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The Effects of Leadership Style and Team Process on Performance and Innovation in Functionally Heterogeneous Teams[†]

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This study focused on leadership style (participative leadership/directive leadership) as a key factor, which has an intervening impact on a functionally heterogeneous team's process and outcomes. In a study of 136 primary care teams, the author found that in high functionally heterogeneous teams, participative leadership style was positively associated with team reflection, which in turn fostered team innovation; however, this leadership style decreased team in-role performance. The impact of directive leadership was in promoting team reflection under the condition of low functional heterogeneity, whereas no such impact was found under the condition of high functional heterogeneity.

Keywords: *participative leadership; directive leadership; functional heterogeneity; team reflection*

Functionally heterogeneous teams are increasingly identified as the method of choice of organizations to respond to the challenges of new forms of organization and volatile environments (Curral, Forrester, Dawson, & West, 2001; Keller, 2001). Functionally heterogeneous teams assemble people from different disciplines and functions, who have pertinent expertise in the proposed course of action (Earley & Mosakowski, 2000). Such teams have high absorptive capacity, as their members' diverse expertise allows them to tap into a broad array of infor-

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mation and knowledge (Ancona & Caldwell, 1992; Dahlin & Weingart, 1996; Lovelace, Shapiro, & Weingart, 2001). This enhances the probability that an adequate solution to the problem will be proposed. Functional heterogeneity is also important for innovation, renewal, and creativity in organizations (Dahlin & Weingart, 1996; Schneider & Northcraft, 1999; Woodman, Sawyer, & Griffin, 1993). However, although functional heterogeneity in an organization's workforce offers potential benefits, a series of studies has explored the potentially negative impact of heterogeneity in increased costs (AitSahlia, Johnson, & Will, 1995), felt stress, and lower group cohesiveness, which consequently affects performance (Donnellon, 1996; Jehn, 1997; Swamidass & Aldridge, 1996). These problems have been attributed to substantive disagreements among team members, centering on differences in jargon, communication styles, and perspectives (e.g., Pelled, 1996), and to social categorization processes, which produce negative cognitive, emotional, and behavioral biases when individuals perceive others as different from themselves (Tajfel, 1982).

This conflicting evidence might suggest that functional heterogeneity does not in itself promote the team's outcomes. Rather, team members have to learn how to interact; share; and develop cognitive, emotional, and instrumental resources so that they use their team's functional heterogeneity properly to enhance effectiveness (West, 2002). Given the dominant role of leadership in the workplace (Redmond, Mumford, & Teach, 1993; Shin & Zhou, 2003), one key situational factor that may have substantial impact on the processes and output of functionally heterogeneous teams is leadership. Yet, despite the theoretical significance and potentially considerable impact of leadership, to date few studies, if any, have focused on understanding the role of the superior in enhancing the aforementioned processes and outcomes. The goal of the present study was to address this important yet relatively unstudied issue.

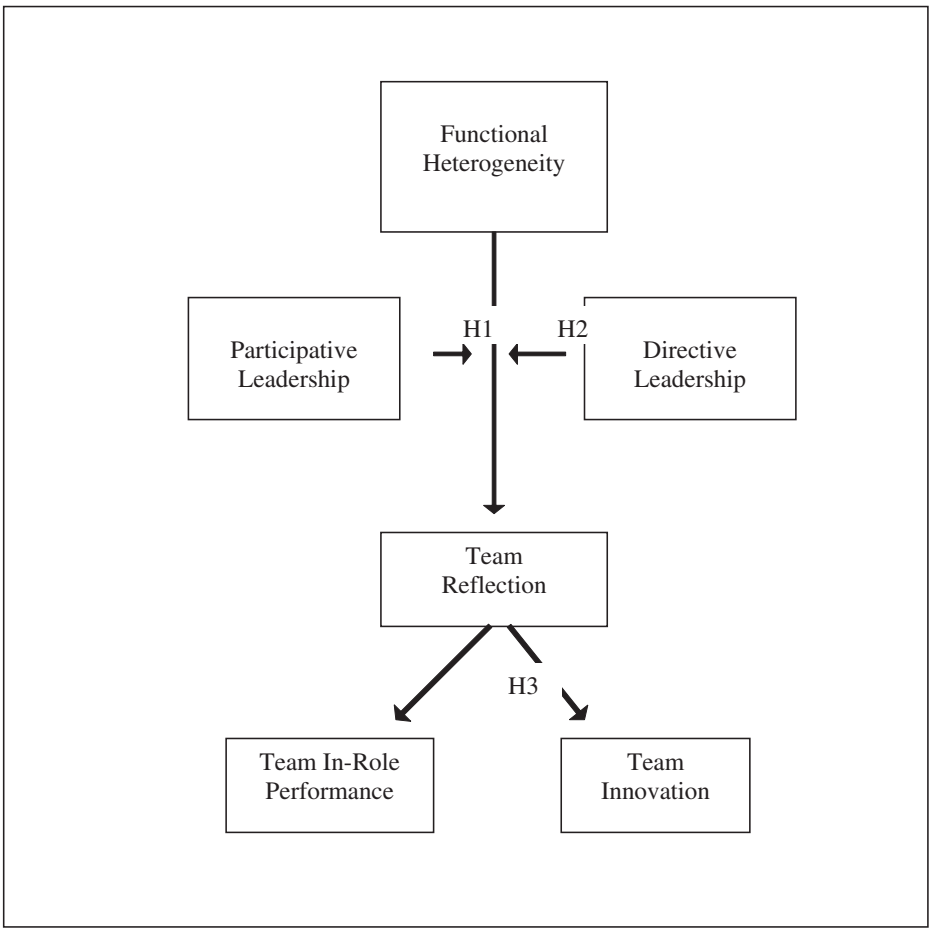
The model proposed here focused on a participative versus a directive leadership style as key factors exercising an intervening impact on team processes and outcomes. Specifically, in this study, I examined how participative/directive leadership moderates the effects of functional heterogeneity on team process (team reflection). Then, I posited that team reflection would mediate those interactive effects on team outcomes (team in-role performance and team innovation) (see Figure 1).

Conceptual Background and Hypotheses

Key Concepts

Functional heterogeneity. A core component of the present model is team heterogeneity. Recently, scholars have begun to identify important distinctions in kinds of heterogeneity. For example, Jackson, May, and Whitney (1995) differentiated between task-related and relations-oriented attributes of heterogeneity. Task-related attributes are all the specific skills and abilities needed to perform the job (e.g., tenure, educational level, and job and organizational experience). Relations-oriented attributes are personal characteristics that are irrelevant to task performance and innovation (e.g., sex, age, and religion). Task relatedness is an important property because it determines whether a particular type of heterogeneity constitutes enlargement of a team's total pool of task-related skills, information, and perspectives. The size of this

Figure 1
A Model of Leadership Style and Team Reflection for Promoting Effectiveness in Functionally Heterogeneous Teams



pool, in turn, represents a potential for better performance (Jackson, 1992, 1996; Simons, Pelled, & Smith, 1999).

