

How shared leadership and team personality composition interact to improve entrepreneurial team performance

Evidence from China

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Abstract

Purpose – The purpose of this paper is twofold: first, to explore the contingency effects of personality composition on the shared leadership and entrepreneurial team performance relationship and second, to examine different contingency effects that team personality mean score and team personality diversity have on the shared leadership – entrepreneurial team performance relationship, using the person-team fit theory and the Big-5 framework.

Design/methodology/approach – The sample consisted of 200 entrepreneurial teams in a technology incubator founded in 2009 in eastern China. Data were collected through an online survey.

Findings – Team conscientiousness level and team openness to experience diversity were found to interact with shared leadership to influence team effectiveness in a supplementary way, such that the relationship between shared leadership and team effectiveness will be stronger when the team's mean score on conscientiousness level is high and diversity score on openness to experience is low. Another finding from this study is that team diversity scores on emotional stability and agreeableness interact with shared leadership in a complementary way; that is, the higher the diversity score, the better influence shared leadership has on team effectiveness.

Practical implications – First, this study provides policy implications for government agencies, foundations, and universities who provide support for start-ups in incubators. These institutions should know the importance of entrepreneurial team composition and team process to start-up performance and should provide entrepreneurial teams support in team development. Second, the study provides entrepreneurs with implications regarding team member selection.

Originality/value – This is one of the first papers to study the interaction between personality composition and shared leadership and its impact on new venture performance. These findings advance the literature on moderators of shared leadership by demonstrating that team personality composition on conscientiousness, openness to experience, emotional stability, and agreeableness moderates the relationship between shared leadership and entrepreneurial team performance.

Keywords Personality, Entrepreneurship, Shared leadership, Team diversity, Entrepreneurial teams

Paper type Research paper

Introduction

The latest theorization defines entrepreneurship as a process of value creation and appropriation led by entrepreneurs in an uncertain environment (Mishra and Zachary, 2015). As empirical research documents the prevalence of team entrepreneurship in the entrepreneurial process (Steffens *et al.*, 2012; Zhou and Rosini, 2015), the study of shared leadership among founding entrepreneurs is receiving attention (Morgeson *et al.*, 2010; Zhou *et al.*, 2015). Taking a functionalist approach of team leadership (Denis *et al.*, 2012), shared leadership has been shown to enhance team effectiveness (Avolio *et al.*, 1996;



Pearce and Sims, 2002), team sales (Mehra *et al.*, 2006), and growth in revenue (Ensley *et al.*, 2006), but only under certain conditions. Although the number of studies in the area of shared leadership in entrepreneurial teams has been increasing, research gaps exist and call for more theorization and empirical examination.

The first research need pertains to the contextual conditions under which shared leadership improves entrepreneurial team performance (Stewart *et al.*, 2011). From a functionalist approach of team leadership, Morgeson *et al.* (2010) conceptualized team leadership as the process of team need satisfaction in the service of enhancing team effectiveness and identified 15 team leadership functions that help teams satisfy these needs. The effectiveness of these functions, however, will be contingent on different contextual elements. To understand these conditions, researchers have proposed a number of factors that might facilitate performance gains from shared leadership among team members. Particularly, previous research has focused on three types of contingencies – characteristics of the task (Pearce, 2004), characteristics of the team (Carson *et al.*, 2007), and characteristics of team members (Greer and van Kleef, 2010). Team composition as contingency variables, however, has not been investigated in the literature yet.

As shared leadership being a team construct, research on groups and teams in the organizational behavior field offers more insight into sharing leadership for team effectiveness. Research on team composition stemmed from the input-process-outcome framework (McGrath, 1984), and later the inputs-mediators-outcomes (IMO) framework (Mathieu *et al.*, 2008). According to the IMO perspective, team composition (as team input) shapes subsequent team activities and processes, and influences team effectiveness. In research on teams, an important focus has been the study of team composition, especially in terms of team diversity. Adopting the IMO perspective, most studies viewed team diversity as an independent variable and investigated its impact on team process and team effectiveness (cf. Mathieu *et al.*, 2008 for a comprehensive review). However, this approach overlooked the possibility that team composition variables could act as contingency variables moderating the impact of team process on team effectiveness. The investigations of the moderating influence of team member characteristics, especially personality compositions, are absent from the literature. Therefore, Pearce and Conger (2003) called for studies into the dimensions of diversity moderating the shared leadership-team effectiveness relationship. However, little research has examined the impact of team diversity on the shared leadership-team effectiveness link (Zhou *et al.*, 2015).

While the need to study moderating effects of team personality composition variables exists, researchers have to decide how to aggregate individual personality trait scores to form team-level constructs. Empirical studies in group and team research has adopted different trait aggregation method, such as the minimum trait score, the maximum trait score, the mean score, and the variance score in the team (Prewett *et al.*, 2009). The conclusion with regard to the choice of aggregation method, however, remains elusive.

Drawing from team leadership and team composition research, the current study aims to fulfill these research needs by attaining the following two purposes. The first goal of this study is to explore the contingency effects of personality composition on the shared leadership and entrepreneurial team performance relationship. Gaining insight into whether specific personality compositions help teams benefit from shared leadership should contribute to our understanding of shared leadership in teams and provide guidance for entrepreneurs trying to better understand how to select team members to improve team performance. Using the person-team fit theory (Hollenbeck *et al.*, 2002; Kristof, 1996) and the Big-5 framework, the second goal is to examine different contingency effects that team personality mean score and team personality diversity have on the shared leadership-entrepreneurial team performance relationship.

