



# Unpacking cooperation in diverse teams

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diverse teams

## Incorporating long-term orientation and civic virtue in the study of informational diversity

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### Abstract

**Purpose** – This paper aims to investigate the effect of team members' informational diversity (i.e. educational and functional dissimilarity) on team cooperation, focusing on the moderating role of long-term time orientation. The authors theorize that teams' long-term orientation moderates the diversity-cooperation relationship through its effect on prosocial civic virtue behaviors.

**Design/methodology/approach** – A total of 56 teams of MBA students were surveyed and data were analyzed along with third-party records of demographic data on educational and functional backgrounds.

**Findings** – Mediated moderation analyses indicated that for teams with high long-term orientation, a negative relationship exists between informational diversity and civic virtue, while no significant relationship existed for teams with low long-term orientation.

**Research limitations/implications** – Future research should be conducted to address remaining concerns about the generalizability of the current findings and common method bias. Further research is also recommended to uncover the potential of cultural values like long-term orientation to inhibit or facilitate diversity effects.

**Practical implications** – The current findings highlight the importance of considering the context and team member orientations toward time in particular as factors impacting how teams with informational diversity operate. Managers of teams consisting of members with high long-term orientation are advised to take steps to minimize the risk experienced by team members when they engage in voice-based behaviors.

**Originality/value** – This article highlights the role of team member orientation towards time as a boundary condition of the link between team diversity and cooperation. Voice-based civic virtue behaviors are also identified as key antecedents to cooperative teams.

**Keywords** Equal opportunities, Team working, Education, Information management

**Paper type** Research paper



Informational diversity is present in teams consisting of members from different educational and functional backgrounds (Jehn *et al.*, 1999; Pelled *et al.*, 1999). According to Harrison and Klein's (2007) typology, informational diversity is a variety diversity that occurs when individual team members have unique sets of information,

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knowledge, or experience deriving from their varied backgrounds in education, training, and work. Many organizations invest in these types of diverse team arrangements hoping to capitalize on the synergies that can be created when people with different informational backgrounds work together (Horwitz and Horwitz, 2007; Jackson *et al.*, 2003; Page, 2007; van Knippenberg and Schippers, 2007). Thus, informationally-diverse teams are often formed and tasked with the solving of complex problems (Gibson *et al.*, 2003; Gratton and Erickson, 2007; Miles and Watkins, 2007).

Despite its importance for today's organizations, there are still significant gaps in our understanding of when diversity works best. Research has generally yielded weak or inconsistent results when linking diversity to team performance (Bowers *et al.*, 2000; Milliken and Martins, 1996; van Knippenberg and Schippers, 2007; Webber and Donahue, 2001). These mixed results may suggest that diversity offers the potential of an increased pool of information and ideas, but it also interferes with team processes due to the conflict and biases that may stem from social categorization (Lau and Murnighan, 1998; van Knippenberg *et al.*, 2004; Williams and O'Reilly, 1998). Hence, a "main effects" approach that involves examining direct relationships between diversity and team outcomes has not proven useful when it comes to predicting diversity effects. In response to this shortcoming, an increasing number of researchers have advocated the study of moderators of diversity effects to improve our understanding of when and how diversity yields positive or negative outcomes (Cannella *et al.*, 2008; Chi *et al.*, 2009; Homan *et al.*, 2008).

Another issue impeding the progress of diversity research is that it has progressed rather independently from team composition research that deals with mean levels of team members' personalities (e.g. conscientiousness), values (e.g. collectivism), and abilities (e.g. general mental ability) (Stewart, 2006; Bell, 2007). As a result, calls have also been made to further integrate research investigating diversity (i.e. the dispersion of member demographic and cognitive attributes) and studies exploring mean levels of team attributes. Some recent research has demonstrated the utility of this approach by showing that mean levels of member personality moderate the effects of diversity on team performance (Homan *et al.*, 2008; Kearney *et al.*, 2009).

The present study thus builds on the above advances in diversity research by investigating how mean levels of team member personality, specifically a preference toward long-term orientation (LTO), moderates the impact of informational diversity on the crucial team outcome of cooperation. Cooperation refers to the degree to which individual members work together toward the accomplishment of team-level goals (Chatman and Flynn, 2001; Smith *et al.*, 1995). Cooperative behaviors that synchronize input and behaviors among teammates serve as indicators of high-performing teams (Evans and Carson, 2005; Fleishman and Zaccaro, 1992; Salas and Cannon-Bowers, 1997). Teams in today's organizations are often evaluated according to how well they cooperate to meet the demands posed upon them by their organizations (Milton and Westphal, 2005). Cooperation is especially important for diverse teams because they need to coordinate ideas, efforts, and behaviors of individual members toward team goals in order to unlock the team's potential (Ancona and Caldwell, 1992; Cronin and Weingart, 2007; Levine and Moreland, 1998).