In the present study, I focused on the most investigated kind of heterogeneity, namely, functional heterogeneity, which is defined as "the diversity of organizational roles embodied in the team" (Jackson, 1992: 353). A team will be characterized as possessing increased functional heterogeneity if different professionals are grouped together as a multidisciplinary team. Functional heterogeneity is generally classified as more task related because it largely cap-

tures experiences, information, and perspectives relevant to the team task (Drach-Zahavy & Somech, 2001; Pelled, 1996; Simons et al., 1999). In addition, according to the categorization theory, although any kind of heterogeneity may provoke categorization—and thus hamper performance—functional heterogeneity sparks fewer personal conflicts. This is because team members with different functional roles are less inclined to perceive their personal success attainment as competitive with the success of other team members (Pelled, Eisenhardt, & Xin, 1999; Pfeffer, 1981).

Participative/directive leadership. In the present study, I focused on the participative leadership style, which is defined as joint decision making, or at least shared influence in decision making, by a superior and his or her employees (Koopman & Wierdsma, 1998), and on directive leadership, which is defined as providing the team members with a framework for decision making and action in alignment with the superior's vision (Fiedler, 1989, 1995; Sagie, 1997; Stogdill, 1974). In the context of teams, focusing on participative and directive leadership styles is important for several reasons (Kahai, Sosik, & Avolio, 1997). First, both participative and directive leadership can be associated with high levels of team outcomes (e.g., Sagie, Zaidman, Amichai-Hamburger, Te'eni, & Schwartz, 2002). For example, establishing clear rules for behavior in work teams (directive leadership) and soliciting new ideas from team members (participative leadership) have been associated with high-performance work teams (Katzenbach & Smith, 1993). Second, a study of participative and directive leadership styles can form the basis for examining more complex leadership styles in teamwork. Third, being effective, participative and directive leadership styles induce team members to devise effective work processes (Kahai et al., 1997; Sagie et al., 2002). Finally, examining these two leadership styles simultaneously responds to a call in the organizational behavior literature to researchers to "move from a traditional, schismogenic, either/or approach to a both/and approach, thus making it possible for us to see management behavior in genuinely new ways" (Quinn, 1988: 85). Accordingly, suitable measures would assess each style separately, rendering it empirically possible for managers to go back and forth between contrasting styles of a behavior (Lewis, Welsh, Dehler, & Green, 2002).

Team reflection. Team reflection is defined as "the extent to which team members collectively reflect upon the team's objectives, strategies and processes" (West, 1996: 559). A reflective model of team processes incorporates the idea that group-task processes are "circular" or "spiraling." Team reflection involves behaviors such as questioning, debating, planning, exploratory learning, analyzing, divertive exploration, making use of knowledge explicitly, reviewing past events, and coming to terms over time with new awareness (West, 1996). In the context of functionally heterogeneous teams, team reflection refers to recent interest in the OB literature on the benefits of cognitive and learning processes in teams. By encouraging the cognitive processes of team reflection, team members might challenge each other on task issues and thereby foster the development of constructive interactive practices to get work done (Argyris, 1992; Simons et al., 1999; Tjosvold, 1990). Accordingly, by encouraging questioning, debating, and reanalyzing, the process of team reflection might serve as a powerful tool to use the heterogeneity of knowledge, expertise, and skills to enhance team outcomes (West, 2002).

Team outcomes. I chose team in-role performance and team innovation as team outcome variables because they tap the different dimensions of team outcomes. Team in-role performance is the extent to which the team accomplishes its purpose and produces the intended, expected, or desired result (Chatman & Flynn, 2001). Team innovation is the introduction or application within a team of ideas, processes, products, or procedures that are new to the team and that are designed to be useful (West, 1990). These two dimensions of team outcomes represent the tension that functionally heterogeneous teams experience when trying to engage in "out-of-the-box" thinking while managing routine in-role duties.

Hypotheses

A central argument of this study is that functionally heterogeneous teams need to be guided to make constructive use of functional diversity. The first hypothesis advances the notion that leadership style will moderate the impact of functional heterogeneity on team reflection. According to this argument, functional heterogeneity represents potential for a higher degree of reflection. Teammates with different organizational roles possess different skills and expertise and, hence, avail themselves of broader informational resources and knowledge. Moreover, functionally heterogeneous teams carry not only diverse knowledge and information but also different vocabularies, cognitive patterns, and styles (Drach-Zahavy & Somech, 2001). These patterns of heterogeneity might potentially induce team members to discuss, reanalyze, question, and debate. However, it is proposed here that the appropriate behaviors of the superior play a crucial role in converting functional heterogeneity into a constructive process of reflection. Without such intervention by the superior, a team's functional heterogeneity may remain an untapped resource, existing but never used (Simons et al., 1999).

Regarding the intervening role of the participative superior, recent work (e.g., Dougherty, 1996; Durham, Knight, & Locke, 1997; Sagie et al., 2002) has suggested that the more consistent benefits of the participative style lie in the cognitive realm. These superiors can help reduce barriers between diverse professionals in functionally heterogeneous teams by facilitating the open exchange of ideas and analytical perspective across multiple functions (Barrett, 1998; Curral et al., 2001; Lewis et al., 2002). By doing so, superiors confront team members with new information from people from different backgrounds, so members are forced to rethink and reflect on their points of view and consider factors they had not previously considered (Drach-Zahavy & Somech, 2001). This in turn can create an atmosphere where ideas are proposed, discussed, critiqued, and reflected on (Olson, Walker, & Ruekert, 1995).

Hypothesis 1: Participative leadership will moderate the relationship between team functional heterogeneity and team reflection, such that the relationship between the two will be more positive under high than under low participative leadership.

Regarding the intervening role of the directive superior, recent studies (e.g., Kahai et al., 1997; Murphy & Fiedler, 1992; Sagie et al., 2002) have suggested that this leadership style also generates cognitive processes. On the basis of a series of studies, Larson and his colleagues (Larson, Christensen, Abbott, & Franz, 1996; Larson, Christensen, Franz, & Abbott, 1998) concluded that directive superiors may well improve information exchange and pro-

cessing. Directive superiors asked more questions, repeated unshared information, and increased members' willingness to adopt unshared information. Similarly, Kahai et al. (1997) found no difference in frequency of supportive remarks or of critical remarks in teams working with a participative and with a directive superior. They explained that a superior's directiveness could have an informational aspect, namely, provide information about a member's competence. Accordingly, members in functionally heterogeneous teams, working under directive superiors, interpreted their superiors as suggesting that team members were capable of providing the input that the superiors directed them to provide. Such an interpretation might encourage members of functionally heterogeneous teams, which possess diverse knowledge and information, to provide more input of critical remarks, suggestions, and solutions, which lead to enhanced processes of reflection.

Hypothesis 2: Directive leadership will moderate the relationship between team functional heterogeneity and team reflection, such that the relationship between the two will be more positive under high than under low directive leadership.