It is important to consider the limitations of this study when interpreting the findings. The university-based sample frame may be one limitation with regard to the generalizability of the results. The sample was from a single university incubator and not a random sample. Furthermore, since only new start-ups were considered in the current study, it was limited in the extent to which the findings could be generalized to later stages of new ventures. It may be that the relative importance of vertical vs shared leadership is dependent on the stage in the development of the organization (Ensley *et al.*, 2006). Therefore, it might be useful to examine the relationships among team diversity, shared leadership and entrepreneurial team performance longitudinally across various stages in the entrepreneurship life cycle.

Theory and hypotheses

Although most research on leadership in teams has focused on the leadership behaviors of an individual team leader, some researchers found that teams performed more effectively when most or all of the members demonstrate leadership behaviors (Carson *et al.*, 2007), referred to as shared leadership. Day *et al.* (2004) described shared leadership as team leadership capacity that included the leadership repertoire of an entire team. Shared leadership can also prove desirable in contemporary organizations as a mechanism to generate fast responses to complex issues (Pearce *et al.*, 2009). Pearce and Conger (2003) emphasized leadership as a dynamic, interactive influence process, whereas Carson *et al.* (2007) viewed leadership as distributed influence across multiple team members. Tasks of entrepreneurial teams are typically characterized by interdependence, creativity, and complexity because new venture founding teams face a situation of no standard operating procedures or organizational structures (Bryant, 2004). Shared leadership is appropriate for this type of team work (Pearce, 2004). In an entrepreneurial team, it is very rare that the leading entrepreneur has all the knowledge and skills to effectively lead the team and perform entrepreneurial tasks (Pearce and Sims, 2000). By sharing leadership among team members, the team as a whole is better informed and more responsive to tasks at hand. Moreover, shared leadership can also increase members' commitment and encourage more information sharing (Cox *et al.*, 2003). Although existing literature has primarily discussed the effect of shared leadership on team effectiveness, we expect the strength of the effect is contingent on team personality compositions.

Team personality composition

According to the person-team fit perspective (Hollenbeck *et al.*, 2002; Kristof, 1996), two types of fit, supplementary fit and complementary fit, matter in teams. Supplementary fit means that people are more satisfied and productive when team members are similar to each other (Muchinsky and Monahan, 1987), and complementary fit suggests that individuals fit the team when they bring something new to the team and take interdependent roles with specific skills or traits necessary to team needs (Biddle, 1979; Cable and Edwards, 2004). What are the roles of team mean score and variance score on different personality trait? In the following section, we discuss the role of complementary and supplementary fit regarding specific personality traits.

Supplementary fit: moderating effects of conscientiousness and openness to experience

Conscientiousness represents the degree to which individuals are achievement oriented, orderly, punctual, dependable, and self-disciplined, and openness to experience refers to whether people accept new experiences, are interested in unusual thought processes, and possess creative tendencies (McCrae and John, 1992). At the individual level, conscientiousness and openness have been shown to be positively related to team performance (Barrick and Mount, 1991; Hurtz and Donovan, 2000). Moreover, these two

traits indicate how team members interpret the team purpose, goals, and structures. Therefore, we argue that it is most appropriate to use the supplementary fit perspective with conscientiousness and openness to experience. According to supplement fit perspective, the team personality level and personality diversity on conscientiousness and openness to experience should have contingency effects on the shared leadership and entrepreneurial team performance relationship for three main reasons.

First, the benefits of shared leadership rely on the mutual influence among team members who are better informed and more responsive to momentary task and leadership challenges (Cox *et al.*, 2003). At the team level, shared leadership demands that multiple team members have a willingness to act as a leader and resume these leadership roles. Leadership emergence research suggests that conscientiousness and openness to experience are strong predictors of leadership emergence (Judge *et al.*, 2002). Therefore, teams high and homogeneous on these two traits are more likely to benefit from shared leadership.

Second, shared leadership means team members take different leadership roles. For example, leadership roles being taken during the transition phase include defining mission, establishing expectations and goals, structuring plans, and making sense of the team environment (Morgeson *et al.*, 2010). Whether roles being taken by different team members could be effectively coordinated together effectively depends on the degree to which team members have a common shared purpose (Carson *et al.*, 2007). Shared purpose indicates that all the team members have similar understandings of their team's primary objectives and take steps to ensure a focus on collective goals (Carson *et al.*, 2007). Teams with low diversity of conscientiousness and openness to experience scores should agree with one another on process decisions, including the degree of effort to put forth and the level of performance desired (goal-setting). This will help the team build higher level of common sense of purpose and agreed-upon goals, and consequently team members are more likely to feel motivated, empowered, and committed to their team and work (Kirkman and Rosen, 1999; Liden *et al.*, 2000; O'Leary-Kelly *et al.*, 1994). Teams with higher level of diversity on task-oriented personality may find it difficult to build common purpose and agree on major decisions.

Third, the nature of the entrepreneurial tasks requires team members have high level but low diversity on conscientiousness and openness to experience. The market for new ventures is highly competitive and all team members need to be highly motivated and work hard to succeed. Teams with a high level of conscientiousness likely organize and direct necessary behaviors to produce targeted outcomes and motivate employees to fulfill their job duties more diligently and with more effort (Peterson *et al.*, 2003). Moreover, new venture activities are usually characterized to be unambiguous, unstructured, and complex (Ensley *et al.*, 2006), and powerful and achievement oriented entrepreneurial team members could initiate structure and establish rules that benefit the new venture over time. The entrepreneurial tasks are also characterized by innovation and creativity. Teams with high level of openness to experience question old assumptions and stimulate new perspectives or ways of doing things (Judge *et al.*, 2002). Consequently, entrepreneurial teams with greater openness are more likely to encourage creative, unconventional behaviors in the workplace. Such creativity is relevant for new ventures for recognizing opportunities and stimulating novel ideas about products and practices (Ensley *et al.*, 2002). Not only does the level but also the diversity of team conscientiousness and openness to experience matter. Similarity of such attitudes among team members results in a friendly atmosphere and a strong identification with the entrepreneurial team and the new venture. Entrepreneurial teams homogeneous in conscientiousness may prevent social loafing behavior of team members and ensure that all team members put efforts into the entrepreneurial process. Otherwise, if entrepreneurial team members are very diverse in

conscientiousness, team members will have or interpret the goals differently resulting in team conflict:

