

## Strategic alliance team diversity, coordination, and effectiveness

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Drawing upon literatures on strategic alliances, teams, and diversity, we propose that strategic alliance team diversity warrants further examination. We suggest that strategic alliance team coordination moderates the relationship between strategic alliance team diversity and effectiveness. Specifically, we hypothesize that coordination strengthens the negative relationship between observable diversity characteristics of nationality and gender and team effectiveness. We also argue that coordination strengthens the positive relationship between nonobservable diversity characteristic of functional background and team effectiveness. Results from 109 team members, 44 team leaders, and 34 alliance executives involved with 44 strategic alliance teams in 15 firms partially support our hypotheses.

**Keywords:** coordination; diversity; functional background; gender; nationality; strategic alliance teams

### Introduction

Strategic alliances are long-term collaborative arrangements between two or more firms to execute specific transactions for mutual gain and to maximize performance through cost reduction, knowledge acquisition, and/or market expansion (Peng 2009). They vary by location (domestic vs. cross-border), investment (equity vs. non-equity), rivalry (competitive vs. noncompetitive), function (marketing vs. production), and/or hierarchical control (independent vs. dependent; Schuler, Jackson and Luo 2004). They have become increasingly important as vehicles for cost reduction, learning, market entry, innovation, and growth. However, considering that approximately 60% of alliances fail (Child and Faulkner 1998), there is much to learn regarding ways to facilitate alliance success. Thus far, strategic alliance research has largely focused on the macro-level (Lyles and Salk 1996; Park and Ungson 1997; Beamish and Berdrow 2003; Steensma, Tihanyi, Lyles and Dhanaraj 2005; Tong, Reuer and Peng 2008). As noted by Hambrick, Li, Xin, and Tsui (2001) and Oliver and Roos (2002), the alliance team, a micro-level mechanism vital to alliance success, has received scant attention. Endeavoring to increase our knowledge of alliance teams, we address two underexplored questions in this study: How do nationality, gender, and functional background diversity affect alliance team effectiveness? How does coordination within the team moderate the diversity-effectiveness relationship?

Considering the extensive literature in organizational behavior concerning diversity issues in groups (Milliken and Martins 1996; Williams and O'Reilly 1998; Jackson, Joshi and Erhardt 2003) and the importance of strategic alliance teams in accomplishing alliance

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outcomes (Leung and White 2006), we emphasize diversity in strategic alliance teams – specifically nationality, gender, and functional background. Strategic alliance scholars have highlighted partner cultural differences at the societal, national, organizational, professional, and managerial levels (Parkhe 1991; Jackson and Schuler 2003; Sirmon and Lane 2004), but the issue of diversity has been largely ignored. Research has typically focused on national differences of the alliance parent firms (Danis and Parkhe 2002). Although a small number of studies have also examined micro-level issues such as individual differences in managerial behavior between international alliance partners (Child and Markóczy 1993), the general issue of diversity has not been given much attention in the alliance literature.

We suggest that it is beneficial to study diversity – particularly nationality, gender, and functional background diversity – in strategic alliance teams for two reasons. First, alliance teams face unique challenges that can influence alliance outcomes. In international strategic alliances, the influence of nationality revolves around communication, conflict, and collaboration challenges, which are interpersonal issues occurring within teams (Gladstein 1984; Pelled, Eisenhardt and Xin 1999; Mathieu, Goodwin, Heffner, Salas and Cannon-Bowers 2000; Jackson et al. 2003). Extending the work on racial diversity (Richard, Murthi and Ismail 2007), we argue that nationality diversity is likely to affect the ability of alliance teams to achieve partner goals because of its influence on team processes and effectiveness. Similar issues arise with gender and functional background diversity. Gender diversity not only influences interactions (Harrison and Klein 2007), but also alliance outcomes. Likewise, functional background diversity – the extent to which teams are composed of members from different functional units – has also been found to influence group effectiveness in teams (Ancona and Caldwell 1992; Earley and Mosakowski 2000; Earley and Gibson 2002; Earley and Ang 2003).

However, research finds inconsistent results regarding the effects of these three types of diversity, with positive, negative, and sometimes no relationship to outcomes (Hoffman and Maier 1961; Tsui, Egan and O'Reilly 1992; Williams and O'Reilly 1998; Pelled et al. 1999; Bunderson and Sutcliffe 2002). Given these mixed results, how diversity influences alliance team effectiveness is unclear. Thus, a second motivation for studying diversity in alliance teams is to explore these relationships further to try to shed light on a possible reason for these mixed findings. As some firms establish functional units dedicated to alliances (Kale, Dyer and Singh 2002) and push for positive alliance outcomes, alliance teams' composition becomes important. Therefore, it is useful to study the influence of diversity at the strategic alliance team level.

We argue that strategic alliance teams' observable diversity characteristics of nationality and gender *negatively* relate to alliance team effectiveness, while the nonobservable diversity characteristic of functional background *positively* relates to alliance team effectiveness. In addition, we suggest that coordination – 'activities required to manage interdependencies with the team work flow' (Kozlowski and Bell 2003, p. 352) – moderates these direct relationships.

Overall, we endeavor to make three contributions to the literature. First, we extend research on strategic alliances by exploring alliance team effectiveness. Thus, we contribute to the strategic alliance literature by focusing on the comparatively less researched organizational behavior phenomena of groups (Leung and White 2006). Second, our study of diversity in strategic alliance teams provides insight to a relatively unexplored area. To our knowledge, Hambrick et al. (2001) and Li and Hambrick (2005) are the only researchers who have explicitly considered group composition in the context of international alliance teams. However, their focus is on group faultlines,

a view that is similar to but differs from diversity (Harrison and Klein 2007). In addition, by examining nationality, we highlight an important component of strategic alliances: the international component. Finally, we also add to the literature on diversity by being one of the few to simultaneously study observable and nonobservable diversity characteristics.