To add further clarity to our investigation of diversity, we identify civic virtue behavior as a key mediator of the relationship between informational diversity and team cooperation. Because the majority of past research has focused on direct

associations between informational diversity and team outcomes (Williams and O'Reilly, 1998), the mechanisms through which diversity impacts team outcomes are still poorly understood (Keller, 2001; Kozlowski and Bell, 2003; van Knippenberg and Schippers, 2007). We propose that team member civic virtue – prosocial voice-based behaviors aimed at improving team situations by constructively challenging – help channel the effects of diversity into cooperation, because these behaviors help maintain and improve team practices that support cooperation.

In summary, we theorize that the effects of informational diversity on team cooperation are not only moderated by teams' long-term orientation (LTO), but that these effects are also mediated by team member civic virtue. The next section develops the logic for these relationships. Our study enhances the understanding of diversity effects by first examining the moderating role of mean LTO so that we know when positive or negative diversity effects may act upon cooperation. Next, by highlighting civic virtue as a mediating mechanism in this relationship, we also shed light onto how this relationship unfolds.

## Theory and hypotheses development

### *Team diversity*

Diversity has typically been thought of as differences that exist between individuals on a team (van Knippenberg and Schippers, 2007). While diversity could exist on many different aspects, research has tended to focus on observable differences in demographic attributes (e.g. age, gender, race, and nationality) and less observable qualities such as educational and functional background (Baugh and Graen, 1997; Tyran and Gibson, 2008). Two main theoretical perspectives have been used to explain diversity effects. On one hand, the information/decision-making perspective argues that diversity has a positive impact on team outcomes because of the greater pool of ideas, perspectives, skills, and abilities that diverse teams can utilize (Williams and O'Reilly, 1998). On the other hand, similarity-attraction and social categorization perspectives predict that differences among team members give rise to divisive in- and out-group distinctions within teams that result in negative conflict and interpersonal tension (Byrne and Griffitt, 1973; Pelled *et al.*, 1999). These intra-group hostilities decrease team performance and functioning (Harrison *et al.*, 1998, 2002).

In an effort to integrate these competing perspectives on diversity, van Knippenberg *et al.* (2004) argue that the performance of diverse teams depends on the extent to which social categorization processes interrupt the processing of information held by different team members. Their categorization-elaboration model (CEM) suggests that detailed processing of information depends on both the motivation and ability of team members to exchange task-relevant feedback as part of the team process. In this paper, we apply the CEM to understanding informational diversity effects on team cooperation. Namely, we propose that team members' long-term orientation affects their motivation to engage in civic virtue, and that contributions in the form of civic virtue mediate the linkage between diversity and team cooperation.

### *Civic virtue as a mediator*

Civic virtue refers to voice-based behaviors aimed at improving situations by constructively challenging as opposed to merely criticizing (LePine and Van Dyne, 1998; Podsakoff *et al.*, 1997; Van Dyne and LePine, 1998). Such behavior is displayed

when people proactively participate in organizational activities by intentionally expressing opinions, work-related ideas, and information for the benefit of a certain target. They are viewed as extra-role citizenship behavior that benefit groups and organizations because they are both promotive (because they proactively encourage things to happen through active participation), and challenging (because they highlight ideas and issues that are change-orientated) (Van Dyne *et al.*, 1995). Civic virtue is different from other team-level behavior such as making suggestions and information elaboration as these actions refer broadly to the exchange, discussion, and integration of task-based information (van Knippenberg *et al.*, 2004), whereas civic virtue-based voice must be focused on change and can also deal with non-task specific issues like improving how the team conducts its discussions (Podsakoff *et al.*, 1997; Van Dyne *et al.*, 1995). Such behavior should be especially relevant for newly formed groups who are in the constant process of evaluating and establishing norms that work best for their situations.

Although the study of these behaviors has primarily focused on the entire organization as the target (Farrell, 1983; Morrison and Milliken, 2003; Organ, 1988; Rusbult *et al.*, 1988; Tangirala and Ramanujam, 2008), civic virtue is relevant for teamwork because it also encompasses actions that are specifically aimed at promoting the effective functioning of smaller collectives. A member thus engages in team-directed civic virtue when he or she actively participates in team governance by offering constructive suggestions for change and improvement, despite facing disapproval from other team members (Podsakoff *et al.*, 2000). For example, a team member could display civic virtue not only by pointing out that his or her team is being dominated by members who are more vocal, but by also suggesting that the team adopt a more democratic process for sharing ideas.

A significant amount of research has highlighted the positive impact that voice-based civic virtue can have for groups and organizations (Podsakoff *et al.*, 2009; Whiting *et al.*, 2008). Civic virtue facilitates team cooperation in two related ways. First, it directs members' attention to team-level goals and emphasizes the coordination of ideas and effort among team members. Second, it targets improvement in team practices and activities (e.g. communication patterns and decision-making practices) that promote efficient coordination of member behaviors (LePine and Van Dyne, 2001). For instance, constructive suggestions help clarify individual's roles within social collectives, which facilitates team cooperation by reducing confusion over team member responsibilities (Frese *et al.*, 1996; Gersick and Hackman, 1990). Thus, we propose that the overall amount of civic virtue that is displayed by team members is positively related to team cooperation.