- H1. Shared leadership is positively related entrepreneurial team performance.
- H2. Team conscientiousness level moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the level of conscientiousness, the stronger the relationship between shared leadership and entrepreneurial team performance.
- H3. Team openness to experience level moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the level of openness to experience, the stronger the relationship between shared leadership and entrepreneurial team performance.
- H4. Team conscientiousness diversity moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the diversity of conscientiousness, the weaker the relationship between shared leadership and entrepreneurial team performance.
- H5. Team openness to experience diversity moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the diversity of conscientiousness, the weaker the relationship between shared leadership and entrepreneurial team performance.

Complementary fit: moderating effects of extraversion, emotional stability, and agreeableness
Complementary fit suggests that team member fits with the team not because he/she is the same as everyone else but because he/she brings something unique to the team (Humphrey *et al.*, 2007). Although extraversion, emotional stability, and agreeableness are clear traits that has significant implications for team processes and effectiveness (Bell, 2007), we propose that complementary fit is more appropriate interpreting the effects of extraversion, emotional stability, and agreeableness in the team setting. The trait of extraversion refers to assertiveness and dominance, as well as sociability, gregariousness, and talkativeness (Costa and McCrae, 1992). The trait of agreeableness assesses one's interpersonal orientation and includes altruism, likability, kindness, and nurturance (Digman, 1990). Individuals scoring high on agreeableness tend to be kind, considerate, sympathetic, and helpful. They are interested in helping others and deal with conflict in a cooperative and collaborative way. Emotional stability refers to an individual's tendency to be well-adjusted, relaxed, self-assured, and calm (McCrae and John, 1992). Adopting the complementary fit perspective, we propose that team diversity scores on these traits should have contingency effects on the shared leadership and entrepreneurial team performance relationship.

Effectiveness of teamwork depends largely on the effectiveness of team leadership. Benefits of shared leadership also depend on the degree to which team members assume different leadership roles when the situation dictates (Morgeson *et al.*, 2010). In an entrepreneurial team, team members may display leadership influence for a variety of reasons. However, what may be most important is whether the members assuming the leadership roles are able to coordinate effectively. When all the members recognize one another as leaders, it's much easier for the team to synchronize leadership efforts so that decision making and action are more effectively channeled within the team (Mehra *et al.*, 2006). Extraversion, emotional stability, and agreeableness help facilitate team interpersonal process and define what roles team members are more likely to assume. For example, in new ventures, team members high in extraversion usually adopt a

transformational leadership style, set visionary goals, and encourage risk taking and creativity (Hofmann and Jones, 2005). Moreover, extraverted members show initiative, take actions, and persuade other members (Bateman and Crant, 1993). However, team members who are high in introversion seek depth over breadth, and delve into issues and ideas before moving on to new ones (Neuman *et al.*, 1999). While high level of agreeableness helps teams build trusting relationships with venture capitalists (Cable and Shane, 1997) or among entrepreneurial team members (Eisenhardt and Schoonhoven, 1990), team members lower in agreeableness may dare to express concerns about unreasonable ideas and prevent teams from groupthink. Because entrepreneurial teams usually only have limited resources and small room for error, all members being too trusting may be detrimental for survival and growth (Zhao and Seibert, 2006). The work environment, workload, work-family conflict and financial risk of starting and running a new business can produce high physical and psychological stress. On the one hand, entrepreneurial teams should have the abilities to maintain and establish good relations with customers, employees, suppliers, financiers and other people related with the business to run it effectively and efficiently. On the other hand, evidence indicates that individuals who score low on emotional stability are better at identifying threats in the environment (Tamir *et al.*, 2006) and anticipating and avoiding the danger from the environment (Nettle, 2006). Therefore, entrepreneurial teams with some members lower at emotional stability may help new ventures avoiding risks from the environment:

- H6. Team extraversion diversity moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the diversity of extraversion, the stronger the relationship between shared leadership and entrepreneurial team performance.
- H7. Team emotional stability diversity moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the diversity of emotional stability, the stronger the relationship between shared leadership and entrepreneurial team performance.
- H8. Team agreeableness diversity moderates the relationship between shared leadership and entrepreneurial team performance such that the higher the diversity of agreeableness, the stronger the relationship between shared leadership and entrepreneurial team performance.

Figure 1 displays the hypothesized relationships among team personality composition, shared leadership and entrepreneurial team performance.

Method

Sample

The sample consisted of 200 entrepreneurial teams in a technology incubator founded in 2009 in eastern China. With support from the government, the incubator offers start-ups with office space and shared administrative services. Entrepreneurs who wish to enter the incubation program must apply for admission. Acceptance criteria vary from program to program, but in general only those with feasible business ideas and a workable business plan are admitted. Other general acceptance criteria include team members are college students or graduates within 5 years, the start-up was registered after 2008, and the leading entrepreneur has more than 30 percent of the ownership of the start-up. The focus on firms within a single region allows us to hold constant key labor market and environmental conditions.