### **Theoretical background**

A review of the diversity literature shows a profusion of studies with different theoretical backgrounds and inconsistent findings (see Milliken and Martins 1996; Williams and O'Reilly 1998; Jackson et al. 2003 for reviews). The majority of research, however, has adopted social identity theory (SIT) and its extension, self-categorization theory (SCT; Williams and O'Reilly 1998). SIT and SCT focus on social categories, how individuals categorize themselves and others into social groups based on various demographic characteristics (Tajfel 1982; Turner 1982, 1987). Individuals consider themselves (and others) as part of a group based on any number of attributes and seek to derive a positive self-identity from such a category. As a result, they develop an in-group bias, favoring their in-group over others (Tajfel 1982; Tajfel and Turner 1986), a view that seems consistent with Byrne's (1971) similarity-attraction paradigm where members prefer to interact with their own social group (Tsui et al. 1992).

These social categories can be formed based on any number of demographic attributes. Perhaps the most consistently used typology categorizes diversity into (1) observable, visible, readily detectable attributes such as age, gender, and race, and (2) nonobservable, less visible, underlying attributes such as personality and values (Milliken and Martins 1996; Pelled 1996; Jackson et al. 2003). In this study, we use this typology to examine the observable characteristics of nationality and gender and the nonobservable characteristic of functional background.

There has been some discussion in the alliance literature regarding rifts in diverse alliance teams due to member characteristics. For example, Hambrick et al. (2001) propose that coalitions (or subgroups) can form within alliance teams based on any number of demographic and psychological attributes. Similarly, Li, Xin and Pillutla (2002) suggest that members of international joint venture (IJV) teams can experience factionalism from identification with different parents, which negatively impacts communication, commitment, and ultimately performance. Along the same lines, Salk and Shenkar (2001) find that members of IJV teams tend to identify more strongly with their country of origin or their parent firm than the JV itself. Thus, due to identification with social categories such as nationality, alliance team members may experience difficulties interacting with dissimilar alliance team members.

Studies of *both* observable and nonobservable diversity characteristics are sparse (Cunningham and Sagas 2004; Phillips and Loyd 2006). However, there are a few exceptions. Harrison, Price and Bell (1998), find that over time, nonobservable diversity in terms of satisfaction and commitment had more impact on cohesion than observable diversity attributes of age, sex, and race/ethnicity. Furthermore, Harrison, Price, Gavin and Florey (2002) find support for their model in which perceived observable and nonobservable diversity characteristics negatively relate to social integration, which positively relates to task performance. They also report that collaboration moderates the negative relationship between perceived diversity and team social integration such that observable diversity reduces the strength of this relationship, while nonobservable diversity increases the strength of this negative relationship. Jehn, Northcraft and Neale

(1999) report that observable diversity positively relates to perceived performance, satisfaction, intention to remain in the group, and commitment, while nonobservable diversity negatively relates to perceived and actual group performance, group efficiency, satisfaction, intent to remain in the group, and commitment.

Cunningham and Sagas (2004) also find that nonobservable diversity (i.e. values) is associated with lower job satisfaction and higher turnover intentions, but that the relationship is not significant for observable, ethnic diversity. In contrast, Mohammed and Angell (2004) find that neither observable nor nonobservable diversity impact relationship conflict. Phillips and Loyd (2006) examine the interaction effect of observable and nonobservable diversity on dissenting group members. They suggest that observable diversity (vs. homogeneity) may be beneficial to incongruent groups. Phillips, Northcraft and Neale (2006) also demonstrate that observable diverse groups outperform observable homogeneous groups regardless of nonobservable similarities. All of the above studies suggest that different types of diversity can at times influence outcomes differently, lending support to the notion that observable and nonobservable diversity are two separate elements.

### **Hypotheses**

In our study, we explore the influence of diversity on strategic alliance team effectiveness. Strategic alliance team effectiveness refers to the extent to which alliance teams achieve the goals of alliance partner firms and satisfactorily perform alliance tasks (Zoogah 2006). We take a broad approach to alliance team effectiveness by measuring the construct in affective and behavioral terms. Affective alliance team effectiveness refers to the ability of strategic alliance teams to sustain or increase the affective desire of alliance partners to cooperate even if immediate goals are not being met, such as satisfaction. In contrast, behavioral alliance team effectiveness refers to the ability of strategic alliance teams to engender cooperative behaviors from partner firms. Examples include goal achievement and productivity. Because alliances are managed by teams, one major determinant of strategic alliance effectiveness is strategic alliance team effectiveness. If strategic alliance teams are effective, it is very likely strategic alliances will be effective (Leung and White 2006). Therefore, we focus on both the affective and behavioral elements of effectiveness to study whether alliance executives are satisfied with the performance of alliance teams.