The second argument of this article is that the process of team reflection will be positively associated with team in-role performance and team innovation. Sound support exists for the proposition that the process of team reflection will predict team performance and team innovation (e.g., Drach-Zahavy & Somech, 2001; Pearce & Ravlin, 1987; West, 2002). Regarding the effect of team reflection on team in-role performance, previous research has shown that through a process of debate about various opinions of team members and critical evaluation of tasks and goals, the team improves its ability to foresee all possible costs, benefits, and side effects, and this leads to improvement in productivity (e.g., Jehn & Mannix, 2001; Pelled et al., 1999). Similarly, the intensive body of research developed by Maier and colleagues (e.g., Maier, 1970; Maier & Hoffman, 1970; Maier & Solem, 1962) found that group productivity improved if groups were encouraged to be "problem minded" rather than "solution minded" (Maier & Solem, 1962).

Regarding the impact of team reflection on team innovation, empirical evidence indicated that the extent to which team members overtly reflect on the team's objectives, strategies, and processes for the purpose of creating a team-level intellectual product initiates team innovation (Larson & Christensen, 1993; West, 1996; West & Anderson, 1996). That research suggested that the process of team reflection improves detection and identification of problems (e.g., Bottger & Yetton, 1987; Hirokawa, 1990), scanning the environment (Ancona & Caldwell, 1992), and producing creative solutions (Maier & Solem, 1962), all of which might be crucial for team innovation.

Hypothesis 3: Team reflection will be positively related to team in-role performance and team innovation.

Finally, as the above discussion indicates, the third argument of this article is that the process of team reflection will mediate the relationship between the interactive effects of functional heterogeneity and leadership style and team in-role performance and innovation. According to this argument, it is possible that team in-role performance and team innovation

described above emerged primarily through the effect of functional heterogeneity and leadership style on team reflection. Therefore, I posit that the process of team reflection serves as a vehicle whereby leadership style/functional heterogeneity interactions enhance team in-role performance and innovation.

Hypothesis 4a: Reflection will mediate the interactive effects of functional heterogeneity and participative leadership on team in-role performance and team innovation.

Hypothesis 4b: Reflection will mediate the interactive effects of functional heterogeneity and directive leadership on team in-role performance and team innovation.

Method

Sample and Procedure

Primary care teams provided a setting appropriate for this study. First, the importance as well as the prevalence of teamwork in primary health care has been emphasized in the research literature (e.g., Borrill et al., 2000) and in numerous reports and policy documents (Poulton & West, 1999). Second, in Israel, the National Health Insurance Law took effect in 1995 in an attempt to set health care on a more economic path, with a distinctly outcome-focused policy agenda. Consequently, to manage competition among the nation's four nonprofit health funds, health professionals operate in a health care system that stresses an innovation-oriented strategy in delivering care. Third, evidence from past research (e.g., Poulton & West, 1999; West & Wallace, 1991), as well as preassessment interviews with practice managers, indicated that variance in the key variables of interest in this study could be obtained.

This study covered 140 primary care teams selected from 1,200 primary clinics of the largest health maintenance organization in Israel. Being part of the same health organization, each primary clinic has the same objectives, work design, roles, and standards for performance. Primary care clinics aim to provide a broad medical-social perspective for the care of the individual, the family, and the community. Through the family-medicine program, the individual is treated within the context of the family and community. Health education, preventive medicine, screening, posthospital, and home care are integral parts of the program. In addition, these clinics serve as centers of health activities for community residents. Each primary care clinic is managed by a practice manager, who is responsible for the ongoing functioning of one clinic. This manager works fairly autonomously and reports to the area management.

Preassessment interviews were conducted with the practice manager, head nurse, and head physician in each primary care team. According to these interviews, all team members interacted regularly to achieve shared goals regarding the quality of care given to their patients. They also depended on one another for knowledge and effort by means of several permanent structures such as scheduled staff meetings, "brown-bag" lunch meetings, and joint refresher workshops.

Data were collected from the 1,292 members of the 140 primary care teams and their corresponding 140 practice managers. These teams consisted of 290 physicians, 692 nurses, 100 social workers, 138 occupational therapists, and 72 dieticians. Team size ranged from 5 to 20

members, with an average of 7.26 (*SD* = 4.23). The sample was 73.5% women, and the average age was 37.9 years (*SD* = 7.97). Average job tenure was 5.4 years (*SD* = 6.22). In education level, 64% had a bachelor's degree, 14% had a master's degree, and 22% had a Ph.D. or equivalent degree. These teams were supervised by practice managers, of whom 65% were female; their average age was 39.2 years (*SD* = 9.32), and tenure was 10.48 years (*SD* = 8.23). In education level, 66% of the practice managers had a bachelor's degree, 13% had a master's degree, and 21% had a professional degree. Analyses of variance of the team averages of the demographic variables confirmed no statistically significant differences across teams in gender, age, job, tenure, or education. In addition, none of the demographic variables predicted a significant portion of the variance in team reflection, team in-role performance, or team innovation. Hence, these demographic variables were not included in subsequent analyses to test the hypotheses.

Data were obtained through a survey. Response rates within teams ranged from 46% to 95%, with a mean of 69% (*SD* = 20.6) for team members and 100% for practice managers. The questionnaire surveys were distributed to employees on site by a research assistant as follows: team members' surveys consisted of measures of reflective team process, participative leadership, and directive leadership. These measures were aggregated to the team level of analysis. Practice managers' data included measures of a team's in-role performance and innovation. In addition, each practice manager was asked to provide demographic information of his or her team's members. Note that because individual responses were aggregated to the team level, I used a 60% response rate as the criterion for including teams in the study analyses. Therefore, the final sample in the present study consisted of 136 teams.

Measures

Team functional heterogeneity. Team functional heterogeneity was defined as the diversity of organizational roles embodied in the team (Jackson, 1992). Information for this measure was provided by each team's practice manager; therefore, functional heterogeneity was based on the actual composition of the team. Functional heterogeneity was measured by the diversity index recommended by Blau (1977) and used by Simons and colleagues (1999): $1 - \sum Pi^2$, where Pi is the proportion of the total team that each function category represents. The function categories used were physicians, nurses, social workers, occupational therapists, and dieticians.

Team reflection. Six items based on West (1996) measured the extent to which team members collectively reflected on the team's objectives, strategies, and processes:

1. "In the team, we always look for different interpretations and perspectives to confront a problem".
2. "In the team, we criticize each other's work in order to improve team effectiveness."
3. "In the team, we are prepared to reflect on the way we act."
4. "In the team, we engage in evaluating our weak points in attaining effectiveness."
5. "In the team, we openly challenge each other's opinions."
6. "In the team, we reassess any proposed solution" (α = .92).

Team members used a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*).

Participative/directive leadership. To assess the frequency at which a superior displayed a participative/directive leadership style, two separate scales developed by Sagie et al. (2002) were used. Participative leadership (three items) measured the extent of the team's involvement in various decisions (e.g., "To what extent is your team involved in solving problems?") ($\alpha = .88$). Directive leadership (six items) measured the extent to which the superior provides team members with a framework for decision making and action in alignment with the superior's vision (e.g., "Your manager provides inspiring strategic and organizational goals") ($\alpha = .93$). Team members used a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*very much*).