This study used a cross-sectional study design. To test hypotheses, a web-based survey instrument was created that included questions about independent, dependent, moderator/mediator, and control variables as well as other background information about

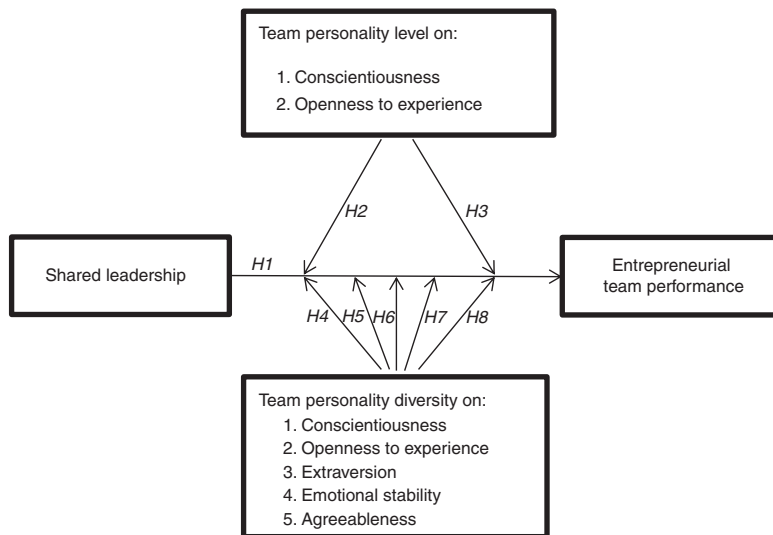


Figure 1.
Theoretical framework
of entrepreneurial
team composition,
shared leadership and
performance

the entrepreneurial team and the start-up. The instrument was translated into Chinese and back-translated into English by two independent bilinguals to ensure meaning equivalence across the two cultures. The survey was designed and distributed online using a PHP-based (Personal Home Page) open source survey tool in China. This system enabled data collection while ensuring anonymity and confidentiality. The final instrument contained 87 questions and took approximately 30 minutes to complete according to pilot tests of five individuals.

In total, 154 entrepreneurial teams (response rate = 77 percent) consisting of 516 entrepreneurs responded to the survey. The average age of entrepreneurs was 28 years ($SD = 3.6$). Of the 516 entrepreneurs, 42.1 percent were female and 57.9 percent were male. Of the 154 teams, 10 teams consisted of only 2 members for each team. These 10 teams were dropped because a diversity measure could not be calculated from a 2-member team. Thus, data analysis was based on usable data from 144 entrepreneurial teams. According to the definition and standard of SMEs by the Ministry of Industry and Information Technology, the National Bureau of Statistics, the National Development and Reform Commission, and the Ministry of Commerce of China in 2011, all the firms in this sample were SMEs.

Measures

Team's mean score on personality traits and personality diversity. Team members' Big-5 personality traits were measured by the Chinese Version of NEO-Five Factor Inventory (NEO-FFI) (Costa and McCrae, 1992). The NEO-FFI has 60 items (12 items per domain) on 5 NEO domains: openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability. NEO-FFI was used for this study because it is a widely used personality measure with high reliability. Cronbach's coefficient α s for the five dimensions have ranged from 0.75 to 0.83 (Costa and McCrae, 1992). The scale was also cross-culturally validated, and the robustness of the NEO-FFI has been proven in the Chinese culture (McCrae *et al.*, 1996; Yik and Bond, 1993). A team's mean score on the personality traits was measured by the mean personality score on each personality trait in each team. Team personality diversity was measured by the standard deviation of personality scores on each personality trait in each team (Barrick *et al.*, 1998).

Entrepreneurial team performance. Team performance was measured by the employment growth rate from which has been widely used as an objective measure of start-up performance (Colomb and Delmastro, 2002; Löfsten and Lindelöf, 2002; Westhead and Storey, 1994).

Shared leadership. Shared leadership was measured with the approach used by Carson *et al.* (2007) focusing on density, which is a measure of the total amount of leadership displayed by team members as perceived by others on a team. Every team member rated each of his/her peers (1, “not at all,” to 5, “to a very great extent”) on the following question: “To what degree does your team rely on this individual for leadership?”. The density was calculated by summing all values and then dividing that sum by the total number of possible ties, or relationships, among team members (Sparrowe *et al.*, 2001).

Control variables. Team size influences team process and functioning; for instance, Bantel and Finkelstein (1991) suggests that larger teams have lower cohesion, and *i* may influence resources and workload requirements that may influence entrepreneurial team performance (Kirkman and Rosen, 1999). Therefore, team size was included as a control variable in this study and was measured as the actual number of members on each team. Employee ownership affects a member’s commitment to an enterprise and willingness to work together productively (Buchko, 1992; Rosen and Quarrey, 1987). Therefore, stock ownership dispersion among entrepreneurial team members may have an effect on their shared leadership behavior and team performance and should be included as a control variable. Ownership dispersion was measured by the following formula (Jacquemin and Berry 1979):

$$\text{Owner dispersion} = \sum_{i=1}^N S_i \ln \left(\frac{1}{S_i} \right)$$

where S_i is the percentage of shares owned by the i th entrepreneurial team member. The value of ownership dispersion increases as ownership is spread more evenly across team members.

Measure aggregation

Team composition research usually aggregates team member individual personality scores to form team-level constructs that relate to team process or outcome variables (Kozlowski and Klein, 2000). For both theoretical and practical purposes, one fundamental issue must be considered when study personality composition of teams – how the individual personality traits should be aggregated to the team level. Trait aggregation method, however, differs across studies. The most common aggregation methods include the mean personality score of members, the variance of personality scores across members, the highest member score, and the lowest score. Among these aggregation methods, the mean score and variance methods have been widely used by researchers in team composition research (Prewett *et al.*, 2009). On the one hand, while recent meta-analyses and systematic reviews (Prewett *et al.*, 2009; Mathieu *et al.*, 2008) suggested that most studies viewed team composition as team input variable and investigated its impact on team process (e.g. team leadership) and team effectiveness, we propose that team composition could create the contingent condition, which impacts the effectiveness of team processes. On the other hand, which aggregation method should be used in the study of contingency effect of team composition remains elusive in the literature. The complementary and supplementary fit (Kristof, 1996) offers insights regarding the appropriateness of the choice of trait aggregation method.

