



Shared leadership, diversity, and information sharing in teams

Shared
leadership

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Abstract

Purpose – Shared leadership is increasingly important in today's organizations. The purpose of this paper is to examine the association between shared leadership and team performance, the moderating role of demographic diversity and the mediating role of information sharing on this relationship.

Design/methodology/approach – The research used a field study design, quantitative data of employees from two different organizations. Data were analyzed with structural equation modeling analyses.

Findings – Shared leadership was positively associated with team performance and this association was mediated by information sharing. Demographic diversity moderated the relationship between shared leadership and team performance, such that shared leadership was more strongly associated with team performance in more diverse teams and less in less diverse teams.

Research limitations/implications – The results found support for moderating and mediating variables, explaining under what conditions and how shared leadership is associated with team performance in organizations.

Practical implications – The findings highlight the importance of nurturing shared leadership, in particular as teams tend to grow more diverse in our today's work settings. They also highlight the importance of diversity in how shared leadership unfolds its potential.

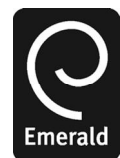
Social implications – The research highlights that shared leadership, diversity, and information are increasingly important in today's organizations and should be considered from a more positive standpoint.

Originality/value – This research explored the association between shared leadership, demographic diversity, and information sharing with team performance. It represents a first step in examining the moderating and mediating variables of the shared leadership and team performance association.

Keywords Leadership, Diversity, Team performance, Teams, Information Sharing, Shared leadership, Groups

Paper type Research paper

Today organizations are faced with uncertainty and fast-changing environments, and work tasks are becoming increasingly complex. Increasingly, organizations have adopted team-based work structures to respond to these challenges (Day *et al.*, 2004, 2006; Morgeson *et al.*, 2010a). With a shift to teams, however, the issue arises regarding the suitability of traditional models of hierarchical leadership. According to Pearce and Conger (2003, p. 1), a potentially more effective approach to team management is shared leadership defined as: "a dynamic interactive influence among individuals in groups for which the objective is to lead one another to the achievement of group or organizational goals or both." The importance of shared leadership has been found to be particularly appropriate in managing teams composed of knowledge workers (Carson *et al.*, 2007; Hmieleski *et al.*, in press; Morgeson *et al.*, 2010b). Having said that, limited research attention has been devoted to examining the moderating and mediating variables of the shared leadership and team performance association (Pearce and Conger, 2003).



Concurrent with external challenges to organizations is the growth in workplace diversity (Harrison and Humphrey, 2010; Mohammed and Angell, 2004; Shore *et al.*, 2009). For example, significant attention has been given to the rise of the percentage of older, or more tenure diverse, employees in the civilian labor force and organizations (Guderjahn, 2005; Kronberger, 2004). This has contributed to a more demographically diverse workforce and an increased salience of demographic diversity (Bowers *et al.*, 2000; Williams and O'Reilly, 1998). However, the association between demographic diversity and team outcomes is not yet fully understood.

Whereas shared leadership and demographic diversity previously have been investigated separately as two lines of research, much could be gained by integrating these areas. Complex, cognitive, interdependent knowledge-based tasks are becoming more common in organizations along with the increased importance of intellectual capital (Backes-Gellner and Veen, 2009; Bowers *et al.*, 2000), the use of teams to complete knowledge-based work, and the issue of diversity within teams. In this environment, demographic diversity has been found to display a substantial positive association with productivity, particularly in companies with knowledge-based tasks (Backes-Gellner and Veen, 2009; Bowers *et al.*, 2000). In light of the supposed important role of shared leadership for managing teams, questions exist regarding the moderating role of demographic diversity on the shared leadership and team performance association. Based on previous diversity research, demographic diversity is expected to moderate the association between shared leadership and team performance, such that diversity further strengthens the association between shared leadership and team outcomes, such as team performance.

Information sharing has been defined as "conscious and deliberate attempts on the part of team members to exchange work-related information, keep one another apprised of activities, and inform one another of key developments" (Bunderson and Sutcliffe, 2002, p. 881). Sharing of information is an important antecedent to positive team processes, for example decision making (Bunderson and Sutcliffe, 2002; Jehn and Shah, 1997), or team performance. However, so far the sharing of information has predominantly been treated as an input factor to team performance (Mesmer-Magnus and DeChurch, 2009). Contrastingly, little is known about what the important antecedents of information sharing are. Consequently, shared leadership in the present research is viewed as predictor of information sharing.

The objective in this current study is to build on and extend prior research that has found support for the shared leadership and team outcomes by investigating additional variables present in team-based work structures. Toward this end, the present field study examined the moderating role of demographic diversity in terms of age and tenure diversity and the mediating role of information sharing on the shared leadership and team performance relationship.

Theoretical background

Research on shared leadership

Shared leadership describes leadership that is spread across team members and organizational units (Brown and Gioia, 2002; Gronn, 2002; Pearce and Conger, 2003). This approach to team leadership has been demonstrated to be positively associated with team and organizational outcomes in a range of different organizational settings and for a variety of types of teams (Bowers and Seashore, 1966; Ensley *et al.*, 2006). For example, using a sample of 71 change management teams, Pearce and Sims (2002) found shared leadership to be positively associated with team effectiveness as

perceived by team managers, team members, and customers, with R^2 ranging from 0.21 to 0.40 for the shared leadership behaviors (Pearce and Sims, 2002; p. 182). With respect to virtual teams, using a sample of 28 teams, Pearce *et al.* (2004) found shared leadership to be positively associated with enhanced team processes. Related to top management, Ensley *et al.* (2006) reported shared leadership as being positively related to new venture performance in a two sample study of 66 top management teams from the Inc. 500 and 154 top management teams from a random national sample of firms (Ensley *et al.*, 2006). More recently, shared leadership has been shown to be positively associated with higher levels of performance in production and manufacturing settings (Ford and Seers, 2006), among US Army light infantry platoons (Avolio *et al.*, 2003), team performance in unionized work settings (Seers, 1989; Seers *et al.*, 1995), sales teams (Mehra *et al.*, 2006), CEO's, anesthesia teams (Künzle *et al.*, 2010), consulting teams (Hoch *et al.*, 2010), and among management students (Carson *et al.*, 2007; Solansky, 2008). It was also shown to relate to higher levels of innovation (Hoch, 2012).