Due to inconclusive and mixed findings on the effects of diversity discussed earlier, van Knippenberg and Schippers (2007) conclude that complex models of diversity incorporating moderator variables are the next step in diversity research. We believe group coordination, activities required to manage team interdependencies, represents a key moderator of the diversity–alliance team effectiveness relationship. A number of researchers have argued that coordination is central to team effectiveness (Brannick, Roach and Salas 1993; Stout, Salas and Carson 1994; Zalesny, Salas and Prince 1995; Kozlowski, Gully, Nason and Smith 1999; Kozlowski and Bell 2003). We concur that a number of process variables are important to study in teams, but, consistent with Brannick et al. (1993), Zalesny et al. (1995), Stout et al. (1994) and Guastello and Guastello (1998), we believe coordination is integral to team performance. Empirical research supports our view. For example, Stout et al. (1994) find that coordination positively influences dyadic team performance in flight simulated tasks. Morgan, Glickman, Woodard, Blaiwes and Salas (1986) also report that members of highly coordinated teams easily move from one task to another, leading to successful outcomes.

Furthermore, we choose to examine coordination due to its significance in strategic alliances (Doz and Hamel 1998). Alter and Hage (1993, p. 91) suggest that 'coordination is especially critical' in interorganizational contexts (e.g. strategic alliances), due to the potential problems of mismanagement. Gulati and Singh (1998, p. 784) agree, noting that strategic alliances 'entail significant coordination of activities between the partners and yet have to be managed without the benefit of the structure and systems available in traditional hierarchies.' Thus, while coordination can benefit teams in general, it is particularly vital in strategic alliance teams, the context of this paper.

### ***Diversity and alliance team effectiveness***

Pelled (1996) proposes that visible diversity dimensions may ultimately hurt performance, while less visible, job-related diversity dimensions may ultimately improve performance due to the mediating role of conflict. These relationships are generally supported by Pelled et al. (1999) and are consistent with SIT (Tajfel 1982; Turner 1982) and the similarity–attraction paradigm (Byrne 1971). Consistent with this work, we believe observable diversity characteristics of nationality and gender may hinder group interactions, cohesion, and communication (Zenger and Lawrence 1989; Jehn 1995; Pelled et al. 1999; van Knippenberg, de Dreu and Homan 2004), and potentially lower performance (Jehn 1995; Williams and O'Reilly 1998). This is because members are likely to identify with and prefer to work with a subgroup within the alliance team, rather than the team itself.

However, we argue that the unobservable diversity characteristic of functional background may be positively associated with group performance (Williams and O'Reilly 1998). This is because members will share additional perspectives, backgrounds, and skill sets related to the task. Functional background diversity has been shown to positively relate to task conflict, which encourages more careful discussion of the task and can improve performance (Jehn et al. 1999; Pelled et al. 1999). Functional diversity has also been found to be directly related to innovation (Bantel and Jackson 1989), ability to respond to environmental shifts (Murnann and Tushman 1997), and performance in general (Hambrick et al. 1996). We therefore hypothesize that:

*Hypothesis 1a: The observable nationality and gender diversity of a strategic alliance team is negatively related to its effectiveness.*

*Hypothesis 1b: The nonobservable functional diversity of a strategic alliance team is positively related to its effectiveness.*

### ***The moderating role of team coordination***

Coordination encompasses an integration of different activities through appropriate timing to achieve synchronization of activities (Zalesny et al. 1995; Kozlowski and Bell 2003). Research on strategic alliances (Gulati 1995; Doz and Hamel 1998) and teams (Morgan et al. 1986; Stout et al. 1994) shows that coordination is a behavioral mechanism that facilitates transformation of team inputs to outputs (Kozlowski and Bell 2003) and can facilitate team performance. If an alliance team is unable to coordinate its task activities due to a lack of members' coordination skills or situational constraints, its effectiveness is likely to be negatively affected (Larson and Schaumann 1993; Doz and Hamel 1998). Moreover, the relationship between coordination and team effectiveness is particularly important in diverse teams. Diverse teams tend to be characterized by heterogeneous

expertise (such as functional background and work experiences) and backgrounds (such as race, gender, and nationality). As a result, members have to coordinate their behaviors, goals, and activities to manage their interdependencies. In alliance teams, this diversity is heightened because of differences in organizational boundaries.

Because we are interested in the moderating effect of coordination on the relationship between diversity (observable and nonobservable) and alliance team effectiveness, we examine how nationality and gender (observable) diversity and functional background (nonobservable) diversity interact with coordination. Our predictions depart from previous research on observable and nonobservable diversity because we theorize on each unique diversity dimension.

### *Nationality diversity*

The relationship between nationality diversity and alliance team effectiveness will be moderated by team coordination. We believe that when nationality diversity is high, high coordination will strengthen the negative relationship between nationality diversity and alliance team effectiveness for a number of reasons. First, individual differences are accentuated by national culture (Elron, Shamir and Ben-Ari 1999). People with different cultural values often have different preferences with regard to work tasks and processes. For example, people from high uncertainty avoidance cultures may prefer more structured tasks, and hence prefer more coordination compared to those from low uncertainty avoidance cultures (Hofstede 2007). Furthermore, collectivists may prefer high levels of cooperation and coordination with their in-group to achieve group goals compared to individualists who may prefer separate, independent individual tasks that give them autonomy (Chen, Peng and Saporito 2002). Thus, there is likely to be disagreement about the ideal level of coordination among alliance team members of different nationalities. While some members may prefer more coordination, others may prefer less, a situation that can minimize coordination's impact on team members' effectiveness, which in turn may affect alliance team effectiveness in the aggregate.

Second, differences in time orientation and relationships among people (Kluckhohn and Strodtbeck 1961; Trompenaars 1994) may accentuate disagreement regarding task and coordination details, potentially creating problems that may influence task performance (Janicik and Bartel 2003). Studies in entrainment show that time orientation differences minimize the effect of coordination on group performance (McGrath 1990; Fleishman and Zaccaro 1992). It therefore seems likely that differential time orientation preferences may hinder the ability of the team to effectively coordinate activities and processes, resulting in tardiness and conflicts.