Results

Because the measures of mean score on personality traits the team level were aggregated from individual scores, the viability of aggregation needed to be examined. This was done by calculating within-group agreement ($r_{wg(j)}$) for each personality trait and each team (James, Demaree, and Wolf, 1984). The average $r_{wg(j)}$ values were above 0.70 for conscientiousness, openness to experience, and emotional stability, indicating that that it was statistically appropriate to analyze these variables at the team level (George, 1990). The average $r_{wg(j)}$ values were below 0.70 for extraversion ($r_{wg(j)} = 0.48$) and agreeableness ($r_{wg(j)} = 0.53$), indicating that the variation is mainly on individual level. The low $r_{wg(j)}$ values indicate that some caution is necessary when interpret the results for team personality level effect.

Table I presents the means, standard deviations, and zero-order correlations for all of the variables used in the analysis. Moderated hierarchical regression and simple slopes analysis were used to test all hypotheses. The predictor variables were mean-centered, and the criterion variable was standardized using a z score to improve graph interpretability (Cohen *et al.*, 2003). In Step 1, control variables, team size and ownership dispersion, were entered. In Step 2, main effects of shared leadership and the moderator being tested were entered. In Step 3, the product term for the interaction of shared leadership and the moderator were entered. Tables II-VIII display the regression results for *H1-H8*.

The main effect hypothesis that shared leadership positively related to entrepreneurial team performance was supported in all models. To test *H2* that team conscientiousness level would moderate the relationship between shared leadership and entrepreneurial team performance, moderated hierarchical regression was conducted and results were displayed in Table II. The interaction term of shared leadership and team conscientiousness level was significant ($\beta = 1.49, p < 0.05$). Therefore, *H2* was supported. *H3*, which predicted that team openness to experience level would moderate the shared leadership-team effectiveness link, was not supported. Surprisingly, team conscientiousness diversity as a moderator was supported by results in Table IV but in the opposite direction ($\beta = 0.54, p < 0.05$); and thus *H4* was not supported either. *H5* predicted that team openness to experience diversity would moderate the shared leadership-team effectiveness link such that shared leadership would be beneficial when team diversity on openness to experience is low; this hypothesis was supported by regression analysis ($\beta = -0.36, p < 0.05$).

	Mean	SD	1	2	4	7	8	9	10	11	12	13
1. Team Size	3.5	0.68										
2. Ownership dispersion	0.2	0.33	-0.06									
4. C_mean	31.7	3.40	0.05	-0.05								
7. O_mean	28.3	4.52	-0.09	0.06	0.09							
8. A_sd	5.3	2.71	0.00	0.01	0.15	0.15						
9. C_sd	5.8	3.02	0.08	0.00	-0.30**	0.07	-0.19*					
10. E_sd	6.0	2.89	0.15	-0.03	0.06	0.15	0.18*	0.27**				
11. ES_sd	7.2	3.17	0.05	-0.16	0.27**	0.17*	0.14	0.17*	0.28**			
12. O_sd	6.2	3.09	-0.10	0.10	0.18*	-0.16*	-0.20*	0.07	-0.07	-0.13		
13. Shared leadership	3.5	0.64	0.00	-0.03	0.22**	0.17*	0.27**	-0.14	0.25**	0.19*	-0.17*	
15. Employment growth rate	0.49	0.52	0.02	-0.03	0.19*	0.28**	0.32**	-0.15	0.09	0.24**	-0.16	0.33**

Table I.
Descriptive statistics

Notes: $n = 144$ teams. O, openness to experience; C, conscientiousness; E, extraversion; A, agreeableness; ES, emotional stability. * $p < 0.05$; ** $p < 0.01$

Table II. Moderated regression results for team conscientiousness level with employment growth

	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.14	0.13
Ownership dispersion	-0.16	-0.11	-0.12
<i>Main</i>			
Team conscientiousness level		0.17*	-0.52
Shared leadership		0.41**	-0.76
<i>Interaction</i>			
Team conscientiousness level × shared leadership			1.49*
Model <i>F</i> -statistics	0.63	11.28**	9.72**
<i>R</i> ²	0.01	0.24	0.26
ΔR^2		0.23	0.02

Notes: *n* = 144 teams. β , standardized regression coefficient. **p* < 0.05; ***p* < 0.01

Table III. Moderated regression results for team openness to experience level with employment growth

	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.14	0.14
Ownership dispersion	-0.16	-0.13	-0.13
<i>Main</i>			
Team openness level		0.24**	-0.07
Shared leadership		0.29**	-0.05
<i>Interaction</i>			
Team openness level × shared leadership			0.50
Model <i>F</i> -statistics	0.63	7.12**	5.80**
<i>R</i> ²	0.01	0.17	0.17
ΔR^2			

Notes: *n* = 144 teams. β , standardized regression coefficient. **p* < 0.05; ***p* < 0.01

Table IV. Moderated regression results for team conscientiousness diversity with employment growth

	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.14	0.16
Ownership dispersion	-0.16	-0.21	-0.20
<i>Main</i>			
Team conscientiousness diversity		-0.17*	-0.69*
Shared leadership		0.42**	0.32*
<i>Interaction</i>			
Team conscientiousness diversity × shared leadership			0.54*
Model <i>F</i> -statistics	0.63	11.12**	9.99**
<i>R</i> ²	0.01	0.24	0.27
ΔR^2		0.23	0.03

Notes: *n* = 144 teams. β , standardized regression coefficient. **p* < 0.05; ***p* < 0.01