Together, research has demonstrated that in varied team settings, the role of shared leadership exceeded the role of hierarchical, solo leadership in explaining variance in team and organizational outcomes (Ensley *et al.*, 2003, 2006; Pearce and Sims, 2002). Building on this stream of research, the present study investigated shared leadership in a sample of heterogeneous work teams, in regards to its association with team performance:

H1. Shared leadership will be positively associated with team performance.

Next, in spite of empirical evidence supporting the positive association between shared leadership with team outcomes, the role of moderators and mediators in the shared leadership and performance association remain largely unexplored and not much is known about the conditions under which, and how, shared leadership is positively associated with team performance (Carson *et al.*, 2007; Pearce and Conger, 2003). In response to this need the present research examined the role of information sharing and demographic diversity, in the shared leadership and team performance association. Figure 1 presents the expected shared leadership and team performance association, posited in *H1*, along with the shared leadership and team performance association being moderated by demographic diversity in terms of tenure and age, and mediated by information sharing, as described below.

Shared leadership and demographic diversity

Several excellent reviews recently have summarized the literature on diversity (e.g. Shore *et al.*, 2009). Some researchers have discussed specific types of diversity such as relationship-oriented and task-oriented diversity (Joshi and Roh, 2007, 2009) whereas others have distinguished between “surface” and “deep levels” of diversity (Harrison *et al.*, 1998; Shore *et al.*, 2009). In contrast, scholars such as van Knippenberg *et al.* (2004) have suggested that a focus upon specific types of diversity should be abandoned in favor of the assumption that all dimensions of diversity may have positive as well as negative consequences. The present article is concerned with the role of age and tenure diversity.

Generally, past research on demographic diversity, such as age and tenure, in work teams has yielded mixed results (Harrison and Humphrey, 2010; Jackson and Joshi, 2004; Williams and O'Reilly, 1998). Consequently, researchers have argued that

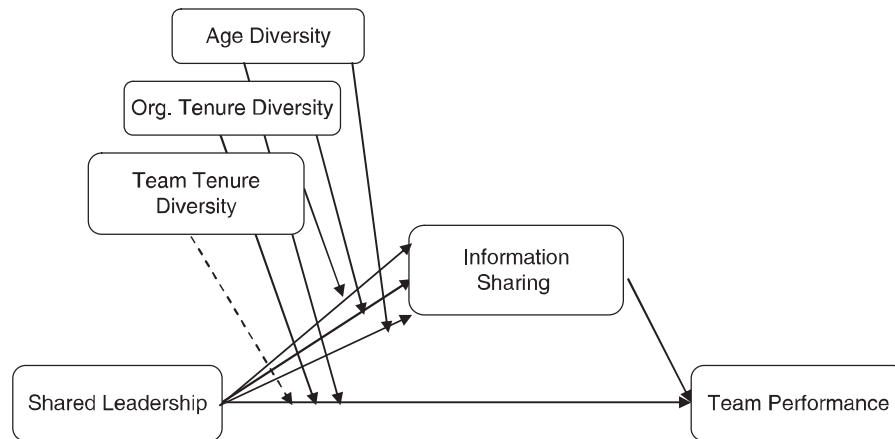


Figure 1.
Hypothesized model

Note: Association between shared leadership, age and tenure diversity, information sharing, and team performance

diversity might represent a “double-edged sword” (Milliken and Martins, 1996), such that the degree to which group members differ from each other might have both positive as well as negative consequences (Shore *et al.*, 2009). Positive consequences have been explained by an information processing approach (Dahlin *et al.*, 2005; Levine and Resnick, 1993), which states that diversity can be beneficial in more diverse teams. This may occur as knowledge and information is more likely to be non-overlapping among the team members, which can lead to increased innovation and team performance, or be used to find creative problem solutions. In contrast, negative consequences have been explained by social identity theory and self-categorization processes (Tajfel and Turner, 1986), or the similarity-attraction paradigm (Byrne, 1971), which argues that the activation of diverse group belongingness may lead to differences in values and faultlines. These may make communication more difficult and lead to lower team outcomes.

Together, since there has been empirical support for both positive and negative consequences of diversity, research is needed that investigates mediating and moderating variables to explain why and how positive or the negative effects of diversity occur (Williams and O’Reilly, 1998). Researchers have suggested that leadership and team composition may be possible moderators of diversity-related effects (Nishii and Mayer, 2009). As such, the present research investigated the role of shared leadership toward diversity.

Interaction among shared leadership and diversity

When it comes to the association between shared leadership and performance, diversity could have both positive and negative influences. Cox *et al.* (2003) stated that diversity represents an important antecedent variable to shared leadership. Precisely, they argue that teams that consist of team members that are more homogeneous may more likely develop higher levels of shared leadership faster. Specifically, it may be that due to higher levels of perceived similarity (Byrne, 1971), team members might also be more likely to treat others equally and share the lead. Thus, the development of shared leadership capacities might be more likely to emerge among demographically

homogeneous teams. However, despite this explains the development of higher degrees of shared leadership in teams, it does not explain the effects or association between shared leadership and team performance, or explain how shared leadership impacts team performance.