Diversity theory proposes two different ways that informational diversity can influence civic virtue. First, diversity can have a positive impact on such behavior because diverse teams have a wider range of opinions and ideas to call upon when seeking to improve team functioning (Williams and O'Reilly, 1998). In contrast, the social categorization perspective suggests a negative effect of informational diversity on civic virtue because of the intra-group tensions that arise from differences in member education and functional backgrounds (Oosterhof *et al.*, 2009). These competing views about the direct effects of informational diversity on civic virtue illustrate a shortcoming of the "main" effects approach to understanding whether diversity effects are ultimately positive or negative (van Knippenberg *et al.*, 2004). To

address this concern we examine how mean levels of team long-term orientation can help explain when positive or negative relationships between diversity and civic virtue will prevail.

#### *Moderating effect of LTO on civic virtue*

Previous research seeking to develop a clearer understanding of informational diversity has highlighted the important role of team-level norms and values in determining how team members respond to diversity. For instance, Kearney *et al.* (2009) found that team-level need for cognition moderated the effects of both age and informational diversity on the elaboration of task-relevant information, team identification, and team performance. In the present study, we focus on another aspect of personality composition: a team's long-term orientation (LTO), and how it motivates members of diverse teams to engage in civic virtue behaviors.

A long-term orientation (LTO) refers to having a holistic view of the past and future, as opposed to a short-term orientation, or a tendency to focus on the here and now. People with long-term orientations value traditions of the past and planning for the long-term future when deciding how they should act and behave. Conversely, people low in LTO are motivated by the short-term gratification of needs (Bearden *et al.*, 2006; Hofstede, 2003; Hofstede and Hofstede, 2005). According to Hofstede (2003), having a LTO is reflected in the holding of Confucian values such as perseverance and face-saving relationships. Individuals with such values thus prefer stable and long-lasting social relationships because to them these relationships hold both economic and affiliation benefits for the future. This preference is evidenced in a propensity for stable relationships, established norms of behavior, and stable communication patterns (e.g. Alves *et al.*, 2006; Bearden *et al.*, 2006).

LTO's emphasis on stability and long-lasting relationships based on face and politeness provides insight to the motivational underpinnings of the relationship between informational diversity and civic virtue. Diverse teams with high LTO should engage in less virtue-based voice because voice threatens established social structures in the context of diverse teams. Though it is meant to benefit the collective, voice is change-oriented and usually involves challenging the status quo and other team members' established ways of thinking (e.g. Detert and Burris, 2007; Nemeth and Staw, 1989; Whiting *et al.*, 2008). For instance, team members who currently hold more influence over team processes and decision making stand to lose power as a result of behaviors calling for more democratic decision-making procedures. In teams made up of people from diverse educational and functional backgrounds, differences in work preferences and ideas for how teamwork should be coordinated make engaging in civic virtue a particularly risky endeavor. Proactive calls for change are more likely to result in conflict and opposition due to the sheer diversity in approaches among team members. Diverse teams thus present a delicate situation where engaging in such behavior could easily "rock the boat" when it comes to established team routines and interpersonal relationships (Chiaburu *et al.*, 2008; LePine and Van Dyne, 1998). Therefore, the change and challenge-oriented nature of civic virtue may be an undesirable and risky endeavor for members of high LTO teams who prefer stability and smooth relationships, especially when there is a high amount of diversity.

Correspondingly, the risk of civic virtue upsetting other team members should be lower in less diverse teams because similarity in educational and functional

backgrounds tends to create a more psychologically-safe team environment (Edmondson, 1999; Peters and Karren, 2009). Members of less diverse teams should thus be more likely to accept and even welcome voice-based behaviors that improve the team functioning. In fact, research shows that individuals in homogeneous teams are more forthcoming in their efforts to challenge and improve their teams (Ashford *et al.*, 1998; Edmondson, 1999, 2003). Thus, members from less diverse teams with high LTO would be more likely to engage in civic virtue compared to members from more diverse teams with LTO because there is more psychological safety and less potential for conflicting differences in opinion in a less diverse setting.