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	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.11	0.10
Ownership dispersion	-0.16	-0.13	-0.13
<i>Main</i>			
Team openness diversity		-0.11*	0.24
Shared leadership		0.31**	0.38*
<i>Interaction</i>			
Team openness diversity × shared leadership			-0.36*
Model <i>F</i> -statistics	0.63	5.10*	4.44*
R^2	0.01	0.13	0.14
ΔR^2		0.12	0.01

Table V.
Moderated regression
results for team
openness diversity
with employment
growth

Notes: $n = 144$ teams. β , standardized regression coefficient. * $p < 0.05$; ** $p < 0.01$

Table VI.
Moderated regression
results for team
extraversion diversity
with employment
growth

	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.13	0.13
Ownership dispersion	-0.16	-0.14	-0.14
<i>Main</i>			
Team extraversion diversity		0.01	0.10
Shared leadership		0.33**	0.34*
<i>Interaction</i>			
Team extraversion diversity × shared leadership			-0.09
Model <i>F</i> -statistics	0.63	4.64*	3.71
R^2	0.01	0.12	0.12
ΔR^2		0.11	0.00

Notes: $n = 144$ teams. β , standardized regression coefficient. * $p < 0.05$; ** $p < 0.01$

Table VII.
Moderated regression
results for team
emotional stability
diversity with
employment growth

	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.15	0.14
Ownership dispersion	-0.16	-0.17	-0.11
<i>Main</i>			
Team emotional stability diversity		0.19*	-0.28
Shared leadership		0.29**	0.20*
<i>Interaction</i>			
Team emotional stability diversity × shared leadership			0.52*
Model <i>F</i> -statistics	0.63	6.23**	6.04**
R^2	0.01	0.15	0.18
ΔR^2		0.14	0.03

Notes: $n = 144$ teams. β , standardized regression coefficient. * $p < 0.05$; ** $p < 0.01$

Table VIII. Moderated regression results for team agreeableness diversity with employment growth

	Step 1	Step 2	Step 3
<i>Control</i>			
Team size	0.14	0.10	0.16
Ownership dispersion	-0.16	-0.10	-0.13
<i>Main</i>			
Team agreeableness diversity		0.24*	-0.17
Shared leadership		0.27*	0.18*
<i>Interaction</i>			
Team agreeableness diversity × shared leadership			0.48*
Model <i>F</i> -statistics	0.63	7.20**	7.18**
<i>R</i> ²	0.01	0.17	0.21
ΔR^2		0.16	0.04

Notes: *n* = 144 teams. β , standardized regression coefficient. **p* < 0.05; ***p* < 0.01

H5-H7 predicted the moderating effects of team diversity on extraversion, emotional stability, and agreeableness, respectively. Moderated hierarchical regression results in Tables VI-VIII indicated that emotional stability diversity ($\beta = 0.52, p < 0.05$) and agreeableness diversity ($\beta = 0.48, p < 0.05$) were significant moderators on the relationship between shared leadership and team effectiveness. Thus, *H7* and *H8* were supported. However, *H6*, which predicted the moderating effect of team extraversion diversity, was not supported.

Figures 2-6 depict the pattern of moderating relationships using the procedures outlined in Aiken and West (1993).

Discussion

The main purpose of the current study was to investigate the interaction effect of team personality composition and shared leadership on team effectiveness. Although benefits of shared leadership to team performance have been evidenced by recent empirical studies,

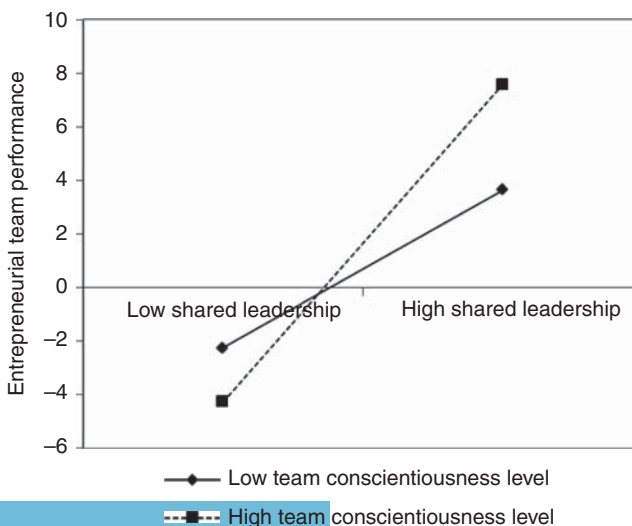


Figure 2. Results of moderating effect of team conscientiousness level on the link between shared leadership and entrepreneurial team performance

Figure 3.
Results of moderating effect of team conscientiousness diversity on the link between shared leadership and entrepreneurial team performance

