leaders and businesses, when the apparent degradation in the quality of the “overall moral fabric of contemporary leadership” (Avolio & Mhatre, 2012, pp. 773-774) creates a need for new theories and practices that focus on promoting what is right rather than focusing only on “results at whatever cost” to the exclusion of ethical/virtuous considerations.

Limitations and Future Studies

The study is not without limitations. First, the sample size is small. Moreover, although we have selected groups with at least six participants, for several cases only two respondents for each independent/mediating variable were considered. Future studies may measure each variable with data from at least three employees. The study was restricted to a single organization, raising the possibility of bias emerging from organization-specific factors, and limiting the extent to which our findings may be generalized (Gelade & Young, 2005). Future studies should collect a larger sample, with larger group sizes, from multiple organizations. Testing if the findings are replicable in groups...
within different kinds of organizations and sectors, and using other measures of group performance, are also recommendable. Future studies may also include the level of interdependence within groups (Hu & Liden, 2011; Stajkovic et al., 2009) as moderator. One may hypothesize that the relationships between variables are stronger in highly interdependent groups than in less interdependent ones (Gibson & Earley, 2007). Our study does not allow testing such effects because the level of interdependence was not measured. This would be especially relevant for the largest stores, where employees may have significantly more contacts/relationships within their sub-groups than with employees in other sub-groups.

Second, although data measuring sales achievement refers to a period subsequent to collecting data about independent/mediating variables, the study does not allow an unquestionable determination of the hypothesized causality, and other causal links and explanations are plausible. For example, store performance may come from systematic sources that spread across large temporal periods. Thus, stores with higher/lower sales achievement during the period surveyed in this study may have been those also having higher/lower sales achievement during the period before our study started. As a consequence, prior performance may predict the independent/mediating variables, at least group potency. In fact, some literature (de Jong et al., 2005; Goddard & Salloum, 2012; Jung & Sosik, 2003) suggests reciprocal influences between group potency and group performance. Prior performance may influence group potency, more effective groups becoming more potent. Therefore, future studies may explore the impact of AL, group virtuousness, and group potency on subsequent group performance after controlling the effect of prior performance.

Difficulties in determining causality may be stronger regarding the relationships between the three independent/mediating variables. For example, although it is plausible that authentic leaders do promote group virtuousness, it is also reasonable to suppose that group virtuousness promotes authenticity in leaders, or that virtuous groups “repel” non-authentic leaders and attract authentic ones. Moreover, within groups with high potency, group members may feel that reaching the group goals requires cooperation and reciprocation efforts that encourage group virtuousness. Future studies may assess AL, group virtuousness, and group potency longitudinally.

Third, the study included only two mediating variables, others being plausible. For example, it is possible that authentic leaders develop meaningful missions and visions, thus leading the group to develop a sense of purpose in what the team does (George, 2003; Webber, 2002) and building a collective identity, which in turn leverages group potency (Shamir, House, & Arthur, 1993). Authentic leaders may also develop intragroup psychological safety, goal and process clarity (Akgün et al., 2007; Hu & Liden, 2011), and collective hope, optimism, and resilience (Avolio, Gardner, et al., 2004; Walumbwa et al., 2011), thereby increasing group potency. They may also encourage group affective tone (Avolio, Gardner, et al., 2004; Ilies et al., 2005), thus promoting group potency (Gibson & Earley, 2007). The relationship between group potency and sales achievement may also be mediated by customer satisfaction and/or loyalty (Gelade & Young, 2005). Future studies may include these variables as mediators.