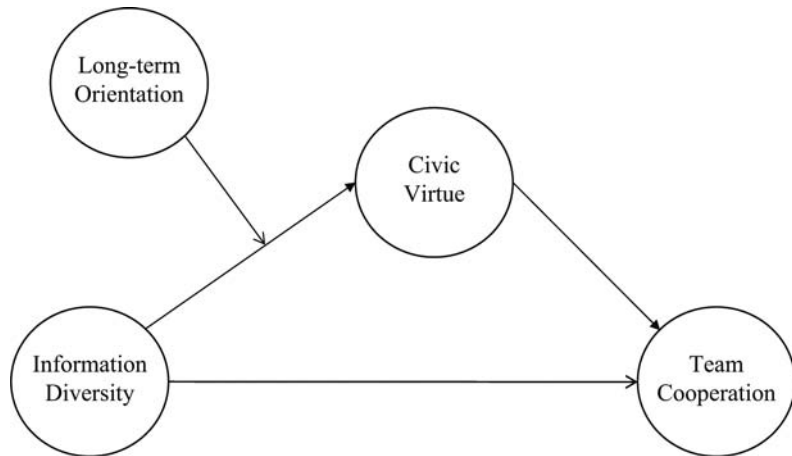
Our overall model explaining the effects of informational diversity on team cooperation is thus one of mediated moderation (Edwards and Lambert, 2007), where the interaction between an independent variable (informational diversity) and a moderator (LTO) affects a mediator (civic virtue), which in turn predicts a dependent variable (team cooperation). Figure 1 presents a graphic illustration of this model. These relationships can be summed up with the following hypotheses:

- H1. Informational diversity predicts cooperation through civic virtue, such that the relationship between diversity and voice is moderated by long-term orientation.
- H2. Long-term orientation moderates the effect of informational diversity on civic virtue such that more diverse teams with long-term orientation engage in less civic virtue compared to less diverse teams with long-term orientation.

**Method**

*Sample and design*

To test our hypothesis, we gathered data from 56 teams consisting of 283 Masters of Business Administration students in a large university in the Southeastern United States. As such, the nature of our sample is similar to previous research that has investigated intact MBA teams to make important contributions to the field (e.g. Chatman and Flynn, 2001; Harrison *et al.*, 2002; Jehn and Mannix, 2001; Polzer *et al.*, 2002). Specifically, the teams comprising our sample were required to work together on



**Figure 1.** Mediated moderation model: effect of information diversity on cooperation mediated by civic virtue behavior and effect of informational diversity on civic virtue moderated by LTO

all class assignments and projects in ten courses throughout two 14-week semesters. Project tasks varied from financial statement analysis (financial accounting), to applying management concepts to case studies (business strategy), to conducting product market research (marketing), to developing firm logistics models (operations). This sample is appropriate to test our hypotheses because team assignments involved coordinated research, analysis, final deliverable reports, and client-targeted presentations based on realistic consulting and business cases. Therefore, the tasks that these teams engaged in were similar to the type of projects that informationally-diverse teams in today's organizations are typically assigned, which strengthens our ability to generalize this study's findings to non-student teams (Carson *et al.*, 2007; Edmondson, 2003). Team size ranged from four to six members where mean team size was 5.05 (median = 5).

We obtained information on the previous functional experience and educational background from the business school's MBA program office. The participants in our study had a good amount of experience in their respective functional backgrounds, with an average 68 months of previous employment (median = 61 months, SD = 30.8 months). To survey the team members, we worked with the MBA program office to administer a web-based survey as part of a larger program-wide initiative to provide students feedback about their teamwork. Participation in the broader MBA program survey was part of students' semester grades, and the response rate for our survey was high (280 out of 283).

### Measures

*Informational diversity.* Consistent with past research (Dahlin *et al.*, 2005; Jehn *et al.*, 1997, 1999) we operationalized informational diversity as heterogeneity in education background (i.e. type of undergraduate degree) and functional area of position held in the individual's most recent job. Based on records obtained from the MBA program office, we classified education background into one of six major degree categories (i.e. arts, business, engineering, science, social science, and technology). Similarly, functional background was classified into 14 categories including accounting, consulting, engineering, entrepreneur, finance, human resource, information systems, general management, marketing, operations management, professional advising, research and development, strategic business planning, and teaching. Due to the categorical nature of these variables, we calculated informational diversity using Blau's (1977) index,  $(1 - \sum p_i^2)$  where  $p_i$  is the fraction of team members with a particular major or functional experience  $i$  (Cannella *et al.*, 2008; Dahlin *et al.*, 2005; Harrison and Klein, 2007; Harrison *et al.*, 1998).

*Civic virtue.* We used Podsakoff *et al.*'s (1997) three-item measure of civic virtue. In order to be consistent with our hypothesized effects of informational diversity on the overall amount of civic virtue performed within a team, we adapted the measure to the team level by having participants rate whether each of their team members engaged in civic virtue (e.g. "this group member provides constructive suggestions about how the group can improve its effectiveness"). Responses were collected using a seven-point Likert scale ranging from "strongly disagree" to "strongly agree", and the Cronbach's alpha of this measure was 0.85. Team member civic virtue behavior was then calculated using the average rating for each team member from the rest of his or her other team. We used teammates' ratings of each other in order to minimize

common source and social desirability biases. Individual ratings of his or her teammates were kept anonymous to guard against any biasing effects of social influence. As we were interested in how informational diversity predicts the overall amount of civic virtue performed by members in a team and how these behaviors in turn influence team cooperation, team-level civic virtue was based on an additive composition model and calculated using the mean of such behaviors within a team (see Chan, 1998; Kozlowski and Klein, 2000; Stewart, 2006). The mean  $r_{wg}$  across teams was 0.94.