Team in-role performance. A seven-item scale adapted from Settoon, Bennett, and Liden (1996), worded for the team level, measured team in-role performance. The items referred to an overall evaluation of the team's job performance, role fulfillment, and professional competence (e.g., "In my estimation, the team adequately fulfills assigned duties") ($\alpha = .88$). The practice manager used a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Team innovation. Team innovation was measured by a four-item scale adapted from West and Wallace (1991). The items reflected the extent to which in the previous 6 months the team had initiated changes in each of four job areas: work objectives, working methods, teaching methods, and development of skills ($\alpha = .83$). The practice manager used a 5-point Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Confirmatory factor analysis using the LISREL 8 program (Jöreskog & Sörbom, 1996) was used to analyze the internal structure of the present five study scales (participative leadership, directive leadership, team reflection, team in-role performance, and team innovation). Specifically, I tested my measurement model by comparing the five-factor (oblique) model with the rival three-factor model (leadership style, reflection, and team outcomes) and a one-factor model (oblique). As Kelloway (1998) noted, the quality of fit of a theoretical model is based on both whether it provides a good absolute fit to the data and whether it fits better than a competing model. Results indicated that the five-factor solution had good fit indexes (Goodness-of-Fit Index [GFI] = .98, Adjusted Goodness-of-Fit Index [AGFI] = .98, Nonnormed Fit Index [NFI] = .95, Nonnormed Fit Index [NNFI] = .95, Incremental Fit Index [IFI] = .95, Comparative Fit Index [CFI] = .95, root mean square error of approximation [RMSE] = .03). Even more important, the five-factor model provided a better fit to the data than did either of the plausible rival models. All the fit indexes of both competing models were worse than those of my five-factor model (three-factor model: GFI = .92, AGFI = .93, NFI = .92, NNFI= .92, IFI = .92, CFI = .92, RMSE = .13; one-factor model: GFI = .90, AGFI = .89, NFI = .90, NNFI= .91, IFI = .90, CFI = .90, RMSE = .16). These results indicated that the five scales of the present measurement model represent concepts that are not only theoretically but also empirically distinguishable.

Control variable. Team size and the heterogeneity of four main background characteristics of team members (gender, age, job tenure, and education) were included as control variables because the literature has noted their effects on team process and outcomes (e.g., Ancona & Caldwell, 1992; Keller, 2001; Simons et al., 1999). *Team size* was the total number of team members reported on the practice management questionnaire. *Gender heterogeneity* was assessed by Blau's index, where male and female served as heterogeneity categories. *Tenure heterogeneity* was calculated as the standard deviation of the number of years team members had spent at the job. Similarly, *age heterogeneity* was calculated as the standard deviation of team members' age. Finally, to measure *educational heterogeneity*, I transformed higher degree into years of formal education and then computed the team's standard deviation to estimate educational-level heterogeneity (Simons et al., 1999).

Level of Analysis

The unit of theory in the present study was the team. That is, all the hypotheses were posited at the team level, and the study variables (team reflection and leadership styles) were aggregates of individual responses to the team level of analysis.

Aggregation is justified by theoretical as well as empirical arguments (Rousseau, 1985). Theoretically, Rousseau (1985) advocated the use of composition theories, which specify the functional similarities of constructs at different levels. Team members may be expected for many reasons to share perceptions concerning their work processes, such as the process of reflection and thoughts on the team's superior. Members' frequent interaction, shared tasks, the clear delineation of team boundaries, and the long standing of most of the teams should allow members to adopt the views of the collective, thereby creating shared norms and perceptions (George, 1990; Jehn, Chadwick, & Sherry, 1997). So it was critical to demonstrate high within-team agreement to justify using the team average as an indicator of a team-level variable (r_{wg}: James, Demaree, & Wolf, 1993). A value of .70 or above is suggested as a "good" amount of within-group interrater agreement (James et al., 1993). All scales exceeded this criterion. Values are given in Table 1, in the column r_{wg}. I also obtained the following intraclass correlation coefficient ICC(1) and ICC(2) values: participative leadership, .35 and .67; directive leadership, .39 and .73; and team reflection, .24 and .52. All of these were comparable to the median or recommended ICC values reported in the literature (e.g., Liao & Chuang, 2004; Knight, Durham, & Locke, 2001). I thus concluded that aggregation was justified for these variables.

Results

Table 1 shows the means, standard deviations, and intercorrelation matrix for the study variables.

Hypotheses 1 and 2 concerned the moderating effect of leadership style (participative/directive leadership) on the relationship of functional heterogeneity and team reflection. To test these hypotheses, a hierarchical regression analysis for predicting team reflection was conducted. All effect terms of the proposed predictors, namely, functional heterogeneity,

Table 1
Descriptive Statistics, Reliabilities,[a] and Intercorrelation Matrix for the Study's Variables

	M	*SD*	r_{wg}	1	2	3	4	5	6	7	8	9	10	11
1. Team size	7.26	4.23		1.00	.06	.04	.02	.01	.02	.15	.20*	.20*	.29***	.29***
2. Gender heterogeneity	0.39	0.23			1.00	.08	.02	.20	.19	.02	.02	.03	–.22**	–.27**
3. Age heterogeneity	0.41	0.17				1.00	.19	.16	.16	.04	.01	.03	.20*	–.21*
4. Tenure heterogeneity	0.58	0.36					1.00	.09	.16	–.23**	.08	.10	–.22**	–.13
5. Educational heterogeneity	0.59	0.36						1.00	.19	.19	.04	.08	.18	.21*
6. Functional heterogeneity	0.53	0.49							1.00	.28***	.03	.28***	.11	.03
7. Team reflection	4.12	0.36	.83							1.00	.50***	.52***	.20*	.50***
8. Participative leadership	3.95	0.47	.77								1.00	.16	.03	.26**
9. Directive leadership	3.53	0.74	.78									1.00	.26**	.28***
10. Team in-role performance	3.85	0.60											1.00	.28**
11. Team innovation	3.71	0.65												1.00

Note: $N = 136$.
a. The statistic r_{wg} represents reliability within groups averaged across all teams (James, Demaree, & Wolf, 1993). The ranges of the reliability scores were .79-.90 for reflection, .70-.92 for participative leadership, and .71-.92 for directive leadership.
*$p < .05$
**$p < .01$
***$p < .001$

participative leadership, and directive leadership, were entered in the regression equation. The control variables (team size, gender heterogeneity, age heterogeneity, tenure heterogeneity, and educational heterogeneity) were entered in Step 1. The main-effect terms were entered in Step 2, and the second-order interactive-effect term was entered in Step 3. I then plotted values respectively plus and minus one standard deviation from the means of functional heterogeneity and leadership styles (Aiken & West, 1991; Cohen & Cohen, 1983). The results of the hierarchical regression analysis are presented in Table 2, in the column labeled "Team Reflection," and in Figure 2.