Third, differences in practices and languages may increase the difficulty in achieving effectiveness among highly coordinated teams. Research on cross-country alliances suggests variations among decision-making criteria (Hitt, Dacin, Tyler and Park 1997), attitudes toward power and control (Parkhe 1991), and managerial preferences (Parkhe 1991). These differences that are heightened in highly coordinated nationally diverse alliance teams amplify coordination's influence on the negative relationship between nationality diversity and alliance team effectiveness. Furthermore, due to different languages, dialects, and different communication norms, communication challenges are likely to ensue. When nationally diverse alliance teams must work together on coordinated tasks, they may have increased miscommunication and conflict, thereby further hindering performance. Thus, low levels of alliance team effectiveness are likely to occur with high levels of nationality diversity and coordination.

In contrast, at low levels of coordination, alliance team effectiveness may be high when national diversity is high. This is because differences from individual preferences may be attenuated at low levels of coordination. Instead of trying to harmonize different preferences, alliance teams may not need to reconcile diverse preferences. For example, individualists may not work closely with collectivists, which will limit the challenges associated with integrating schedules, activities, and processes (Chen et al. 2002). Similarly, team members with different time preferences may choose to work separately from one another. For example, some members may choose to work sequentially, while others work synchronously (Trompenaars 1994). It is also possible that alliance teams with low coordination may consent to having multiple and different business practices and languages instead of attempting to integrate them. Indeed, it is possible for international teams to work across diverse business practices and languages by devising strategies that facilitate independent work performance (Earley and Gibson 2002). Overall, we hypothesize:

*Hypothesis 2a: Coordination will moderate the relationship between nationality diversity and alliance team effectiveness: The negative effect of nationality diversity will be stronger when coordination is high.*

#### *Gender diversity*

Similar to nationality diversity, we expect the relationship between gender diversity and alliance team effectiveness to vary according to the level of coordination because of different preferences for coordination between males and females. On average, women tend to put group attributes over personal egos (Miller and Karakowsky 2005), while men often engage in behaviors of self-promotion, individualism, and competitiveness (Eagly and Steffen 1984; Eagly 1987). Thus, we may expect women to work more collaboratively in groups compared to men. Women may prefer more coordination because they may perceive integrated workflow as facilitating effective groups. In contrast, men may not like high coordination because of their preference for more independent activities. Consequently, divisiveness may be high in gender diverse groups. The divisiveness may hinder problem solving and team performance (Williams and O'Reilly 1998). In contrast, alliance team performance may be high when coordination is low because the divisiveness is minimized. Thus, due to different preferences for and comfort with coordination, as well as associated process issues, we expect that when gender diversity is high, alliance teams with high coordination are likely to be less effective than teams characterized by low coordination levels. Hence we hypothesize that:

*Hypothesis 2b: Coordination will moderate the relationship between alliance team gender diversity and alliance team effectiveness: The negative effect of gender diversity will be stronger when coordination is high.*

#### *Functional diversity*

In contrast to our expectations with observable diversity, we expect that when functional diversity is high, alliance team effectiveness will be higher in teams with high coordination than those with low coordination. Since coordination requires integration of tasks (Zalesny et al. 1995), it is necessary for members of highly coordinated, functionally diverse alliance teams to communicate with each other and agree upon a course of action. This may increase frequency of communication, which encourages careful discussion of tasks and is associated with improved performance (Jehn et al. 1999). In addition, since functional differences may be recognized as being job or task-related (Pelled et al. 1999),

alliance team members may appreciate the usefulness of functional diversity for their goal, expect difficulties from different perspectives, and be more willing to coordinate tasks with each other, all of which can facilitate performance. The issue of information from functionally different members being ignored or undervalued (Williams and O'Reilly 1998) could be minimized in teams with high coordination, and thus improve the strategic alliance team's effectiveness.

In contrast, when functional diversity is low, alliance team effectiveness is likely to be lower for alliance teams with low rather than high coordination. This is because low coordination limits the ability of alliance teams to harness and integrate individual expertise that seems essential for group productivity. At low levels of coordination, members do not share information, which seems critical to team effectiveness (Williams and O'Reilly 1998). The inability of alliance teams to access information may lead to misunderstandings, miscommunications, and process losses (Milliken and Martins 1996) due to different worldviews, perspectives, and skill sets. Thus:

*Hypothesis 2c: Coordination will moderate the relationship between alliance team functional diversity and alliance team effectiveness: The positive effect of functional diversity will be stronger when coordination is high.*

## **Methodology**

### ***Sample***

We identified one firm that had multiple alliances in several industries. Through the permission of that focal organization we randomly solicited the participation of alliance teams from its partner firms as well as the partners of the latter. The alliance literature shows multiple categories of strategic alliances that vary by location, vesting, size, rivalry, function, or hierarchical control (Schuler et al. 2004; Peng 2009). As a result, a number of typologies have been proposed to classify the large number of alliance structural arrangements, and the literature seems inconsistent on the typology of alliances (Parkhe 2004). However, one typology that has gained wide acceptance consists of equal-equity, minority-equity, and non-equity alliances (Das and Teng 2003; Schuler et al. 2004; Peng 2009). In equal-equity alliances, there is equal distribution of costs and rewards between the parties in the relationship. As a result, they 'require active day-to-day management' (Schuler et al. 2004, p. 4). In minority-equity alliances, there is usually a small contribution of one partner relative to other partners. The role and involvement of the minority-equity holder in the alliance tends to be low. Non-equity alliances are investment vehicles in which profits and other responsibilities are assigned to each party according to a contract; each party cooperates as a separate legal entity and bears its own liabilities (Schuler et al. 2004). The parties are independent with sometimes asymmetric but not destabilizing motivations. Thus, alliances fall on a continuum with co-marketing and licensing on one end, franchising and strategic investment in the middle, and JVs and mergers and acquisitions on the other end (Peng 2009).