Contrastingly, we believe that the association between shared leadership and team performance is more likely to benefit from demographic heterogeneity, not homogeneity. Precisely, due to the presence of higher levels or degrees of non-overlapping, non-redundant, information in heterogeneous, compared to homogeneous teams, more diverse teams that exhibit high degrees of shared leadership will benefit to a larger extent from that shared leadership than more homogeneous teams. That is because in more diverse teams, more non-redundant and non-overlapping information is likely to be shared among the team members (Dahlin *et al.*, 2005; Stasser *et al.*, 1995). Consequently, it is reasonable to expect that demographic diversity will benefit shared leadership, because teams that are more diverse in terms of tenure or age will likely possess more diverse experience and knowledge background. This in turn, during sharing the leadership, will likely improve the quality of team decision making, encourage innovation and creative problem solutions, and benefit team performance. Thus, drawing on previous literature (Dahlin *et al.*, 2005), shared leadership will enhance information sharing, as well as enhance the benefits inherent to diversity, such as the sharing of non-redundant and non-overlapping information. Specifically, higher levels of shared leadership may help team members draw upon their information and knowledge related to their diverse experience backgrounds, which will enhance team performance. Consequently, it is expected that the shared leadership and team performance association will be augmented in teams that are age and tenure diverse. This association is also presented in Figure 1:

- H2. (a) Organizational tenure diversity, (b) team tenure diversity, and (c) age diversity, will moderate the association between shared leadership and team performance such that shared leadership will be more strongly associated with team performance when (a) organizational tenure diversity, (b) team tenure diversity, and (c) age diversity is high rather than low.

Shared leadership and shared information

A key concept of small group and team research is information sharing (Bunderson and Sutcliffe, 2002). Sharing of information is an important correlate of high-quality team outcomes, for example decision making (Bunderson and Sutcliffe, 2002; Jehn and Shah, 1997). In a recent meta-analysis Mesmer-Magnus and DeChurch (2009) reported a correlation of 0.37 between information sharing and team performance. Similar results have been obtained for shared cognition (Wildman *et al.*, 2012) and shared mental models, or team mental models (Klimoski and Mohammed, 1994; Mohammed *et al.*, 2010). However, despite an increasing amount of research has been concerned with information sharing consequences, presently little is known about what variables represent antecedents of information sharing are (Mesmer-Magnus and DeChurch, 2009). As outlined below, shared leadership may represent an important antecedent of information sharing.

Shared leadership reflects a situation where multiple team members engage in leadership and shared leadership is characterized by collaborative decision making and shared responsibility for outcomes. Carson *et al.* (2007, p. 1218) defined shared leadership as an “an emergent team property that results from the distribution of

leadership influence across multiple team members.” It has been described as a mutual influence process carried about by members of a team who lead each other toward the achievement of goals (Day *et al.*, 2004) and it has been described as a “team process where leadership is carried out by the team as a whole, rather than solely by a single designated individual” (Ensley *et al.*, 2006, p. 220). A key aspect of shared leadership is that team members share information and build on each other’s ideas. In this respect, Carson *et al.* (2007) stated “[...] shared leadership can provide organizations with competitive advantage through [...] information sharing (Carson *et al.*, 2007, p. 1217).”

Based on prior literature, it is reasonable to expect that under conditions of higher levels of shared leadership, team members will be more likely to contribute their unique ideas to the team, and encourage their co-team members to engage in information sharing. In particular the sharing of non-redundant and non-overlapping ideas and information has been argued to be a key ingredient of high levels of decision-making quality, innovation, and creative problem solutions, which are important components of high team performance (Dahlin *et al.*, 2005; Stasser *et al.*, 1995). In support of this, research has demonstrated that shared leadership leads to innovation, creative problem solving, and decision making (Hoch, 2012). Further, shared leadership has been found to positively correlate with transactive memory systems (Solansky, 2008), which are defined as the knowledge about the team task, the roles, and the expertise among the team members (Mohammed and Dumville, 2001; Mohammed *et al.*, 2010).

Teams usually spend less time discussing initially distributed (unshared) information than shared information (Stasser and Titus, 1985). Stasser and Titus’ (1985, 1987) biased information sampling model indicated that groups are more likely to discuss the information they already share (i.e. information already known by all group members) than unshared information (i.e. information uniquely held by one group member). Stasser and Titus’ (1985, 1987) argued that teams would benefit most from sharing unique, and non-overlapping information (i.e. information that is held only by one or a few team members in the team).

Shared information not only has a sampling advantage, it also has a repetition and recall advantage over unshared information (Mohammed and Dumville, 2001; Larson *et al.*, 1996). Various reasons for the biased information processing effect (Stasser *et al.*, 1989, 1995; Wittenbaum and Stasser, 1996) have been discussed. For example, it has been argued that team members are less likely to share information with team members whom they perceive as different than themselves (Devine, 1999; Mesmer-Magnus and DeChurch, 2009; Miranda and Saunders, 2003). Teams with more initially correct, and therefore informationally independent, members are better in sharing information (Hollingshead, 1996b; Stasser and Stewart, 1992). Further, factors that have been found to influence information sharing are: leadership (Larson *et al.*, 1996, 1998), status (Hollingshead, 1996a, b), and expertise (Stasser *et al.*, 1995).

It was found that the biased processing effect increases with group size and is, among other causes, due to a lack of assigned experience and responsibility. Clear role distribution, assigned responsibilities, such as in shared leadership, should therefore help the process of information sharing. Under assigned expertise roles and responsibilities are clear, and there is clear transparency and structure (Stewart and Stasser, 1998, p. 620). Consequently, the following hypothesis of the association of shared leadership and information sharing was proposed:

H3. Shared leadership will be positively associated with information sharing.

Mediating role of information sharing

Due to the role of shared leadership facilitating information sharing, the tendency to discuss redundant information will be reduced, and the quality of information sharing will increase. The degree to which roles, responsibilities, power, status, and leadership are clearer and more equally distributed among team members, will influence the degree to which the members will distribute information more consistently and share unique information. Thus, shared leadership will counteract the “biased information processing” (Stasser *et al.*, 1995) effect, and lead to higher levels of information sharing and enhanced team performance, through elaborate processing of information and sharing of unique information. Accordingly, the role of shared information will explain the association between shared leadership and team performance:

- H4. The association between shared leadership and team performance will be mediated by information sharing.