As shown in Table 2, regarding prediction of team reflection, the control variables accounted for a negligible percentage of the variance in team reflection (.06, $p > .05$). The joint main effects of team reflection predictors accounted for 36% ($F = 10.01$, $p < .001$) of the variance in team reflection. Specifically, both participative and directive leadership were positively and significantly associated with team reflection. However, no significant relation was found between functional heterogeneity and team reflection.

The second-order interaction effects between functional heterogeneity and leadership style, entered in Step 3, accounted for an additional 10% of the variance in team reflection ($F = 11.01$, $p < .001$). To estimate the effect sizes, partial effects sizes were computed. Small, medium, and large effect sizes for an F-statistic have partial eta-squared values of .01, .059, and .138, respectively (Kirk, 1996). First, in line with Hypothesis 1, the interaction effect between functional heterogeneity and participative leadership on team reflection was significant ($\beta = .49$, $p < .001$; partial $\eta^2 = .061$). Analysis of the simple effects revealed that when functional heterogeneity was high, team reflection was significantly higher with superior's high participation than low ($b = .33$, $t = 6.26$, $p < .001$). However, when functional heterogeneity was low, no difference in team reflection was found under superior's high or low participation ($b = .15$, $p > .05$). The interaction effect is illustrated in Figure 2.

Second, the results also indicated a significant interaction effect between functional heterogeneity and directive leadership ($\beta = -.51$, $p < .01$; partial $\eta^2 = .090$). However, analysis of the simple effects revealed that, in contrast to the hypothesized direction (Hypothesis 2), when functional heterogeneity was high, team reflection showed no difference under superior's high or low directiveness ($b = -.02$, $p > .05$), but when functional heterogeneity was low, team reflection was higher under superior's high directiveness than low ($b = .40$, $t = 5.31$, $p < .01$) (see Figure 2).

To test the relationship between team reflection and team in-role performance and team innovation (Hypothesis 3), two hierarchical regression analyses were conducted. All effect terms of the proposed predictors, namely, functional heterogeneity, participative leadership, and directive leadership, were entered in the regression equation. The control variables (team size, gender heterogeneity, age heterogeneity, tenure heterogeneity, and educational heterogeneity) were entered in Step 1. The main effect terms were entered in Step 2, and the second-order interactive effect term in Step 3. To qualify for the effect of team reflection on team in-role performance and team innovation above and across the antecedents, the effect of team reflection was entered in Step 4. The results of the hierarchical regression analyses are presented in Table 2, in the columns labeled "Team In-Role Performance" and "Team Innovation."

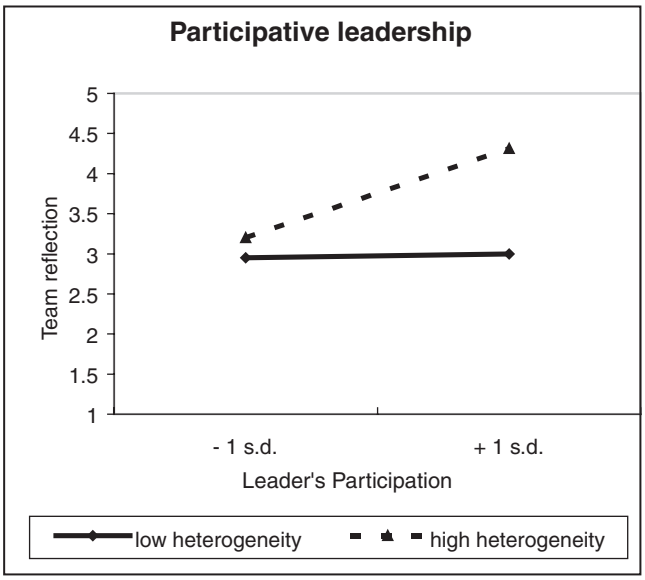
Table 2
Results of Hierarchical Regression Analyses for Predicting Team Reflection, Team In-Role Performance, and Team Innovation

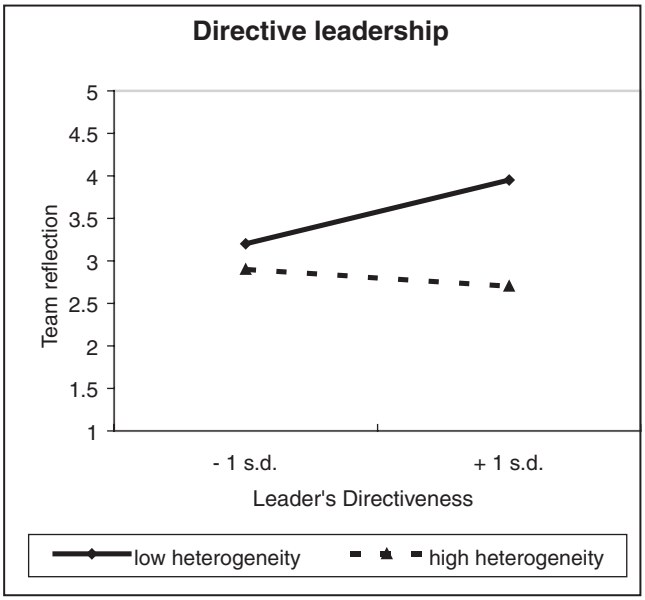
	Model 1														
	Team Reflection					Team In-Role Performance					Team Innovation				
Step variables	β	*SE*	ΔR^2	ΔF	*F*	β	*SE*	ΔR^2	ΔF	*F*	β	*SE*	ΔR^2	ΔF	*F*
Step 1: Control variable			.06	1.40	1.40			.10	4.01**	4.01**			.14	4.27***	4.27***
Constant	4.05[a]	.26				4.01[a]	.39				4.38[a]	.46			
Team size	0.34*	.01				0.50***	.01				0.46***	.01			
Gender heterogeneity	0.02	.10				–0.21*	.15				–0.16	.18			
Age heterogeneity	0.05	.01				0.28	.01				–0.15	.01			
Tenure heterogeneity	–0.26	.01				–0.50*	.01				0.05	.02			
Educational heterogeneity	0.04	.06				0.06	.08				0.15	.10			
Step 2: Main effects			.36	24.8***	10.01***			.18	6.53**	5.70***			.11	5.29**	4.97***
Constant	4.02[a]	.21				4.34[a]	.38				4.34 [a]	.45			
Team size	0.06	.01				0.40**	.01				0.46**	.01			
Gender heterogeneity	0.09	.09				–0.31	.15				–0.17	.19			
Age heterogeneity	–0.19	.01				0.24	.01				–0.15	.02			
Tenure heterogeneity	0.06	.01				–0.39	.01				–0.05	.02			
Educational heterogeneity	0.02	.05				–0.01	.08				–0.11	.10			
Functional heterogeneity	0.12	.08				0.01	.09				0.17	.17			
Participative leadership	0.48***	.06				0.01	.11				0.35***	.13			
Directive leadership	0.43***	.07				0.33**	.12				0.01	.14			
Step 3: Interactions			.10	6.42*	11.01***			.09	7.74**	6.97***			.12	7.81***	6.04***
Constant	3.93[a]	.20				4.13[a]	.35				4.10[a]	.43			
Team size	0.06	.01				0.39**	.01				0.29*	.01			
Gender heterogeneity	0.05	.09				–0.29*	.16				–0.17	.18			
Age heterogeneity	–0.16	.01				0.28	.01				–0.18	.02			
Tenure heterogeneity	0.09	.01				–0.34	.02				0.17	.02			
Educational heterogeneity	0.06	.01				–0.05	.09				–0.16	.11			
Functional heterogeneity	0.18	.07				0.10	.10				0.56**	.27			
Participative leadership	0.59**	.07				0.19	.12				0.39**	.14			
Directive leadership	0.57**	.07				0.44***	.12				0.13	.15			