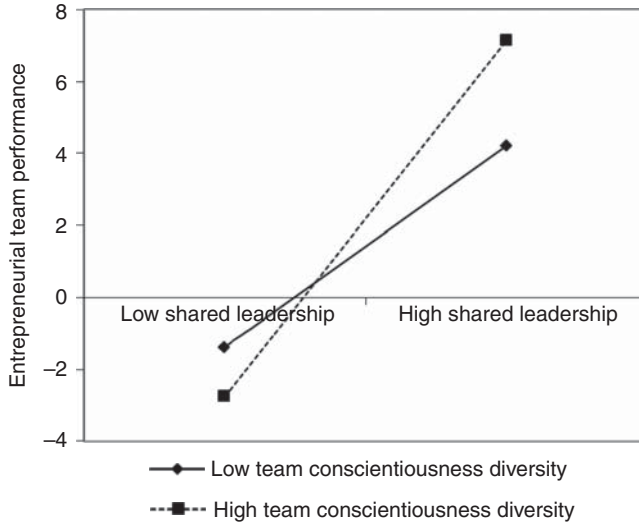
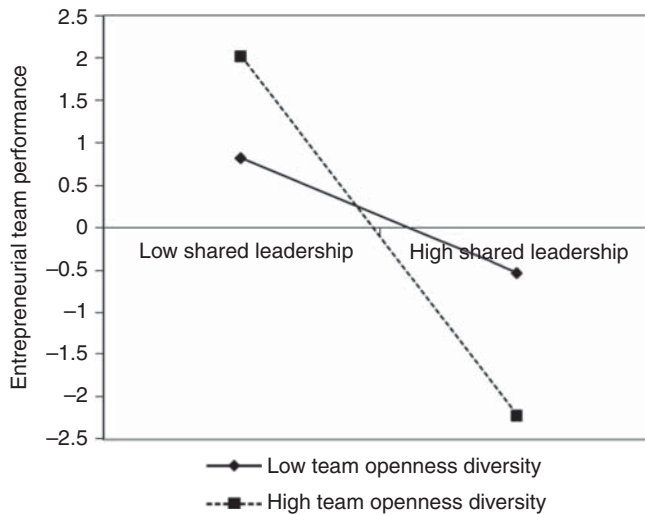


Figure 4.
Results of moderating effect of team openness diversity on the link between shared leadership and entrepreneurial team performance



no research to date has explored characteristics of team composition, especially team personality diversity, as contingencies of this relationship. In this study, several such moderating effects were found.

Discussion of key findings

Team conscientiousness level and team openness to experience diversity were found to interact with shared leadership to influence team effectiveness in a supplementary way (Kristof-Brown *et al.*, 2005), such that the relationship between shared leadership and team effectiveness will be stronger when the team's mean score on conscientiousness level is high

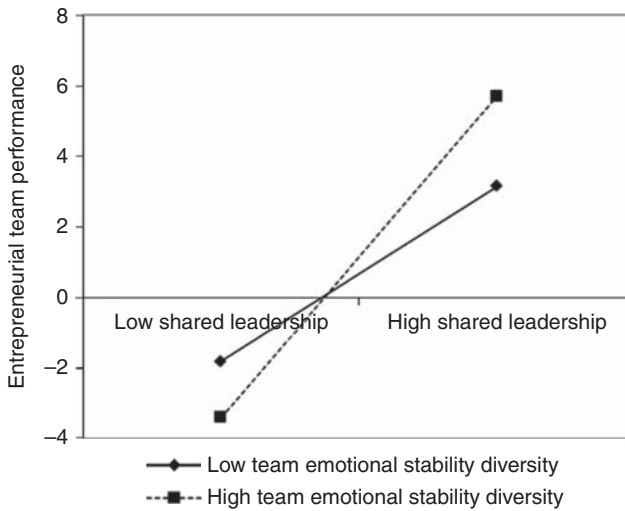


Figure 5. Results of moderating effect of team emotional stability diversity on the link between shared leadership and entrepreneurial team performance

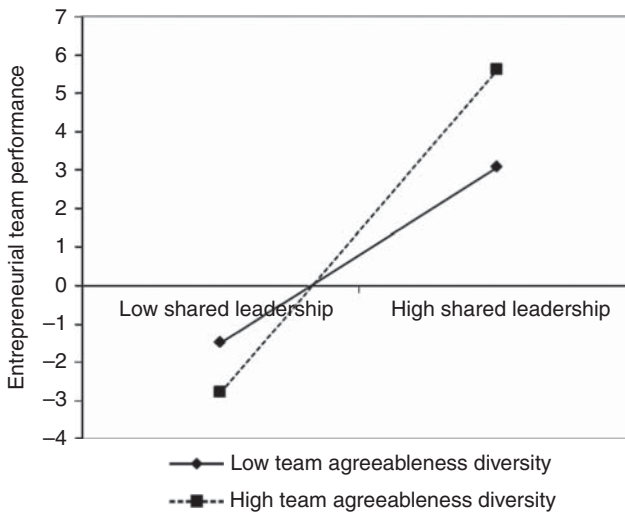


Figure 6. Results of moderating effect of team agreeableness diversity on the link between shared leadership and entrepreneurial team performance

and diversity score on openness to experience is low. Another finding from this study is that team diversity scores on emotional stability and agreeableness interact with shared leadership in a complementary way (Kristof-Brown *et al.*, 2005); that is, the higher the diversity score, the better influence shared leader has on team effectiveness. These findings contribute to theory development and management practice.

Team openness level was not found to be significantly interacting with shared leadership. One rationale for the team openness level hypothesis is that creativity and innovation are critical for entrepreneurial team effectiveness. However, as a highly cohesive team, it may not be necessary to have all team members to be creative to be successful as long as one team member has a high score on openness to experience. Therefore, one possible reason for this unsupported hypothesis might be that it is the maximum score on openness to

experience but not the mean score matters. Therefore, as a follow up analysis the maximum score on openness to experience was used in the hierarchical regression analysis. However, the interaction term between maximum openness score and shared leadership was not significant either. Another possible explanation for this finding might be that a team's openness level or maximum openness score might be more related than team creativity rather than growth. Therefore, it's desirable to test the impact of team openness composition on creativity or innovation related outcomes.

Another finding from this study is that team diversity scores on emotional stability and agreeableness interact with shared leadership in a complementary way (Kristof-Brown *et al.*, 2005); that is, the higher the diversity score, the better influence shared leader has on team effectiveness. These findings are consistent with Prewett *et al.* (2016), who also found the moderating effect of team emotional stability diversity. However, the hypothesized moderating effect of extraversion diversity on the relationship between shared leadership and entrepreneurial team performance was not supported. One possible explanation might be that most entrepreneurial tasks require a great deal of interaction with other people, such as public relations and sales. Therefore, it is possible that a high average level of extraversion is more important than extraversion diversity for entrepreneurial teams. Another possible reason for the insignificant relationship between extraversion diversity and entrepreneurial team performance might be the small sample size in this study. These findings contribute to theory development and management practice.