*Long-term orientation.* We assessed long-term orientation using Bearden *et al.*'s (2006) eight-item scale, which has demonstrated convergent and discriminant validity in past research (Bearden *et al.*, 2006). Sample items include: "respect for tradition is important to me" and "I plan for the long term". Responses were collected using a seven-point Likert scale ranging from "strongly disagree" (1) to "strongly agree" (7). Cronbach's alpha was 0.82. We aggregated long-term orientation to the team level by calculating the mean member long-term orientation within each team. This method is appropriate because long-term orientation at the individual level should manifest itself in the same way at the team level by serving as a measure of overall team preferences for long-term and stable within-team relationships (Kozlowski and Klein, 2000). The mean  $r_{wg}$  across teams was 0.87.

*Team cooperation.* We used Chatman and O'Reilly's (2004) measure of team cooperation. Responses were assessed using the team as a referent (e.g. "my group pulled together for a common goal"). The internal consistency measure of Cronbach's alpha was 0.84. We then aggregated individual responses to the team level because it was consistent with our hypothesized construct of how much team members worked as a team to coordinate their efforts. Mean  $r_{wg}$  was 0.91.

### Analyses

We hypothesized that long-term orientation would moderate the effect of informational diversity on team cooperation through civic virtue. These relationships constitute a mediated moderation model (see Figure 1), which we analyzed using Edwards and Lambert's (2007) method. Our present model corresponds to what Edwards and Lambert (2007, p. 8) refer to as a first stage moderation model, because LTO moderates the first stage of the indirect effect of informational diversity on cooperation. Hence, the moderation regression equation for effect of informational diversity on the mediation variable civic virtue is:

$$M = a_0 + a_1X + a_2Z + a_3XZ + e_m \quad (1)$$

where mediation variable  $M$  refers to civic virtue, independent variable  $X$  refers to informational diversity, and moderation variable  $Z$  refers to LTO. The regression equation for the dependent variable cooperation is:

$$Y = b_0 + b_1X + b_2M + e_y \quad (2)$$

where dependent variable  $Y$  refers to cooperation. Substituting equation (2) into equation (1) yields the reduced form equation:

$$Y = (b_0 + a_0b_2) + (b_1 + a_1b_2)X + a_2b_2Z + a_3b_2XZ + b_2e_m + e_y \quad (3)$$



Simple slopes relating informational diversity to cooperation are obtained by rewriting equation (3):

$$Y = (b_0 + (a_0 + a_2Z)b_2) + (b_1 + (a_1 + a_3Z)b_2)X + b_2e_m + e_y \quad (4)$$

Equation (4) represents the indirect effect of diversity on cooperation as the compound term  $(a_1 + a_3Z)b_2$ , which varies as a function of the moderator variable LTO (i.e.  $Z$ ). On the other hand, the direct effect of diversity on cooperation denoted by  $b_1$  is unaffected by LTO. The intercept is denoted by the term  $(b_0 + (a_0 + a_2Z)b_2)$ , which also varies as a function of LTO. We substituted selected values of 1 standard deviation below and above the mean for LTO into equation (4) to recover the simple slopes that vary according to LTO. We then plotted these slopes together with their intercept to illustrate the form of the moderating effect of LTO.

*Model estimation and interpretation.* Regression equations (1) and (2) above were estimated using OLS regression (SPSS version 15.0), where coefficients from the equation were tested using standard procedures (Cohen *et al.*, 2003). We followed Edwards and Lambert's (2007) recommendation to use the bootstrap method to analyze the moderation and indirect effects described in reduced form equations (3) and (4). The bootstrap was required in this case because the various effects in equations (3) and (4) involve products of regression coefficients, which must be tested using procedures that account for sampling distributions of products of random variables. Results were based on the bias-corrected confidence interval generated from 1,000 bootstrap samples. This latter bootstrap analysis was performed using the constrained nonlinear regression (CNLR) module in SPSS (Edwards and Lambert, 2007, pp. 11-12). All moderation analyses were conducted using centered independent variables to aid in the interpretation of results and also to eliminate nonessential multicollinearity (Cohen *et al.*, 2003).

*Evaluating statistical power.* Given the nature of current sample, it was important to establish that our  $n$  of 56 teams was adequate to detect above-hypothesized relationships. With an alpha value of 0.05 and sample size of 56, statistical power was .80 for detecting  $R^2$  effect sizes of 0.21 (equation (1)) and 0.18 (equation (2)) [1]. These effect sizes are similar with those obtained by past empirical research relating team diversity and composition to team outcomes (see recent meta-analyses by Bell, 2007; Horwitz and Horwitz, 2007; Stewart, 2006). As reported in the following section,  $R^2$  values (0.34 for equation (1) and 0.24 for equation (2)) actually exceeded these values, implying that the  $n$  of our current sample was adequate when it comes to detecting meaningful relationships involving informational diversity, civic virtue, and team cooperation.