Functional Heterogeneity × Participative Leadership	0.49***	.15		–0.38*	.27			0.80***	.37				
Functional Heterogeneity × Directive Leadership	–0.51**	.18		0.67**	.30			–0.02	.33				
Step 4: Mediator						.06	4.07*	6.55***			.09	16.03***	7.73***
Constant				3.91[a]	.76			1.03*	.87				
Team size				0.40**	.01			0.27*	.01				
Gender heterogeneity				–0.28*	.15			–0.19*	.17				
Age heterogeneity				0.25	.01			–0.12	.02				
Tenure heterogeneity				–0.32	.02			0.13	.02				
Educational heterogeneity				–0.06	.09			–0.14	.11				
Functional heterogeneity				0.17	.12			0.43**	.30				
Participative leadership				0.21	.14			0.15	.16				
Directive leadership				0.71**	.15			–0.08	.16				
Functional Heterogeneity × Participative Leadership				–0.52***	.29			0.59*	.36				
Functional Heterogeneity × Directive Leadership				0.75**	.32			0.05	.31				
Team reflection				–0.14	.17			0.41***	.20				
Total R^2			.52			.43				.47			
Adjusted R^2			.47			.37				.41			

a. Unstandardized coefficient.
*$p < .05$
**$p < .01$
***$p < .001$

Figure 2
Interactive Effect of Leadership Style and Team Heterogeneity on Team Reflection





As shown in Table 2, regarding the prediction of team in-role performance, in contrast to the hypothesis, team reflection did not contribute to the explained variance in it. However, as predicted, team reflection predicted 9% of the variance in team innovation ($F = 7.73$, $p < .001$).

Finally, to test the mediating role of team reflection (Hypothesis 4), a complete mediation can be demonstrated only by showing the following:

1. The antecedents are related to the consequence: Support for this argument is provided by the results of the hierarchical regression analyses presented in Table 2, in the columns labeled "Team In-Role Performance" and "Team Innovation." The antecedents of the interactive effects of functional heterogeneity and leadership style significantly predicted 9% of the variance in team in-role performance ($F = 6.97$, $p < .001$) and 12% of the variance in team innovation ($F = 6.04$, $p < .001$).
2. The antecedents are related to the mediator: Support for this argument was provided by examining and supporting Hypotheses 1-2.
3. The mediator is related to the consequence: Support for this argument was provided only for team innovation (Hypothesis 4) and not for team in-role performance.
4. The relation between the antecedent and the consequence is eliminated when the mediator is controlled (Baron & Kenny, 1986). The fourth condition, for examining full mediation, was tested only for the mediating role of team reflection between the interactive effect of functional heterogeneity and of leadership style and team innovation, and not for the interactive effect of functional heterogeneity and leadership style and team in-role performance, because, as shown above, Condition 2 was not confirmed for team in-role performance.

To confirm Condition 4, I conducted a hierarchical regression analysis to control for team reflection. Control variables were entered in the first step. Team reflection was entered in Step 2. The main-effect terms were entered in Step 3, and the second-order interactive-effect term was entered in Step 4. The results of the hierarchical regression analysis are presented in Table 3. As shown in Table 3, the mediator (team reflection) remained significant ($\beta = .24$, $p < .01$), whereas none of the main terms and interactive terms of functional heterogeneity and leadership style were significant. The results suggest that team reflection fully mediated the effect on team innovation of the interaction of functional heterogeneity and participative leadership (Hypothesis 4a).

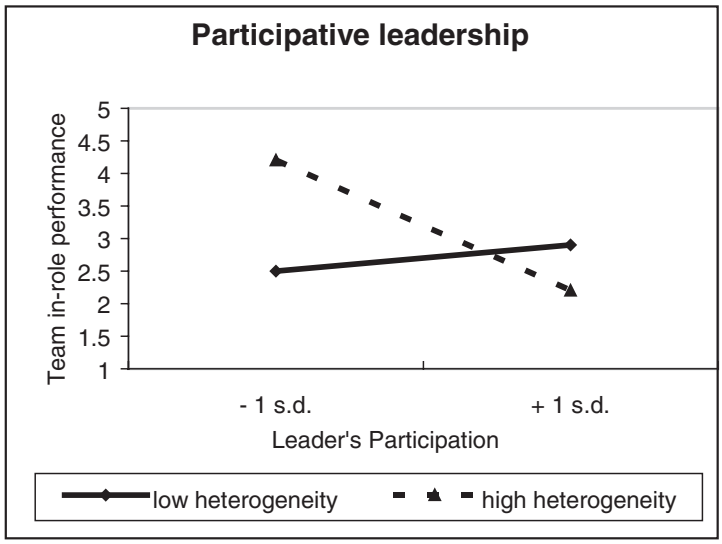
Finally, although not directly hypothesized, it is interesting to note that the results demonstrated a negative interaction effect between functional heterogeneity and participative leadership on team in-role performance ($\beta = -.38$, $p < .05$; partial $\eta^2 = .084$) and a positive interaction effect between functional heterogeneity and directive leadership on team in-role performance ($\beta = .67$, $p < .01$; partial $\eta^2 = .147$) (Table 2, in the column labeled "Team In-Role Performance"). Specifically, regarding participative leadership, analysis of the simple effects revealed that when functional heterogeneity was high, team in-role performance was significantly lower with superior's high participation than low ($b = -.39$, $t = -3.60$, $p < .01$). No difference in team in-role performance was found between superior's high and low participation under the condition of low functional heterogeneity ($b = -.12$, $p > .05$) (see Figure 3). By contrast, regarding directive leadership, when functional heterogeneity was high, team in-role performance was higher under superior's high directiveness than low ($b = .43$, $t = 4.57$, $p <$