Implication for theory development

First, this study contributes to research on small business and enterprise development. In the entrepreneurship literature, many studies, adopting upper echelons theory, have looked into the potential effects of top management team demographic diversity, such as age, gender, race, tenure, and functional experience diversity, but ignored the effect of team personality diversity. This study contributes to the entrepreneurship literature by addressing this research gap. Moreover, this study goes beyond general personality diversity by theorizing and investigating the effects of personality diversity for each of the Big-5 dimensions. That is, findings of this study show that personality diversity of different personality traits had different relationships with entrepreneurial team performance. This study contributes to the entrepreneurship literature also by opening the "black-box" between personality diversity and performance. One research gap in the entrepreneurial team research is the lack of studies focusing on process variables to understand the performance effect of team diversity. To fill this research gap, this study explored not only the relationship between personality diversity and entrepreneurial team performance but also the mechanism through which this relationship occurs.

Second, this study's contributions to shared leadership research are twofold. First, the study provided empirical support for the positive effect of shared leadership on team performance, especially for entrepreneurial teams. The findings suggested that when the tasks a new venture faces are complex, shared leadership is desirable (Ensley *et al.*, 2006). The study also contributes to shared leadership research by examining the contingency effect of personality diversity on the shared leadership and team performance relationship. Although the importance of shared leadership in working teams has now been established (Pearce and Sims, 2002), much detail remains to be explored about under what conditions shared leadership is more likely to be beneficial. Responding to Bolden's (2011) call for including diversity in shared leadership research and Stewart *et al.*'s (2011) call for examining contextual conditions in research on team level leadership, this study extends the literature on moderators of shared leadership by demonstrating that team personality composition on conscientiousness, openness to experience, emotional stability, and agreeableness moderates the relationship between shared leadership and entrepreneurial team performance.

Third, this study also contributes to group research. Although the effect of diversity has been widely studied in groups and teams research, most of the studies were conducted in the laboratory rather than in the field. Bell's (2007) meta-analysis provides evidence that the effect of diversity would differ between lab studies and field studies and requests more future research in field settings. Therefore, this study provides empirical evidence regarding the diversity effects in the field, specifically in the context of entrepreneurial teams. There are different theoretical perspectives regarding the relationship between diversity and team performance. While diversity may create value and benefit for team outcomes because of a broader range of expertise and perspectives from team members (Cox *et al.*, 1991), diversity also could create poor social integration and cohesion and thus poor performance for teams. The empirical studies have provided inconsistent and inconclusive results regarding the performance effect of team diversity. The results of this study enrich this line of research by showing a different path through which team personality diversity may influence team outcomes.

Managerial implications

Besides potential theoretical contributions, the study also has important implications for policy makers and practitioners. First, this study provides policy implications for government agencies, foundations, and universities who provide support for start-ups in incubators. These institutions should know the importance of entrepreneurial team composition and team process to start-up performance and should provide entrepreneurial teams support in team development. Second, the study provides entrepreneurs with implications regarding team member selection. One practical and important question the leading entrepreneur must answer when creating the entrepreneurial team is whom he/she wants to select as partners. Specifically, our results suggest that when building entrepreneurial teams, the leading entrepreneurs should take into account the personalities of future team members and ensure that the team has an adequate blend of personalities, such as agreeableness, extraversion, and emotional stability. That is, entrepreneurial teams can promote shared leadership by selecting team members who have a good supplementary fit and complementary fit regarding personality traits.

Limitations and suggestions for future research

One limitation is that it is possible that a three-way interaction among team personality level, team personality diversity, and shared leadership exists. However, this three-way interaction was not investigated in the current study and future research is encouraged to examine this effect. The current study attempted to test the moderating effect of team personality composition. However, it is technically correct to say that shared leadership moderates the relationship between team composition and team effectiveness. With cross-sectional data, it is theoretically difficult to say which variable is the moderator and which one is the antecedent. Therefore, further refinement on the theory and experimental studies are encouraged in this area. Moreover, there are other factors that might be included as control variables in the analysis, such as business sector in which start-ups are doing business.

Findings of this study suggest several future research directions for group research, entrepreneurship research and shared leadership research. First, this study encourages future research to focus on doing more longitudinal studies. The cross-sectional nature of the research design does not allow us to draw causal conclusions. One study found that effects of team diversity on team performance have a temporal element; the effects of diversity based on attitude and personality increase with time (Harrison *et al.*, 1998). Hence, future research that adopts a longitudinal approach can refine the current findings. Moreover, future research

necessitates the adoption of other performance measures (e.g. innovation, profitability, and revenue) that are applicable to different stages of venture development.

Second, experimental studies that explores whether different personality configuration across team members will facilitate the development of shared leadership would contribute to the understanding of shared leadership dynamics. As this study focused on entrepreneurial teams dealing with entrepreneurial tasks, additional research could explore the effects of personality diversity on shared leadership with other types of teams. Differences in task types may result in variation in the amount of communication, coordination, and technical demands (Sundstrom *et al.*, 1990). The manipulation of different tasks may provide further insight into the role of personality diversity on shared leadership.

Third, the study examined the relationship among team personality diversity, shared leadership, and entrepreneurial team performance using a variable approach – assessing the isolating personality traits' impact on entrepreneurial team performance. It may overlook the possibility that the Big-5 personality traits together affect entrepreneurial behavior. Therefore future research adopting a configuration approach or pattern-oriented approach can be used to offer insights into team personality – performance relationship.

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