## Results

Correlation and regression results from equation (2) (Tables I and II) suggest that team-level civic virtue was positively related to cooperation ( $r = 0.58, p < 0.01$ ;  $b_2 = 0.72, p < 0.01$ ). However, informational diversity was not related to civic virtue ( $r = -0.11, p > 0.05$ ;  $a_1 = -0.01, p > 0.05$ ). Tests of moderation effects explain why the latter relationship was not significant. Specifically, we found evidence for the moderating effect of long-term orientation on the effect of informational diversity on civic virtue in such a way that diverse teams with long-term orientation engaged in less civic virtue compared to less diverse teams.

First, coefficient estimates in Table II offer support for our hypothesis that long-term orientation moderates the effect of informational diversity on civic virtue ( $a_3 = -2.59, p < 0.05$ ). These estimates were then used to compute simple effects in Table III, which are illustrated in Figure 3. For high long-term orientation (i.e. one standard deviation above the mean), the first stage moderation effect was significant ( $p < 0.05$ ). The indirect effect of informational diversity on cooperation was also significant ( $p < 0.05$ ). Conversely, these effects were not significant when long-term orientation was low. Furthermore, the direct effect of diversity on cooperation (i.e.  $b_1$ ) was not significant regardless of the level of long-term orientation. This latter finding implies that the effect of informational diversity on cooperation was fully-mediated through civic virtue.

Tests of the difference in effects between high and low long-term orientation suggest that the first stage moderation effect was significantly different when long-term orientation was high compared to when it was low ( $p < 0.05$ ). Similar results were obtained for differences between the indirect ( $p < 0.05$ ) and total effects ( $p < 0.05$ ) (see Table III). Figure 2 shows the difference in simple slopes for high and low long-term orientation. This figure illustrates the finding that long-term orientation moderated the relationship between informational diversity and civic virtue in such a

**Table I.**  
Descriptive statistics and correlations

|   | Variable                | Mean | SD   | 1     | 2      | 3      |
|---|-------------------------|------|------|-------|--------|--------|
| 1 | Informational diversity | 1.32 | 0.15 |       |        |        |
| 2 | Long-term orientation   | 5.55 | 0.35 | -0.18 |        |        |
| 3 | Civic virtue            | 4.71 | 0.40 | -0.11 | 0.42** |        |
| 4 | Cooperation             | 6.19 | 0.50 | -0.03 | 0.30*  | 0.58** |

Notes:  $n = 56$ ; \* $p < 0.05$ ; \*\* $p < 0.01$

**Table II.**  
Coefficient estimates from OLS regressions

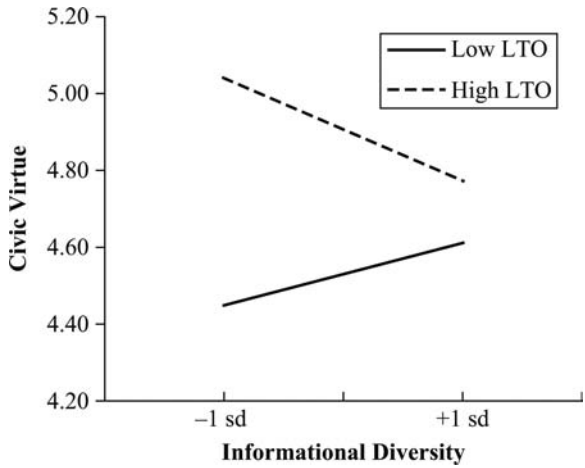
| $a_0$ | $a_1$ | $a_2$  | $a_3$  | $R^2$  | $b_0$ | $b_1$ | $b_2$  | $R^2$  |
|-------|-------|--------|--------|--------|-------|-------|--------|--------|
| -0.02 | -0.01 | 0.61** | -2.59* | 0.24** | 0.00  | 0.10  | 0.73** | 0.34** |

Notes:  $n = 56$ ; entries under columns labeled  $a_0, a_1, a_2,$  and  $a_3$  are unstandardized coefficient estimates from equation (1), which uses civic virtue as the dependent variable; entries under columns labeled  $b_0, b_1,$  and  $b_2$  are unstandardized coefficient estimates from equation (2), which uses cooperation as the dependent variable; \* $p < 0.05$ ; \*\* $p < 0.01$