Mediated moderation: information sharing as a mediator in the diversity-shared leadership-performance association

The quality of information sharing, in its essence, depends on the actual presence of distinct and non-redundant, non-overlapping information, and knowledge as held by the members of a team. Only the sharing of non-redundant, non-overlapping information among the team members has the potential to enhance team performance (c.f. Stasser *et al.*, 1995). The “sharing” of redundant and overlapping information (that the members of the team already have) is less likely to lead to performance improvement. Thus, if teams are highly homogeneous, team members will more likely bring the same KSAOs, experiences, backgrounds, values, etc. and the potential to share unique information will be lower than highly heterogeneous teams.

Consequently, team diversity has the potential to enrich the teams’ quality of information sharing, as there is more non-redundant information present in heterogeneous teams, as opposed to in homogeneous teams. Related, research has documented support for this. For example, the investigation of new product development efforts in over 20 firms (Dougherty, 1990, 1992; Dougherty and Corse, 1995) has shown that when diverse members of project teams combined their perspectives in a highly iterative way to improve integrated information flow, they were more innovative. However, shared leadership is needed by the team to actually access the benefits inherent to the diverse team composition. Diversity alone does not possess this potential. Instead, shared leadership and demographic diversity will both contribute and interact in regards to the quality of information sharing and enhanced team performance:

- H5. The interaction between shared leadership and (a) organizational tenure diversity, (b) team tenure diversity, and (c) age diversity, will be related to information sharing, such that information sharing will be highest under (d), high diversity, and (e), high shared leadership than under low diversity and/or low-shared leadership.

Team diversity, such as in terms of demographic background, might correlate with the quality of actual non-redundant information available, (i.e. the range of diverse knowledge in the team), if the diverse information is shared, exchanged, and elaborated on. These occurrences might in particular be encouraged by similarly high levels of shared leadership (as opposed to low-shared leadership) present in these teams. Together,

the shared leadership-team diversity interaction might be positively correlated with the teams' performance. This relation with team performance is likely due, and related, to information sharing. Consequently, it was expected:

- H6.* Information sharing will mediate the association between the interaction among shared leadership and (a) organizational tenure diversity, (b) team tenure diversity, and (c) age diversity, with team performance.

Method

Sample

The field sample consisted of 280 team members and their team leadership representing 46 teams from two different organizations. The average team consisted of six team members. The first organization was a medium sized training and development provider to manufacturing-related companies and it contributed 27 project teams, comprising 100 individuals and their respective team leaders. The second sample comprised 19 teams and work groups, consisting of 79 individuals and their leaders in an administrative public sector organization. Thus both organizations were service organizations.

The majority of teams were predominantly engaged in somewhat interdependent, cognitive, complex, and knowledge-based work. Precisely, they were providing services toward different other organizations, or providing training to customers. Thus, all of them were working on highly interdependent, and project-based tasks. The team members worked in this composition on their respective projects for about six months on average at the time of the survey.

The team members mean age was 32 years ($SD = 2.85$, range 27-39) and the mean organization tenure was 2.31 years ($SD = 1.81$); team leaders mean age was 36 years ($SD = 3.18$, range 33-42) and the mean organization tenure was 4.52 years ($SD = 2.28$). Team members had about 6.5 years of work experience ($SD = 3.22$). Gender was predominantly male for both team members and leaders.

Measures

Team leaders rated their teams' performance and team members rated their teams' shared leadership, information sharing, and demographic variables. The team members completed a survey at time 1; team leaders completed a survey at time 2, which was four weeks later.

Procedure

The teams received feedback on their teams' performance and related processes, upon completing the surveys. However, none of the teams received feedback unless all of the team members participated, i.e. had completed the survey. Due to this incentive structure, the participation rate was comparably high. Since the survey invitations and links were e-mailed, we were able to monitor the progress, and track the results.

Shared leadership was assessed with the shared leadership sub-scales from the shared leadership questionnaire by as described by Hoch (2012; Hoch *et al.*, 2010). The questionnaire was a short version of Pearce and Sims' (2002) instrument. The questionnaire and development is more detailed outlined by Hoch (2012). Specifically, the following leadership behaviors were assessed: transformational and transactional leadership, empowering leadership, and aversive leadership, each with four to six items (26 items total). Aversive leadership was reverse coded, such that high levels of

aversive leadership meant “negative” and low levels of aversive leadership meant “positive” leadership behaviors. The questionnaire with all the individual items is presented in Appendix. The Cronbach α was 0.85.

Information sharing, was measured using six items that assessed the extent to which team members would adequately shared information that was relevant in completing their team task. Sample items were: “We usually receive all important information in time,” “Important information is shared with everyone in the team in time.” The Cronbach α was 0.75.

Team diversity

Following Harrison and Klein (2007) the standard deviation was computed from the organization tenure, team tenure, and age of each team member aggregated to the team level, as measure of diversity in teams.

Performance ratings

Team leaders rated the performance of their teams using a measure following Hoegl and Gemuenden (2001), comprising quantity of performance, quality of performance, timeliness and budget of the projects and the overall performance and motivation of the team, each rated on a scale ranging from 0 to 100 percent (Gemuenden and Hoegl, 2001; Hoegl and Gemuenden, 2001). Cronbach’s α was 0.82.