Fourth, considering that authentic, ethical, servant, and transformational leadership constructs share some commonalities (Hu & Liden, 2011; Walumbwa et al., 2008, 2011), future studies should include servant, ethical, and transformational leadership for control. Fifth, instead of focusing on group potency (i.e., generalized group efficacy), future studies may focus on task-specific beliefs. It cannot be taken for granted that group efficacy beliefs across different tasks are the same (Gibson & Earley, 2007). Moreover, different kinds of collective efficacy may have different impacts on performance, and those impacts may be contingent on the organization’s or group’s mission and goals. For example, in the case of retail stores, the collective efficacy regarding service quality and customer satisfaction may have greater impact on sales achievement than what the collective efficacy on performing administrative tasks do. Sixth, the aggregation indices regarding group potency are modest (Table 3), a finding that calls attention to the question of the potency’s homogeneity/heterogeneity within groups with different tasks. Future studies may test if employees...
with specific tasks within stores have different levels of collective efficacy in different tasks. Seventh, the reliabilities of two dimensions of the group virtuousness construct (optimism and, mainly, trust) are lower than the cutoff value of .70 (Table 2). Future studies may improve the psychometric properties of the scales and/or test the reasons explaining low reliabilities.

**Implications for Management**

In spite of the above limitations, the study suggests that the AL and group virtuousness constructs interrelate, and that both may advance group potency and, in this way, group performance (Stajkovic et al., 2009). Group virtuousness may be developed in several ways, including the following (Cameron et al., 2011; Rego et al., 2010, 2011). First, leaders may allow group members to experience a sense of positive purpose in their work, with positive consequences for employees’ work engagement and performance (Bunderson & Thompson, 2009). Second, leaders may create and sustain optimism (e.g., promoting employees’ leniency for the past, appreciating the present, seeking opportunities for the future, and maintaining realistic and flexible perspectives; Luthans, Youssef & Avolio, 2007), even when major challenges and difficulties are faced. Third, leaders must act in a respectful, honest, trustful, courteous, and compassionate way, cultivating their credibility, as well as trust and social capital within the group. Fourth, leaders must develop a strong focus on getting results and avoiding errors, together with a capacity to forgive (honest) errors and learn from them, encouraging psychological safety within the group and helping the group to be proactive and creative, and to continuously improve (Edmondson, 1999; Mainemelis, 2010).

Cultivating group virtuousness may not only promote group potency, but also support group members’ positive affect, engagement, and turnover (Cameron et al., 2011), thus creating more conditions to elevate the group’s performance. Such positive impact may emerge as the result of three kinds of effects (Cameron et al., 2011). Buffering effects mean that group virtuousness protects the group from the negative effects of trauma or distress by enhancing resiliency, solidarity, and a sense of efficacy. Amplifying effects mean that group virtuousness facilitates group members’ positive affect and social capital. Heliotropic effects represent the inherent tendency of living systems toward positive energy and away from negative energy. Thus, virtuous groups cultivate “positive energy” among group members, and this “positive energy” elevates group performance (Cameron et al., 2011, p. 288). Indirectly, the study also suggests that selecting leaders with authentic features, and implementing training and development actions aimed at increasing AL (Avolio & Gardner, 2005; Harvey, Martinico, & Gardner, 2006) may have a positive impact on group potency and performance.

**Concluding Remarks**

Cameron et al. (2004, p. 784) suggested that investigation of virtuousness in organizations represents an important opportunity in the fields related to the “highest human potential, ennobling qualities, and transcendent purposes”. However, concepts like authenticity and virtuousness have been underconsidered and undervalued, in both academia and business. Although scholars themselves have started to introduce such topics to the agenda, running the risk of being accused of naïveté, more empirical research is necessary for legitimizing them, in both the scholarly and practitioner communities (Cameron & Winn, 2012). Without empirically demonstrated “pragmatic outcomes” (Cameron et al., 2004, p. 770) AL and virtuousness are less likely to capture attention from either community. Our study suggests that by acting authentically and engendering group virtuousness, leaders are more able to promote “pragmatic outcomes”, group performance being such an outcome. This is an important empirical contribution to enrich the POS literature (Cameron and Spreitzer, 2012). Authentic leaders may promote group virtuousness and potency, these being critical paths leading toward organizational positivity and flourishing.
REFERENCES