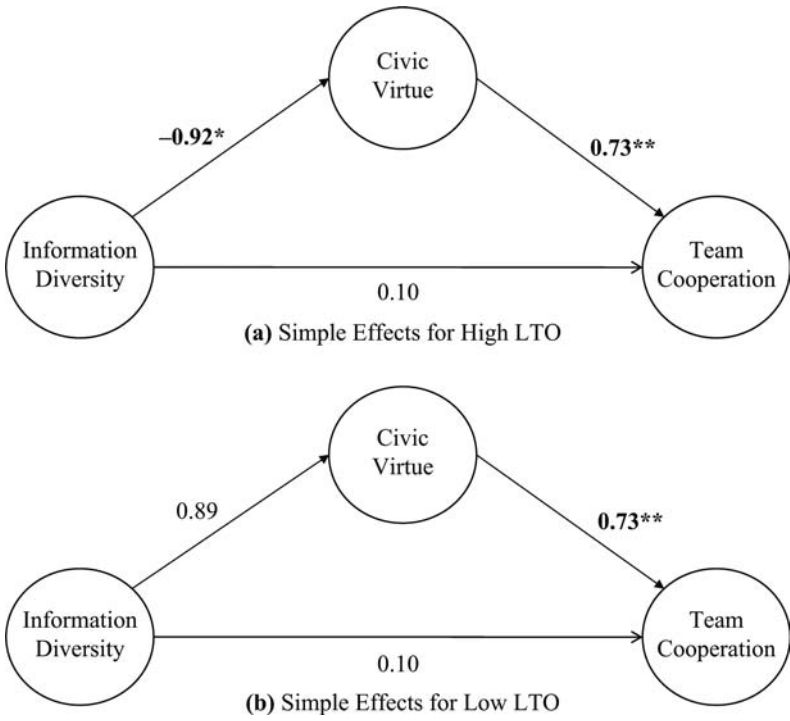
**Table III.**  
Analysis of simple effects

| Moderator variable | First stage moderation | Direct | Effect Indirect | Total |
|--------------------|------------------------|--------|-----------------|-------|
| LTO                |                        |        |                 |       |
| High               | -0.92*                 | 0.10   | -0.67*          | -0.57 |
| Low                | 0.89                   | 0.10   | 0.65            | 0.75  |
| Differences        | 1.81*                  | 0      | 1.32*           | 1.32* |

Notes:  $n = 56$ ; \* $p < 0.05$



**Figure 2.** Simple slope plots of relationship between informational diversity and civic virtue



**Figure 3.** Simple effect path models at high and low levels of LTO

way that there was a significant negative relationship between diversity and civic virtue when long-term orientation was high ( $-0.92, p < 0.05$ ), but no significant relationship between diversity and civic virtue when long-term orientation was low.

Taken together, these results support both *H1* and *H2*. Informational diversity predicted team cooperation through civic virtue, and mean levels of long-term

orientation moderated the effect of diversity on civic virtue such that more diverse teams with high long-term orientation engaged in less civic virtue than less diverse teams. Lastly, we note from Table I's correlations that long-term orientation was positively associated with both civic virtue ( $r = 0.42$ ;  $p < 0.01$ ) and cooperation ( $r = 0.30$ ;  $p < 0.05$ ). This finding highlights the importance of considering the effects of long-term orientation in the context of informational diversity.

### Discussion

The proliferation of teams with high informational diversity in today's organizations makes it imperative that we understand how and why this type of diversity impacts team outcomes (Gratton and Erickson, 2007; Miles and Watkins, 2007). Our study contributes to this goal in several ways. First, we argue that research on diversity effects should be expanded to include team cooperation. While studies utilizing the CEM framework make valuable contributions to the understanding of how diversity impacts information elaboration and decision quality (Homan *et al.*, 2007; Homan *et al.*, 2008; Kearney *et al.*, 2009; van Ginkel and van Knippenberg, 2008, 2009), cooperation clearly also constitutes an important outcome (Salas and Cannon-Bowers, 1997). Because a team's ability to cooperate and function as a well-coordinated collective is a good indication of its potential to achieve consistent success across different tasks (Fleishman and Zaccaro, 1992), our study highlights an under-researched outcome of diversity.

Next, our study builds on recent advances in diversity research by examining when diversity impacts cooperation, and the role of team composition in this relationship (Homan *et al.*, 2008; Kearney *et al.*, 2009). Specifically, we highlight the motivational implications that team long-term orientation can have for civic virtue behaviors and ultimately team cooperation. Thus, our study answers calls for more research into how deep-level (i.e. unobservable) aspects of team composition (e.g. personality, values) influence the way that informationally-diverse teams operate and succeed (Bell, 2007; Kozlowski and Bell, 2003; Neuman *et al.*, 1999; Stewart, 2006).

Third, we introduced and found evidence for the role of civic virtue as a key mediator of the relationship between informational diversity and cooperation. By moving beyond direct associations between diversity and team outcomes, we emphasized the importance of prosocial voice-based behaviors, such as the active sharing of ideas geared toward the improvement of team processes (Keller, 2001; Kozlowski and Bell, 2003; van Knippenberg and Schippers, 2007; Williams and O'Reilly, 1998). Hence, our research builds upon the established CEM framework by identifying proactive civic virtue as an antecedent to team success.

Finally, our results suggest that – by itself – informational diversity did not influence either team cooperation or civic virtue. This finding coincides with past research, which has been inconclusive regarding the relationship between informational diversity and team-based outcomes (e.g. Milliken and Martins, 1996; van Knippenberg and Schippers, 2007; Williams and O'Reilly, 1998). Our results indicated that informational diversity was only related to civic virtue when long-term orientation was high within the team. Furthermore, mediated moderation analysis supported our prediction that informational diversity only influences cooperation indirectly, through the civic virtue contributions of team members. In all, these results suggest that informational diversity is most relevant for civic virtue and cooperation

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when teams have a collective long-term orientation. Thus, a nuanced investigation of informational diversity taking into account team members' values for long-term orientation revealed an intriguing relationship between informational diversity, civic virtue and cooperation.