Common method variance

In order to control for common method variance (Podsakoff and Organ, 1986; Podsakoff *et al.*, 2003) and ensure the independence of the measures, confirmatory factor analyses (CFA) were calculated. The first model comprised a one-factor model, where all items were loaded on the same common factor. In comparison, a second model analysis contained the hierarchical measure of shared leadership and information sharing as two distinct but related constructs. The one-factor model provided an insufficient fit to the data ($\chi^2(50) = 98.81$, $p < 0.001$, $\chi^2/df = 1.97$, CFI = 0.69, RMSEA = 0.11). The second model, with shared leadership and information sharing as separate constructs, provided a better fit ($\chi^2(49) = 70.13$, $p < 0.05$, $\chi^2/df = 1.43$, CFI = 0.86, RMSEA = 0.04). This difference was significant ($\Delta\chi^2\text{-diff}(1) = 28.68$, $p < 0.01$), evidencing that shared leadership and information sharing ought to be treated as two separate constructs, and not as one.

Interrater agreement

To examine the agreement among team members within-team consistencies were calculated (rwg’s and ICC) (James, 1982; James *et al.*, 1993). In respect to shared leadership with a rwg of 0.78, ICC(1) of 0.32, and ICC(2) of 0.70, as well as with ICC(1) of 0.34 and ICC(2) of 0.75 for information sharing, the results indicated that the aggregation of the data were justified and analyses were conducted at the team level of the data.

Analyses

To test the hypotheses, adhering to general assumptions (Jung and Avolio, 2000; Mathieu and Taylor, 2006; Stone-Romero and Rosopa, 2011), direct and indirect effects relationship tests with model analysis using structural equation modeling (SEM) with AMOS (Arbuckle, 2003) were conducted. Adhering to general assumptions (Jung and Avolio, 2000; Mathieu and Taylor, 2006; Stone-Romero and Rosopa, 2011), interaction

hypotheses were tested with centered predictor variables (Aiken and West, 1991; Liakhovitski *et al.*, 2008). Mediation analyses were performed as suggested by Stone-Romero and Rosopa (2011) and Stone-Romero (2011) (related, Edwards and Lambert, 2008; Muller *et al.*, 2005; Preacher *et al.*, 2008).

Control variables

To account for their influences, we controlled for gender (1 = female, 2 = male), team size (number of team members per team) and, since the sample comprised teams from two different organizations, organizational subsample (1 = organization one, 2 = organization two) in the analyses. Precisely, the control variables were entered as predictor variables in the analyses. The control variables and regular predictor variables were allowed to inter-correlate.

Results

Means, standard deviations, and correlations are provided in Table I.

In order to test the study hypotheses, a series of SEM models were calculated. The full model (model 1) included associations between predictor variables and interaction terms and mediator, and between predictor variables and interaction terms and outcome, and between mediator and outcome. The main model (model 2) included associations between predictor variables and interaction terms and outcome, and between mediator and outcome. The mediated model (model 3) included relationships between predictor variables and interaction terms and mediator, and between mediator and outcome. The results from the model analyses are summarized in Figure 2, and are outlined as follows.

With regard to the *H1*, the results demonstrated that shared leadership was positively related to team performance ($B = 4.73$, $p < 0.01$). Thus, *H1* was supported.

With regard to *H2*, team performance was positively related to shared leadership interacting with organization tenure diversity ($B = -3.39$, $p < 0.01$) and age diversity ($B = 7.40$, $p < 0.01$), but not with team tenure diversity ($B = -2.09$, $p < 0.10$). Thus, *H2a* and *H2c* were supported, but *H2b* was not supported. These interactions are depicted in Figures 3(a) and (b). Figure 3(a) shows that shared leadership was more strongly associated with team performance under higher levels of organization tenure than under lower levels of organization tenure. Figure 3(b) shows that with regard to age diversity, shared leadership was more strongly associated with team performance under higher levels of age diversity than under lower levels of age diversity.

Next, shared leadership was positively associated with information sharing ($B = 0.17$, $p < 0.01$), thus supporting *H3*. Information sharing also was positively associated with team performance ($B = 20.94$, $p < 0.001$). The previous reported association between shared leadership and team performance disappeared (ns) when information sharing was entered in the model. The association between shared leadership and team performance was no longer significant, as it was explained by information sharing. Thus, *H4* was supported.

With regard to the association between information sharing and the interactions between shared leadership and diversity, the interactions between shared leadership and organization tenure diversity ($B = -0.12$, $p < 0.05$), shared leadership and team tenure diversity ($B = -0.09$, $p < 0.06$), and shared leadership and age diversity ($B = 0.21$, $p < 0.05$) were each associated with information sharing. Thus, *H5* was supported. The three interactions are depicted in Figure 4(a)-(c).

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Gender (members)	1.11	0.18	–										
2. Age (<i>M</i> , members)	31.96	2.37	–0.32*	–									
3. Tenure organization (<i>M</i>)	2.32	1.39	–0.19	0.41**	–								
4. Tenure team (<i>M</i>)	1.41	0.50	0.12	–0.27	0.07	–							
5. Tenure employment, (<i>M</i>)	7.20	3.22	–0.20	0.90**	0.59**	–0.27	–						
6. Age diversity (SD)	4.42	2.49	–0.23	0.71**	0.20	–0.10	0.72**	–					
7. Tenure organization diversity (SD)	0.67	0.41	0.01	–0.19	–0.07	0.56**	–0.19	0.03	–				
8. Tenure team diversity (SD)	5.29	3.23	–0.15	0.69**	0.16	–0.04	0.67**	0.88**	0.04	–			
9. Shared leadership	4.11	0.26	–0.06	–0.28	0.12	–0.40**	–0.17	–0.38*	–0.05	–0.50**	–		
10. Information sharing	4.06	0.34	–0.03	–0.23	–0.05	0.15	–0.31*	–0.26	0.20	–0.27	0.23	–	
11. Team performance	91.11	4.84	–0.05	0.18	0.22	0.10	0.28	0.39**	0.12	0.36*	0.02	–0.19	–

Notes: *n* = 46. *M*, mean score; *SD*, standard deviation; correlation, Pearson's correlation coeff.; gender: 1 = male, 2 = female. ***p* < 0.01; **p* < 0.05 (two-tailed)