The alliances in our sample encompassed this broad spectrum. There were co-production, co-marketing, R&D, strategic project, strategic supplier, and strategic investment alliances. The co-production alliances involved the manufacture of household materials to be distributed in geographically distinct markets, while the R&D alliance involved discovery, testing, and manufacture of a drug for two continental markets. The co-marketing agreement centered on the marketing of a drug in three regions – Europe, the Middle East, and South America. The strategic project involved establishment

of human resource services to global corporations. The strategic supplier alliance was a contract on the exclusive supply of raw materials for a major product of one of the companies in the study. In the strategic investment alliance, one partner invested in the production of another partner. The former was intricately involved in the activities of the latter consistent with contractual stipulations. In sum, there was a great deal of diversity among the alliances in our study.

Overall, we studied 44 strategic alliance teams from 19 alliances (13 domestic alliances within the United States and 6 international ones). Our sample involved 15 firms. Participating teams, randomly selected from the firms' array of alliance teams, were from 16 industries, including manufacturing ( $n = 6$ ), R&D ( $n = 2$ ), information technology (IT;  $n = 3$ ), pharmaceuticals ( $n = 4$ ), and services ( $n = 1$ ). There were more teams than alliances, since some alliances had multiple alliance teams, and some firms had multiple alliances and teams. Each alliance team was composed of two to three members, one team leader, and one alliance executive. In all, there were 109 team members, 44 team leaders, and 34 alliance executives. Team members and leaders were generally mid-level managers managing operational and tactical (relatively non-strategic) aspects of the relationship. It was primarily their cooperation that resulted in the completion of alliance projects. The functional areas of team members and leaders included finance, manufacturing, marketing, and R&D. Alliance executives were responsible for the performance of the alliance team. They were superiors of the alliance team and were not involved in daily alliance actions.

Our sampled alliance teams interacted with other alliance teams from culturally different, geopolitically complex, and organizationally complicated environments. Alliance teams existed for the duration of alliance projects. Team interactions occurred often and were face-to-face, as well as virtual. Face-to-face interactions occurred four times a year with rotating locations. For example, if one partner firm hosted a meeting in January, the other firm hosted it in April. Virtual interactions involved the use of telecommunication (e.g. videoconferencing) and computer (e.g. internet meeting) media. Electronic mails and net-meetings supplemented virtual interactions. Team leadership was generally stable, thus ensuring continuity in team tasks.

After soliciting permission from the firms and receiving agreements from the alliance teams to participate, the first survey, which focused on diversity and coordination variables, was emailed to team members and team leaders (Time 1). Team members provided information on the variables, while team leaders rated coordination within alliance teams. This multisource approach enabled us to determine convergent validity (Podsakoff, MacKenzie, Lee and Podsakoff 2003). One month later (Time 2), we emailed the second survey – the effectiveness survey – to alliance executives. To obtain an unbiased assessment of team effectiveness, the executives (not alliance team members) were requested to rate their satisfaction with each alliance team's performance. The response rates for team members, team leaders, and alliance executives on their respective surveys were 86%, 90%, and 85%, respectively. Teams were composed of males (60%) and females (40%), and were from the United States (55%), Hong Kong (15%), Germany (10%), France (10%), the United Kingdom (5%), and South Africa (5%).

## **Measures**

### *Diversity*

Following Harrison and Klein (2007), we measured all three forms of diversity – nationality, gender, and functional background – using Blau's (1977) index of diversity, computed as  $1 - \sum_{i=1}^n p_i^2$  where  $p$  is the proportion of unit members in  $k$ th category.

Blau's index can range from zero to  $(K - 1)/K$ . Nationality diversity had values ranging from 0.69 to 1.19. Values for gender diversity ranged from 0.70 to 1.20. Functional diversity values ranged from 0.56 to 0.74.

### *Coordination*

Alliance team coordination was measured with five items adapted from Earley and Gibson (2002) and anchored on a 5-point Likert scale ranging from strongly disagree to strongly agree. These items were (1) 'My team distributes work among members and all members know who is doing what,' (2) 'My team members ensure that information or ideas are understood by relevant members,' (3) 'Connected processes and activities are well coordinated with other teams,' (4) 'Duplicated and overlapping activities are avoided by my team members,' and (5) 'My team members have no problems in coordinating with other teams.' Cronbach's alpha ( $\alpha$ ) was 0.75.

### *Alliance team effectiveness*

Alliance team effectiveness was measured in two ways: (1) alliance team performance satisfaction (i.e. the extent to which alliance organizations were satisfied with the performance of alliance teams) and (2) goal achievement (i.e. the extent to which alliance teams achieved the goals of alliance organizations). Similar measures have been used to measure alliance effectiveness in the past (Kozlowski and Bell 2003). Our performance satisfaction items were adapted from Earley and Mosakowski (2000). Cronbach's alpha ( $\alpha$ ) was 0.89. Goal achievement was measured with four items adapted from Earley and Mosakowski (2000). Cronbach's alpha ( $\alpha$ ) is 0.76.