### *Limitations*

This paper is not without limitations. First, the generalizability of our findings must be considered because our sample consisted of MBA teams in an education setting. Thus, the moderating effect of LTO on civic virtue could be even more pronounced in organizational contexts where relationships are more politicized. In addition, the incidence of civic virtue could also be different in actual project based teams who are often faced with the uncertainty of exactly how long they will continue to work together on current or future projects. On the other hand, the project assignments that current teams worked on mirror the type of projects that diverse teams are commonly engaged in actual organizations, and our sample consisted of participants with considerable experience in many different functional fields, with an average of more than five years professional work experience.

Next, while we gathered our diversity data from archival records, our data on time orientation, civic virtue, and cooperation were obtained with a survey. Potential concerns about common method bias are tempered by the fact that civic virtue was operationalized as the aggregate of other team member's ratings of a focal individual (e.g. not self report). Therefore, we avoid the common-source biases that are inherent in previous research that has relied on self-reports to study civic virtue behavior (e.g. Rusbult *et al.*, 1988; Tangirala and Ramanujam, 2008). Moreover, our hypotheses were nuanced with a focus on moderated relationships, which are not affected by common method variance (Evans and Carson, 2005).

### *Implications*

Our findings hold several important practical implications for understanding informational diversity in teams. First, results emphasize that the context under which informational diversity operates is crucial. While it is commonly assumed that teams with informational diversity are able to generate more and better ideas, these teams also suffer from process losses and reduced cooperation. In our data this drop in cooperation is only evident in teams with a long-term orientation who value stable social relationships and long-range planning. Thus, managers and leaders of informationally-diverse teams with high LTO should be especially wary of the challenges to team processes such as intra-group bias, communication difficulties, and conflict due to the absence of civic virtue behaviors (Cannella *et al.*, 2008; Dahlin *et al.*, 2005; Jehn *et al.*, 1999; Pelled *et al.*, 1999).

Our focus on time orientation and LTO is particularly interesting in the context of previous research that has focused on time itself as a moderator of team diversity-team outcome relationships (e.g. Harrison *et al.*, 1998, 2002). Past research has suggested that when team members are given time to interact and coordinate, culturally diverse groups improve both team process and performance to match the output of their culturally homogeneous counterparts (Chatman and Flynn, 2001; Harrison *et al.*, 1998, 2002; Watson *et al.*, 1993). Our study adds to research on the temporal nature of

diversity effects by examining not time itself, but team members' orientation towards time. Thus, our results offer new insight into the role of time in diversity research.

More generally, our results underline the importance of cultural values in understanding the complexities of team composition and civic-oriented behaviors (Cohen and Keren, 2008). Past research has already highlighted the importance of team-level collectivism in designing effective teams (Earley, 1993; Eby and Dobbins, 1997; Gomez *et al.*, 2000; Kirkman and Shapiro, 2005; Wagner, 1995). Our findings confirm that other cultural values also may play a key role in facilitating or inhibiting team diversity effects (Kirkman and Shapiro, 1997). This idea is further emphasized by the fact that our mediated moderation models accounted for 24 and 34 percent of the variance in civic virtue and team cooperation respectively (see Table II). Hence, our study demonstrates the utility of integrating informational diversity with other aspects of team design when seeking to understand diversity-related processes in teams.

Finally, this study highlights a basic dilemma faced by informationally-diverse teams with long-term orientation. Namely, these teams need civic virtue-based voice to draw the best out of each member and capitalize on diverse ideas and perspectives. However, long-term orientated individuals within these teams may be unwilling to engage in these behaviors because they do not want to rock the boat and face disapproval. Thus, managers of these teams should take steps to minimize the risk that team members perceive when they engage in voice behaviors. One way this could be achieved is by implementing organizational support systems to ensure that teams and their members receive adequate access to information, resources, and rewards that encourage civic virtue. Leaders should also engage in more open, supportive and coaching-oriented behavior to create psychologically safe climates for their teams to operate in (Chiaburu *et al.*, 2008; Detert and Burris, 2007; Edmondson, 1999, 2003).

### Conclusion

Organizations invest in informationally-diverse teams hoping to benefit from the wider range of ideas and synergies that can occur when individuals from different educational and training backgrounds collaborate. However, the diverse make-up of these teams poses significant challenges to collaboration that often hinder the realization of their potential. In particular, if not proactively managed, it appears that members' long-term orientation may hinder prosocial civic virtue behaviors that are crucial to cooperation in diverse teams.

### Note

1. Statistical power estimates were obtained using the G\*Power 3 computer program (Erdfelder *et al.*, 1996).

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