Table I.
Correlation analysis
of study variables

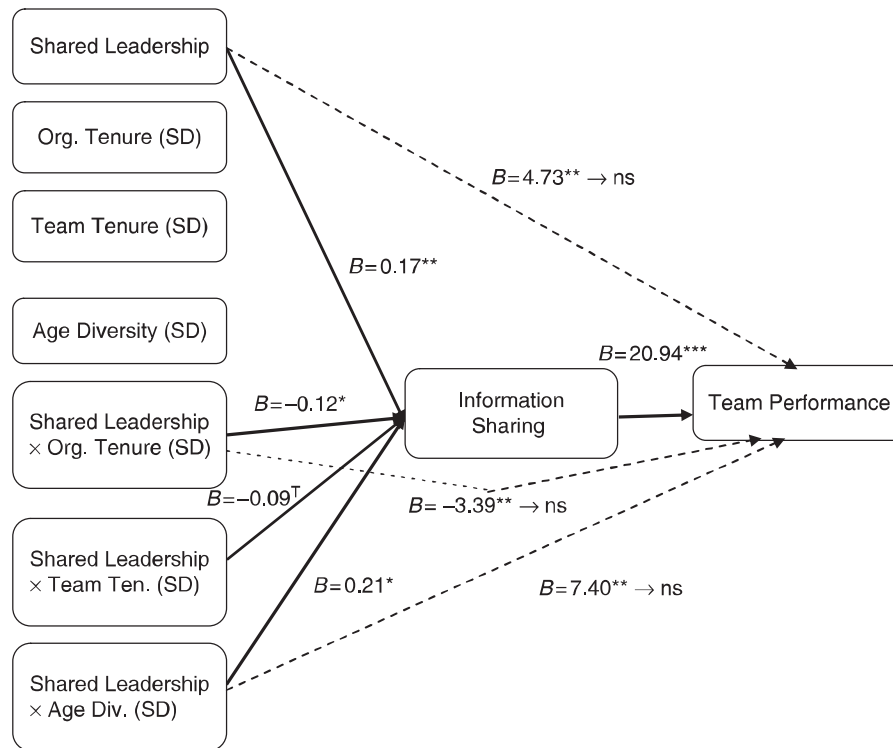


Figure 2. Direct and indirect relationships between team performance, and information sharing, with shared leadership and demographic diversity

Notes: Interrupted lines mark associations that are not significant. Continuous lines mark significant associations among variables. $^{\dagger}p < 0.06$; $*p < 0.05$; $**p < 0.01$; $***p < 0.001$

Align with the expectations, Figure 4(a) shows that shared leadership was more strongly associated with information sharing under higher levels of organization tenure diversity, than under lower levels of organization tenure diversity. Figure 4(b) shows that shared leadership was more strongly associated with information sharing under higher levels of team tenure diversity, than under lower levels of team tenure diversity. Contrastingly, Figure 4(c) shows that shared leadership was more strongly associated with information exchange under low levels of age diversity, than under high levels of age diversity. Also, none of the predictor variables or interaction terms were related to performance any longer (ns). The role of information sharing fully explained (i.e. mediated) this relationship. *H6a* (i.e. organization tenure diversity) and *H6c* (i.e. age tenure diversity) were fully supported. With regard to *H6b*, respectively, *H4b* (i.e. team tenure diversity), there was an indirect relationship only. That is, team tenure diversity and shared leadership interacted in relating to information sharing, which in turn, was associated with team performance. The association between team diversity and shared leadership with team performance was indirect, but not mediated, through information sharing.

Next, based on Jung and Avolio's (2000) procedure, the model fit between the first model, which contained full and mediated associations, and the second model, which comprised main associations only, were compared. The model fit indicators are displayed in Table II. The full model, containing both mediated and direct associations

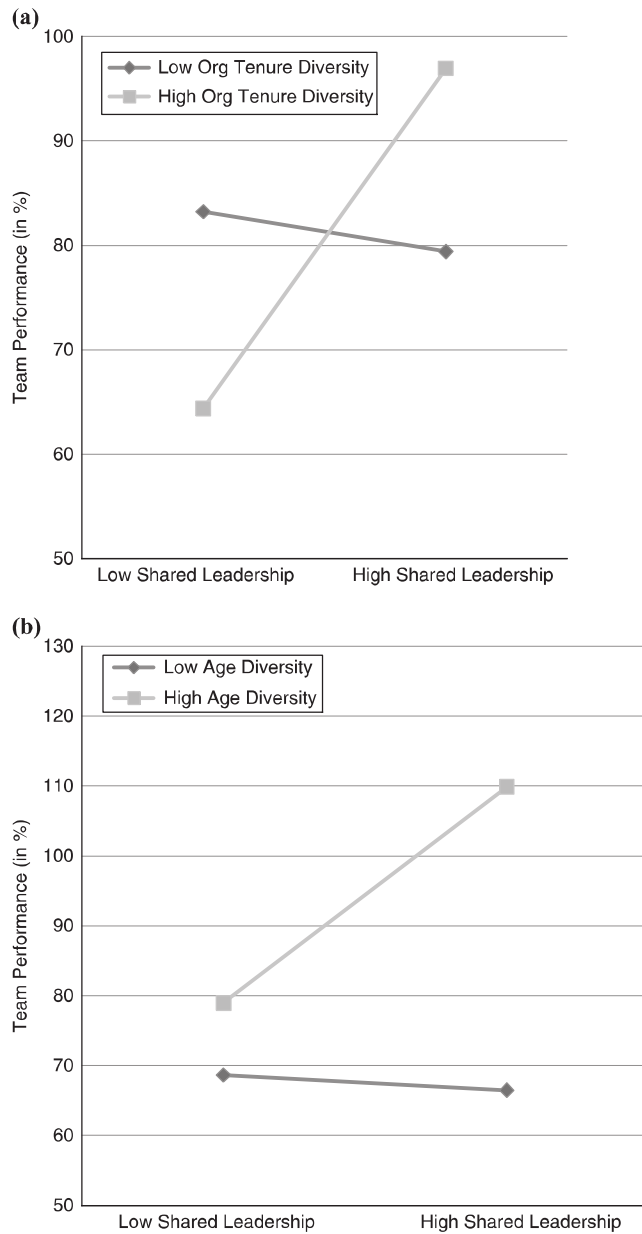


Figure 3.
 (a) Associations between organization tenure diversity, shared leadership and team performance;
 (b) associations between age diversity, shared leadership and team performance