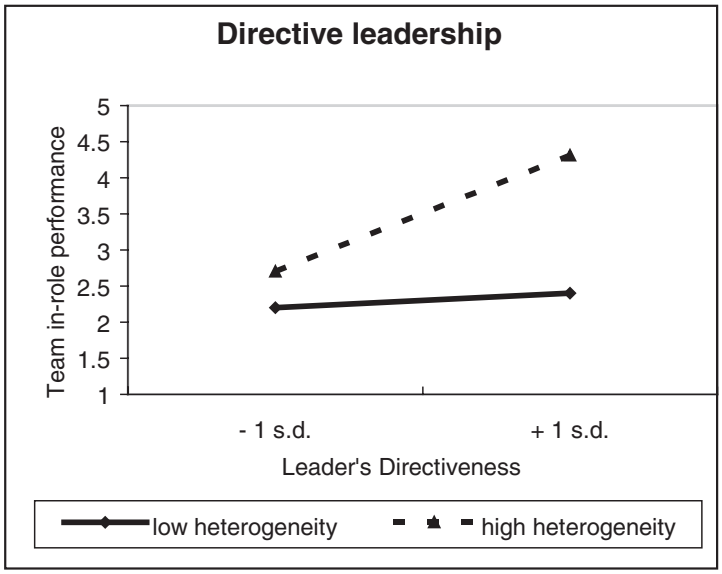
Table 3
Results of Hierarchical Regression Analyses for Predicting Team Reflection as a Mediator of Team Innovation

	Team Innovation				
Step Variables	β	*SE*	ΔR^2	δF	*F*
Step 1: Control variable			.18	4.27**	4.27***
Constant	4.38[a]	.46			
Team size	0.40**	.01			
Gender heterogeneity	–0.278*	.18			
Age heterogeneity	–0.23	.01			
Tenure heterogeneity	0.29	.02			
Educational heterogeneity	0.23*	.10			
Step 2: Mediating variable			.12	35.35***	10.56***
Constant	0.81[a]	.73			
Team size	0.32	.01			
Gender heterogeneity	–0.27*	.16			
Age heterogeneity	0.21	.01			
Tenure heterogeneity	–0.23	.02			
Educational heterogeneity	–0.23*	.09			
Team reflection	0.24**	.13			
Step 3: Main effects			.05	2.33	8.08***
Constant	0.58[a]	.86			
Team size	0.35*	.01			
Gender heterogeneity	–0.32*	.17			
Age heterogeneity	0.03	.01			
Tenure heterogeneity	–0.12	.02			
Educational heterogeneity	–0.18	.09			
Team reflection	0.22*	.17			
Functional heterogeneity	0.17	.15			
Participative leadership	0.07	.13			
Directive leadership	0.13	.14			
Step 4: Interactions			.06	4.09*	7.74***
Constant	0.87[a]	.86			
Team size	0.33	.01			
Gender heterogeneity	–0.28*	.17			
Age heterogeneity	0.01	.01			
Tenure heterogeneity	–0.02	.02			
Educational heterogeneity	–0.21*	.10			
Team reflection	0.22*	.18			
Functional heterogeneity	0.05	.21			
Participative leadership	0.09	.16			
Directive leadership	0.21	.16			
Functional Heterogeneity × Participative Leadership	0.13	.31			
Functional Heterogeneity × Directive Leadership	–0.17	.33			
Total R^2			.41		
Adjusted R^2			.35		

a. Unstandardized coefficient.
*$p < .05$
**$p < .01$
***$p < .001$

Figure 3
Interactive Effect of Leadership Style and Team Heterogeneity on Team In-Role Performance





.05); when functional heterogeneity was low, no difference in team in-role performance was found between superior's high and low directiveness ($b = -.02$, $p > .05$) (see Figure 3).

Discussion

Implementing functionally heterogeneous teams may be seen as a vital strategy in response to the challenges of volatile environments, required to develop products and services quickly and to respond promptly and personally to customers (Guzzo, 1996). The study reported in this article indicates that translating functional heterogeneity into beneficial outputs is more complex than was thought. The present model suggests that leadership style represents an intervening construct that enhances the occurrence of constructive team processes, which in turn promote team outcomes. However, the present results highlighted the distinctive moderating effects of participative and directive leadership styles on the relationship between team heterogeneity and team process of reflection, hence on team in-role performance and team innovation. Yet, rather than depicting these styles as mutually exclusive, the present study proposes that each promotes a distinct, but potentially complementary approach to managing functional heterogeneity, depending on the desired team outcome. This study offers a basis for ongoing conceptual development, by helping researchers and practitioners to move from an either/or to a both/and approach to thinking and working (Lewis et al., 2002), thus augmenting our knowledge in several ways in the realm of team theory.

First, the present results indicated the intervening impact of leadership style on the relationship between a team's functional heterogeneity and team reflection. Regarding the role of the participative superior, the present results showed, as predicted, that for highly functional heterogeneous teams, participative leadership was positively associated with the process of team reflection. These results suggest that one important role for the participative leader in heterogeneous teams is to help team members translate the advantages of heterogeneity, such as the variety of professional backgrounds, knowledge, skills, and abilities, into significant processes of questioning, reviewing, and exploring (West, 1996, 2002). The present results are consistent with current literature, which implies that participation might facilitate and foster the process of team reflection through cognitive mechanisms (e.g., Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995; Durham et al., 1997). These scholars suggest that participation, which opens all communication channels, enables team members to discover information relevant to their task and to clarify ambiguous points (Latham, Winters, & Locke, 1994). Such acts might serve as prerequisites for the process of team reflection (De Dreu & West, 2001).

However, the observed interactive effect of the directive leader on the relationship between functional heterogeneity and team reflection is a particularly critical finding. It showed that the impact of directive leadership was in promoting team reflection under the condition of low functional heterogeneity; no such impact was found under the condition of high functional heterogeneity. The conclusion to be drawn is that where the team is functionally heterogeneous, the potential for team reflection already exists and the facilitating practices of the participative leader are sufficient to actualize it. But where the team is functionally homogeneous, namely, team members are more similar in their professional backgrounds, knowledge,

skills, and abilities, there might be strong pressures for conformity, which might hamper the team's readiness for reflection (West, 2002). To encourage a significant process of team reflection, the superior might thus take a more directive approach. By advocating a position, and by voicing disagreement (Cruz, Henningsen, & Smith, 1999; Peterson, 1997), this superior might encourage team members to criticize, question, and debate, thereby promoting the team's process of reflection.

Second, also as predicted, for team innovation, participative leadership in functionally heterogeneous teams was positively associated with team reflection, which in turn fostered team innovation. The present findings suggest that the process of team reflection serves as a vehicle through which the interaction of participative leadership style and functional heterogeneity enhances team innovation. As Dougherty (1996) explained, collaborative structures and problem-solving processes enable people throughout the organization to be involved in selecting, defining, and refining innovations across functions, products lines, and divisions.

However, regarding team in-role performance, team reflection did not mediate the interactive effects on it of functional heterogeneity and participative leadership. Overall, this finding might suggest that type of task may be critical in determining the need for team reflection. Team reflection may be important for more complex tasks, such as innovative acts, but redundant for routine tasks.

Still, the results demonstrated an inhibiting effect of participative leadership on the relationship of team functional heterogeneity and team in-role performance. Specifically, it was found that participative leadership lowered team in-role performance under the condition of high functional heterogeneity, whereas no impact was found under the condition of low functional heterogeneity. These results augment those of other research (e.g., Cruz et al., 1999; Olson et al., 1995) indicating that participative leadership does not consistently foster team outputs, but it might be considered in a contingent perspective (Sagie, 1997). This suggests that in the management of functionally heterogeneous teams, the relationship between participative leadership and team outputs may vary, depending on the selected team output. This paradoxical pattern exposes the possible need for trade-offs. Team superiors often demand both innovation and in-role performance, but certain activities may foster one and impede the other (Dougherty, 1996; Lewis et al., 2002; Tierney & Farmer, 2002).