We included two variables – team size and average team experience – as controls because they could potentially impact the effects of diversity (Harrison and Klein 2007).

Following Podsakoff et al. (2003), we controlled for common method variance in two ways. First, we obtained measures of the predictors and criteria from different sources (alliance team members, alliance team leaders, and alliance executives). Second, we obtained data at two different time periods (Times 1 and 2). Measures for diversity and coordination were obtained in Time 1 from alliance team members and alliance team leaders, respectively. Data for the alliance team effectiveness measures of performance satisfaction and goal achievement were obtained from alliance team members and alliance executives, respectively, in Time 2. The interval between Times 1 and 2 was 5 weeks on average.

### *Data analysis*

We conducted preliminary analyses to examine the psychometric properties of the constructs across levels (reliability and inter-member agreement) and construct variability between units (intra-class correlation – ICC (1) and ICC (2)). Second, we conducted ordinary least squares (OLS) tests to examine the hypothesized relationships. In addition to the internal consistency estimates of the variables reported earlier (see measures), inter-member agreement ( $r_{wg(j)}$ ) for team coordination (0.82) and performance satisfaction (0.87) suggested a collective orientation of the variables and provided support for aggregation to the alliance team level (Bliese 2000). We examined the construct variability of the measures between units by computing intraclass correlations [(ICC (1) and ICC (2)] at both levels. ICC (1) estimates for coordination was 0.12. ICC (2) estimates

for the same variable was 0.35. ICC (1) and ICC (2) estimates for satisfaction were 0.09 and 0.33. The  $F$ -test estimate for coordination (1.99) was significant at the  $p < 0.05$  level, suggesting that the construct varied between teams.

## Results

Table 1 shows descriptive statistics and Table 2 shows the OLS results. Models 1 and 4 (control variables only) are not significant overall. Overall, Models 2 and 5 (control variables and main effects) are also not significant. However, Model 3 (full model for performance satisfaction) shows significant main effects of gender diversity ( $\beta = 2.7, p < 0.01$ ) and functional diversity ( $\beta = -3.2, p < 0.05$ ). Contrary to our hypotheses, gender diversity relates positively to performance satisfaction, while functional diversity relates negatively to performance satisfaction. Nationality diversity does not influence performance satisfaction ( $\beta = 0.29, n.s.$ ). Model 6 (full model for goal achievement) also shows overall significance for gender diversity effects on goal achievement ( $\beta = 2.87, p < 0.01$ ), though again in the opposite direction we hypothesized. Model 6 does not show significant main effects of nationality diversity ( $\beta = -0.03, n.s.$ ), functional diversity ( $\beta = -0.63, n.s.$ ), or coordination ( $\beta = 3.74, n.s.$ ). Hypotheses 1a and b are therefore not supported.

With regard to our hypotheses on moderation, Model 3 shows significant interaction effects for nationality diversity  $\times$  coordination ( $\beta = -0.41, p < 0.05$ ), gender diversity  $\times$  coordination ( $\beta = -4.99, p < 0.01$ ), and functional diversity  $\times$  coordination ( $\beta = 8.71, p < 0.05$ ). However, Model 6 shows only the gender diversity  $\times$  coordination interaction ( $\beta = -5.14, p < 0.01$ ) as significant. It should also be noted that the nationality diversity  $\times$  coordination interaction ( $\beta = -0.32, p < 0.10$ ) is also marginally significant. The interactions explain a significant proportion of additional variance (Model 3,  $\Delta R^2 = 0.31$ ; Model 6,  $\Delta R^2 = 0.21$ ). We plotted the significant interactions  $+1SD$  and  $-1SD$  of the mean after centering the explanatory variable. Figure 1A–D show the plots.

As shown in Figure 1A, for teams with high coordination, performance satisfaction is high when nationality diversity is low. In other words, for nationally homogeneous teams, performance satisfaction tends to be higher when there is high coordination, but lower when there is low coordination. However, the opposite is true for nationally heterogeneous teams. The relationship between goal achievement and nationality diversity is not significantly affected by coordination. However, considering the support for the relationship between nationality diversity and performance satisfaction, there is partial support for Hypothesis 2a.

A similar pattern is observed for the interaction of coordination and gender diversity on both performance satisfaction (Figure 1B) and goal achievement (Figure 1C). Both performance satisfaction and goal achievement ratings are higher for more gender diverse teams when coordination is low than when it is high. Thus, there is robust support for Hypothesis 2b, suggesting that coordination moderates the relationship between the observable diversity characteristic of gender and alliance team effectiveness.

Hypothesis 2c suggests that the interaction between functional diversity and coordination would improve effectiveness such that high levels of functional diversity and high levels of coordination would be associated with more effectiveness. This relationship is significant for the performance satisfaction measure of effectiveness, as shown in Figure 1D. It is not supported for the effectiveness measure of goal achievement. However, since performance satisfaction is an aspect of effectiveness and is shown to be significant among highly coordinated functionally diverse teams, there is partial support for Hypothesis 2c.

Table 1. Descriptive statistics and inter-correlations.