showed appropriate model fit ($\chi^2(1) = 2.72$, $p = 0.11$, $\chi^2/df = 2.72$, CFI = 0.99, RMSEA = 0.02). Compared to that, the main model, which contained the direct associations only, fitted the data less ($\chi^2(12) = 30.07$, $p < 0.05$, $\chi^2/df = 2.51$, CFI = 0.89, RMSEA = 0.02). The difference was significant ($\Delta\chi^2(11) = 27.35$, $p < 0.01$). Next, a mediated model, with predictors and interactions relating to information sharing, and information sharing relating to performance was calculated. The mediated model also

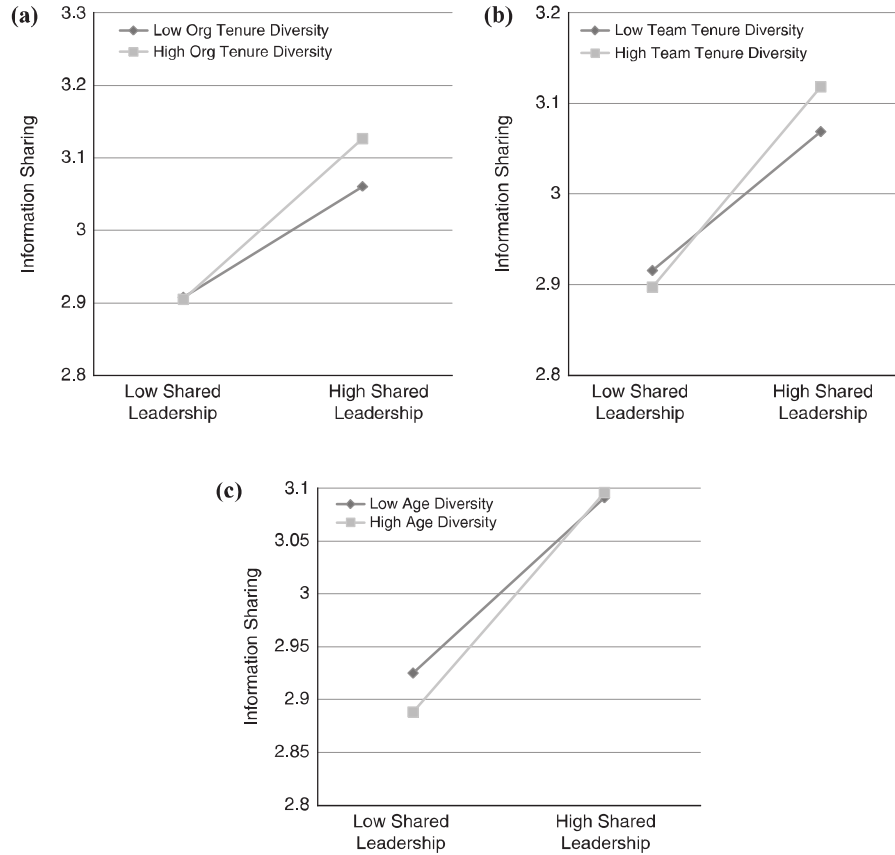


Figure 4. (a) Associations between organization tenure diversity, shared leadership and information sharing; (b) associations between team tenure diversity, shared leadership and information sharing; (c) associations between age diversity, shared leadership and information sharing

Table II. Findings from SEM analyses on full model, main model and mediated-model analyses

	χ^2	df	<i>p</i>	χ^2/df	CFI	RMSEA	$\Delta\chi^2$	Δdf
Full model (included associations between predictor variables, interaction terms and mediator, and between predictor variables, interaction terms and outcome, and between mediator and outcome) (Model 1)	2.72	1	0.11	2.72	0.99	0.02	-	-
Main model (included associations between predictor variables, interaction terms and outcome, and between predictor variables, interaction terms and mediator) (Model 2)	30.07	12	0.05	2.51	0.87	0.02	27.35**	11
Mediated model (included associations between predictor variables and interaction terms and mediator, and between mediator and outcome) (Model 3)	19.26	12	0.08	1.61	0.95	0.01	16.54	11

Note: *n* = 46 teams

fitted the data well ($\chi^2(12) = 19.26$, $p = 0.08$, $\chi^2/df = 1.61$, CFI = 0.95, RMSEA = 0.01). The mediated model did not significantly differ from the full model ($\Delta\chi^2(11) = 16.54$, ns) with respect to model fit. Thus, based on the procedures delineated, the data supported the occurrence of both mediated and direct associations (Mathieu and Taylor, 2006), showing that information sharing functions as a partial mediator towards the association between the antecedents and team performance.

Discussion

The primary objective of the present study was to investigate moderating and mediating variables of the shared leadership and performance relationship. Consequently, the results contribute to the shared leadership literature by suggesting that information sharing represents one mechanism through which shared leadership operates, together with diversity to enhance team performance. Further, shared leadership is actually more likely to correlate with team performance under high than compared to low levels of team diversity. Conversely, shared leadership was less strongly associated with team performance when diversity was low.