Finally, the present study did not support the mediating role of team reflection in the relationship between the interactive effects of functional heterogeneity and directive leadership and team in-role performance and team innovation. However, the results demonstrated the moderating role of directive leadership on the relationship between team functional heterogeneity and team in-role performance. Although this is the first study that examined the role of the superior in functionally heterogeneous teams, these results are consistent with previous theory and research, which indicated that teams led by highly directive superiors were generally more productive than teams with superiors who exercised low directiveness (e.g., Fiedler & House, 1988; Sagie, 1996). These scholars argued that high directiveness can help encourage team members to adopt challenging goals and to achieve high rates of attained goals (Cropanzano, James, & Citera, 1993; Fiedler & House, 1988). Moreover, by serving as the connecting chain for communication, directive superiors might decrease mutual interactions among functionally heterogeneous team members and so decrease the potential for conflict, which harms team in-role performance.

To conclude, the results of the present study buttress the argument by Lawrence (1997) and by Jackson et al. (1995) that organizational demography studies have overemphasized a direct link between demographic characteristics and outcomes, without adequately describing intervening psychological and social constructs. Moreover, the present findings indicate that functional heterogeneity in itself does neither contribute to the process of reflection nor to team in-role performance and team innovation. Leadership style might serve as a catalyst or as a neutralizer, which might lead to different, sometimes productive and sometimes counterproductive, outputs.

Integrating the present results highlighted the potent determinant role of leadership style on the outcomes of functionally heterogeneous teams. By examining participative and directive leadership as distinct styles, the present study clarified the unique contribution of each style to such teams. These results suggest that participative and directive styles might be more complementary than contradictory (Sagie, 1997). Moreover, the advantages of one style may be the disadvantages of the other. Participative leadership is certainly critical for the ability of a functionally heterogeneous team to turn new ideas and individually held knowledge into innovative procedures, services, and products, through its impact on the process of team reflection. Yet a key element of successful leadership for team in-role performance is the superior's clear vision and direct instructions to the functionally heterogeneous team.

Limitations and Suggestions for Future Research

Although these findings are encouraging for team research, the present study was limited by its design. First, the data were largely self-reported, hence subject to bias. This aspect of the study does not differ from previous work (Ancona & Caldwell, 1992; Lovelace et al., 2001). Note that recent research suggests that self-reported data are not as limited as was previously believed and that people often accurately perceive their social environment (Alper, Tjosvold, & Law, 1998). Moreover, regarding leadership style, Yukl (1994) suggested that in contrast to most research, which centered on leaders' perceptions in their description of the behaviors that they themselves used, the study of subordinates' perceptions of the leader's behavior may be most useful in examining linkages between organizational variables and leadership styles. In addition, in the present study, the likelihood of common method variance was low because the criterion variables (team in-role performance and team innovation) were obtained from different sources (practice managers) (Podsakoff & Organ, 1986). However, I do not have data to show that these perceptual measures of team performance are predictors of "objective" measures of performance and innovation. Further research should use other sources for evaluating team performance (Lovelace et al., 2001; Oldham & Cummings, 1996).

A second limitation involves the study's ability to predict causal relationships. Because the data were cross-sectional, there might have been associations between the variables in the study, but I cannot conclude that they were causal. Many of the relationships were probably reciprocally causal over time, for example, that between team innovation and team reflection. Nevertheless, as my starting point was a theoretical framework, experimentally examined in previous studies, the causal inferences do seem the most logical. Future research in more controlled settings (but ideally, with real, interacting teams) must be done before causal inferences

regarding the relationships observed in the present study can be made with more certainty (Lovelace et al., 2001).

A third limitation pertains to the uniqueness of the sampled organizations, namely, health care organizations. Although theory cuts across organizational types, the question arises as to whether functional health care teams are sufficiently similar to other functional teams or if they are so distinct as to require different ways of viewing and measuring the team's phenomena. Two salient aspects of health care teams have been identified previously that make them interesting for cross-team comparisons (Carroll & Edmondson, 2002; Tucker & Edmondson, 2002): They rely on knowledge workers, and they involve complex interdependent relationships across various professional groups as well as across organizations (e.g., clinic to hospital to rehabilitation center to home health agency). All in all, this might imply that results from well-executed research with health care teams should be applicable to teams comprising other types of workers who share these characteristics. Nevertheless, it is critical to assess the generalizability of the present findings to other types of organizations (Tierney, Farmer, & Graen, 2002). Moreover, the present sample size limited the opportunity to include additional important control variables to avoid the problem of the power of the statistical tests. Further research should follow Stevens's (1996) recommendation indicating that 15 participants per predictor are needed for a reliable regression equation in social sciences. Finally, although team reflection proved a significant process variable among heterogeneous teams (West, 2002), given the obvious multidimensionality of team process, the selection of a specific variable does not fully capture the potential complexity of the relationship of functional heterogeneity and team processes with team outcomes. Further studies should examine the interactive impact of leadership style on other process variables, such as internal and external communication, in an attempt to extend our understanding of how to manage functionally heterogeneous teams in order to use their benefits.

Managerial Implications

Functionally heterogeneous teams have become a tool for improving organizational effectiveness (Olson et al., 1995). However, they have not always resulted in the outcomes they were designed to produce: team in-role performance and team innovation. The results of the present study and the suggested model may help managers identify some critical factors (leadership style and the process of team reflection) needed to assist functionally heterogeneous teams to translate the benefits of heterogeneity into significant achievements. The results provide important evidence that leadership style matters. Meeting urgent demands for team innovation and in-role performance requires a more flexible and elaborate repertoire of activities (Lewis et al., 2002; Quinn, 1988). It is suggested that managers combine participative and directive behaviors to enhance team outcomes. This both/and approach responds to the recent call (e.g., Lewis et al., 2002; Sagie et al., 2002) to reconsider the sweeping recommendation by authors (e.g., Muczyk & Reimann, 1989; West, 2002) to prefer the participative to the directive leadership style.

The findings also call on managers to invest in developing constructive work processes rather that focusing only on the bottom line. The key point is that by appropriate superior's

behaviors, teams can develop proper processes for improving their outcomes. The results imply that in functionally heterogeneous teams, heterogeneity will translate into a constructive process of team reflection via participative leadership, but the findings of the present study suggest that homogeneous teams also have the potential to develop a process of team reflection under an appropriate leadership style, that is, directive leadership. It is proposed that in highly heterogeneous teams, the differences in opinions and perspectives already exist, so what is needed is a facilitative superior who may create the proper atmosphere for team members to participate and share their heterogeneity, factors crucial for the process of team reflection. However, in homogeneous teams, this heterogeneity typically does not exist, so the superior must take a more active role in stimulating team members to promote reflection by providing them with a framework for decision making and establishing clear rules for behavior.

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