Variable	Mean	SD	1	2	3	4	5	6	7	8
1. Team size	2.52	0.55	1							
2. Average team experience	2.36	0.89	-0.10	1						
3. Functional diversity	0.69	0.04	0.13	0.23*	1					
4. Nationality diversity	0.92	0.11	0.08	0.24*	-0.01	1				
5. Gender diversity	0.96	0.09	0.07	-0.05	0.08	0.69**	1			
6. Coordination	3.68	0.60	-0.01	0.31**	-0.11	0.01	-0.24**	1		
7. Performance satisfaction	3.66	0.76	-0.08	-0.14	0.01	0.14	0.16*	-0.01	1	
8. Goal achievement	3.69	0.76	-0.21	-0.06	-0.14	0.02	0.03	0.17*	0.65**	1

Notes: N = 44. \*p < 0.05; \*\*p < 0.01.

Table 2. Hierarchical linear regression results.

Step	Variables	Performance satisfaction			Goal achievement		
		Model 1 $\beta^a$	Model 2 $\beta$	Model 3 $\beta$	Model 4 $\beta$	Model 5 $\beta$	Model 6 $\beta$
1	Team size	-0.10	-0.14	-0.12	-0.22	-0.22	-0.2
	Average team experience	-0.15	-0.23	-0.26	-0.09	-0.15	-0.07
2	National diversity		0.19	0.29		0.04	-0.03
	Gender diversity		0.02	2.7***		0.05	2.9**
	Functional diversity		0.07	-3.2**		-0.05	-0.63
	Coordination		0.05	-2.8**		0.22	3.7
3	Coordination $\times$ national diversity			-0.41**			-0.32*
	Coordination $\times$ gender diversity			-4.9***			-5.14***
	Coordination $\times$ functional diversity			8.7**			1.73
	$R^2$	0.03	0.09	0.40	0.05	0.11	0.32
	Adjusted $R^2$	-0.02	-0.09	0.19	0.01	-0.04	0.14
	$\Delta R^2$	0.03	-0.06	0.31	0.05	0.05	0.21
	$\Delta F$	0.61	0.48	4.13***	1.14	0.54	3.55**
	Overall $F$	0.61	0.5	2.08**	1.14	0.72	1.99*

Notes: \* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

<sup>a</sup>  $\beta$ s are standardized.

## Discussion

### Contributions

In our view, at least two sets of theoretical and empirical contributions emerge. Theoretically, we contribute to strategic alliance research by drawing on the relatively scant literature on strategic alliance teams and the organizational behavior topic of diversity. We have examined the issue of nationality diversity for these teams, a diversity characteristic that has received much less attention than ethnic or racial diversity in the organizational behavior literature (Milliken and Martins 1996), yet may be critical for strategic alliance teams. We have also explored the effect of gender and functional diversity.

Empirically, we have tested a model of observable and nonobservable diversity characteristics, thereby providing a more in-depth analysis of diversity characteristics in the context of alliance teams, and contributing to the small number of studies on both observable and nonobservable diversity characteristics in the literature. Thus, we extend Hambrick et al.'s (2001) theoretical work by testing whether diversity (rather than compositional gaps) in both observable and nonobservable characteristics influence strategic alliance team effectiveness. Similar to Li and Hambrick (2005), we are concerned with the impact of demographic characteristics on strategic alliance teams. While we also include gender as a demographic characteristic, we have gone beyond Li and Hambrick (2005). Specifically, we measure two additional demographic characteristics (nationality and functional background), focus on the effect of diversity (rather than faultlines), and are interested in strategic alliance team effectiveness (rather than JV performance). In sum, we extend the literature on strategic alliance teams by studying the effect of diversity on team effectiveness.

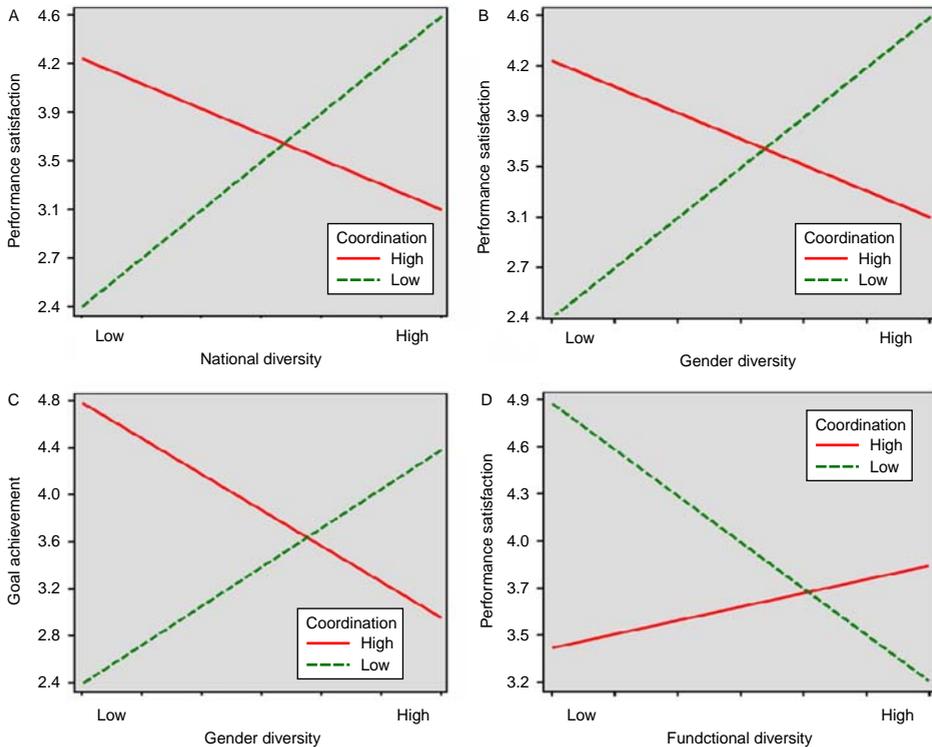


Figure 1. Plots of (A) nationality, (B, C) gender, and (D) functional background diversity and coordination interactions.