The results further found support for information sharing playing a mediating role in the shared leadership, team diversity, and team performance relationship, a finding that is consistent with input-process-output models (McGrath, 1991). The results also suggest that information sharing might be enhanced when shared leadership is high, leading to use of team members' diverse information and knowledge backgrounds. Team member diversity, with respect to demographic attributes, is positively associated with team performance under these circumstances (Shore *et al.*, 2009).

Practical implications

This study suggests several implications for management and training. First, despite a direct association between shared leadership and team performance was supported, the results suggest that the process of information sharing explained this relationship. Because of this, the present results encourage training that promotes both shared leadership and information sharing. This training may be beneficial in strengthening the shared leadership and performance association that is due to the impact of information sharing. A recommendation would be to encourage team members to share their diverse backgrounds with their team members. In situations where teams are less diverse, encouraging shared leadership may still be helpful. The results suggest the use of diversity awareness, team building, and other group-identification training to foster more of a sense of group belongingness among those team members.

Implications for society

Shared leadership had a positive association with team performance through information sharing and second, this positive relationship was more pronounced in more diverse teams, (Dahlin *et al.*, 2005). The results therefore support a positive role of diversity in organizations (Sawyer *et al.*, 2005; Shore *et al.*, 2009) and highlight that diversity within organizations should be considered from a more positive standpoint as well as valued.

However, there is an important caveat with respect to our results. That is, while there was a direct association for shared leadership with information sharing and team performance, there was no direct relationship for any form of diversity. Thus, while teams that are composed of more diverse team members, will possess diverse backgrounds in terms of KSAOs, expertise and personal values, leading to higher quality

of decisions, etc. this will require the presence of shared leadership. Paradoxically, however, shared leadership might be even more difficult to develop in teams that are more demographically diverse, since their personal value and KSAOs, expertise, etc. backgrounds differ.

Future research

The results showed that teams that are more demographically diverse benefit from shared leadership. However, it is unclear if these findings will replicate, or extend to other forms of diversity, such as cultural background, or gender diversity. One direction for future research therefore is to investigate this. Furthermore, shared leadership correlated with performance in diverse teams through information sharing. However, in addition to the cognitive process of information sharing, there might be affective (positive affect, Solansky, 2008) or motivational processes (collective self-efficacy and group potency, Bandura, 1997), that might explain this relationship. These present promising future directions for research on shared leadership.

Limitations

This study was not without shortcomings. Mainly, the study design included performance ratings, but no “objective” performance measures, such as company growth indicators or revenue sales. Despite diversity indicators were obtained from objective records, all other study measures were perceptual. Future research would need to examine other non-perceptual measures, such as objective performance indicators, or shared leadership assessed with observational data.

In addition, as both our organizations were service organizations, future research should replicate and extend our results in sectors other than the service industry, i.e. such as in production and manufacturing organizations, or in research and development teams. Finally, despite team size was identified and considered as control variable, it was not examined with respect to how it might affect the results. Future research would benefit from investigating team size on the shared leadership, diversity, and information sharing relationship. Finally, based on the SEM analysis it cannot be claimed that the model tested is the only model that fits the data well (see Stone-Romero and Rosopa, 2010). Although, the SEM results are consistent with the assumed mediation model, potential alternative models may also have a good fit with the data. Therefore, the results of the mediation model should be interpreted with caution.

Conclusion

The widespread adoption of team structures to organize and complete organizational tasks is one of the major changes in work and organizations that has occurred during the last 50 years. In 1959, when individual work characterized organizations, Peter Drucker (1959) predicted the movement toward team structures in future organizations along with the emergence of the “knowledge-worker,” a term he coined at the time. Implicit in the adoption of teams is the need for management of teams as well as an understanding of the relevance of different management approaches to enhance team performance.

This paper has contributed to the growing body of literature on diversity and shared leadership. It examined diversity, shared leadership, and information sharing, in an attempt to further understand their associations. The results were supportive of the hypotheses and highlighted that diversity and information sharing represent two conditions affecting the shared leadership and performance relationship. The present

research should encourage researchers to continue to examine the shared leadership and team performance relationship by building on findings of this current study and investigate additional factors that may play a role in the shared leadership and team performance relationship.

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Further reading

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Appendix. Items used to measure shared leadership

Transformational leadership

Vision

My team colleagues provide a clear vision of whom and what our team is

Idealism

My team colleagues are driven by higher purposes or ideals

Inspirational communication

My team colleagues show enthusiasm for my efforts

Intellectual stimulation

My team colleagues encourage me to rethink ideas which had never been questioned before

My team colleagues seek a broad range of perspectives when solving problems

Performance expectations

My team colleagues encourage me to perform beyond what is normally expected (e.g. extra effort)

Transactional leadership

My team colleagues and me have clear agreements and stick to those when we work together

Material rewards

If I perform well, my team colleagues will recommend more compensation

Personal rewards

My team colleagues give me positive feedback when I perform well

My team colleagues give me special recognition when my work performance is especially good

Empowering leadership

Participative goal setting

My team colleagues decide on my performance goals together with me

My team colleagues and I work together to decide what my performance goals should be

My team colleagues and I sit down together and reach agreement on my performance goals

My team colleagues work with me to develop my performance goals

Empowerment – individual

Independent action

My team colleagues encourage me to search for solutions to my problems without supervision

My team colleagues urge me to assume responsibilities on my own

Self-development

My team colleagues encourage me to learn new things

Self-reward

My team colleagues encourage me to give myself a pat on the back when I meet a new challenge

Empowerment – team

Teamwork

My team colleagues encourage me to work together with other individuals who are part of the team

My team colleagues advise me to coordinate my efforts with other individuals who are part of the team

My team colleagues urge me to work as a team with other individuals who are part of the team

Aversive leadership

Intimidation

My team colleagues try to influence me through threat and intimidation

My team colleagues can be quite intimidating

Reprimand

When my work is not up to par, my team colleagues point it out to me

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