In addition, by examining the moderating role of coordination, we have responded to van Knippenberg and Schippers' (2007) call for more complex models of diversity. This also enables us to further Hambrick et al.'s (2001) and Li and Hambrick's (2005) work on JV teams by exploring models that include moderation (rather than mediation) influencing the relationship between strategic alliance team composition and performance.

At least three implications for practice emerge. First, managers need not worry that diversity directly negatively impacts outcomes. Based on our findings, diversity on its own does not appear to hinder performance in strategic alliance teams. However, team processes do seem to have an effect. Second, we find that coordination hinders performance of nationally and gender diverse alliance teams. Alliance executives may therefore want to consider de-emphasizing the importance of coordination in alliance teams characterized by these forms of diversity. Alternatively, managers may want to engage team members in cross-cultural training to facilitate better communication and cooperation among members, which might limit the negative indirect effect of coordination. Finally, strategic alliance executives may want to make increased use of team members with diverse functional backgrounds or other nonobservable diversity characteristics that do not seem to be negatively influenced by coordination.

#### *Limitations and future research directions*

A number of reasons may account for the lack of support for certain hypotheses. First, we unexpectedly find that the direct relationship between nationality diversity and

effectiveness is not significant. Two possible explanations are withholding and mistrust effects. With regard to withholding, due to cultural differences, alliance team members may not know how to interact with each other effectively (Sirmon and Lane 2004). They may therefore withhold information, which neither helps nor hurts effectiveness. Another possible explanation is that members from different cultural groups may not trust each other. Several studies in the alliance literature show mistrust hinders effective interaction (Douma, Bilderbeek, Idenburg and Looise 2000; Butler 2007), which could negatively affect team performance. However, even though mistrust may negatively influence effectiveness, when it is combined with withholding, the latter may dominate, thereby eliciting no impact on effectiveness. Future research could further explore these intervening factors.

Second, our hypothesized direct effect of gender diversity is not supported. One reason may be the context. The complexity of alliances may have neutralized interpersonal differences that facilitate interaction. Another reason may be that other diversity characteristics (e.g. nationality) are dominant and minimize the main effect of gender diversity. This is likely considering that gender diversity interacted with coordination. We encourage future research on the dominance of certain diversity characteristics over others.

Third, we find that functional diversity does not influence performance satisfaction or goal achievement in the expected direction. Our evidence supports studies that show negative effects of functional diversity (Bunderson and Sutcliffe 2002). One reason may be because we do not distinguish between specialist and generalist functions. Bunderson and Sutcliffe (2002) report that specialist functional diversity may have a positive effect because of complementary knowledge, but generalist functional diversity may have a negative effect on team outcomes. We therefore encourage future researchers to disentangle these different effects in relation to alliance team effectiveness.

Overall, the non-significant relationship between diversity and effectiveness is not entirely surprising, given the mixed findings in the literature, where diversity at times has a positive, negative, or insignificant effect on outcomes (Williams and O'Reilly 1998). It is also consistent with research suggesting that moderator relationships are essential to understanding the relationship between diversity and outcomes (van Knippenberg and Schippers 2007).

Future research may also benefit from greater sample considerations. Our sample is limited in the number of surveyed alliances and teams, though it is comprehensive in covering major types of alliance relationships. In our view, this is both a strength and a limitation. As a strength, our comprehensive coverage ensures that our findings are not limited to a specific type of alliance such as JVs. As a limitation, our small sample size prevents us from doing subgroup analysis to tease out how the variables would function in a specific type of alliance such as R&D alliances. Given the complexity of alliances, it is theoretically possible that some of the variables may behave differently in different types of alliances. However, if we did subgroup analysis, each subgroup would be too small to render meaningful quantitative results. Future studies would ideally have a larger sample size, making it possible to explore how our variables of interest behave differently in different types of alliances. But more importantly, future studies will need to first theoretically fine tune how diversity variables in a strategic alliance team context would function differently in different types of alliances.

Finally, future research could benefit from studying different aspects of diversity. Additional diversity characteristics, such as age and tenure, could provide further insight. Given the importance of certain diversity characteristics based on local context (Budhwar and Debrah 2009), it would also be interesting to explore the dynamics of these

relationships within certain countries and regions. In addition, we focus on one moderator: coordination. Research could benefit from exploring other moderating variables such as team cooperation or cohesion as well as overarching processes related to strategic alliance effectiveness (Doz 1996). Lastly, we focus on diversity in general, rather than other configurations such as faultlines (Lau and Murnighan 2005) or other types of diversity than variety (Harrison and Klein 2007). In the future, researchers may want to consider examining other forms of diversity in strategic alliance teams.

## Conclusions

Clearly, the strategic alliance team has been a missing link in the otherwise voluminous alliance literature. In this study, we have theoretically claimed and empirically documented the impact of the three types of diversity – nationality, gender, and functional background – on strategic alliance team effectiveness. We have also found that coordination moderates the relationship between diversity and alliance team effectiveness. In addition, we have extended the research on diversity, traditionally a micro topic, to strategic alliances, traditionally a macro topic, thereby linking the micro–macro divide. In conclusion, strategic alliance teams may be the micro–macro link enabling us to probe deeper into the drivers of strategic alliance effectiveness. We hope that more future research will be devoted to this crucial micro–macro link: the strategic alliance team.

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