Journal of Management

The Effects of Team Diversity on Team Outcomes: A Meta-Analytic Review of Team Demography

Sujin K. Horwitz and Irwin B. Horwitz

The online version of this article can be found at:

Published by:

$SAGE

http://www.sagepublications.com

On behalf of:

S·M·A
SOUTHERN
MANAGEMENT
ASSOCIATION

Southern Management Association

Additional services and information for *Journal of Management* can be found at:

Email Alerts: http://jom.sagepub.com/cgi/alerts

Subscriptions: http://jom.sagepub.com/subscriptions

Reprints: http://www.sagepub.com/journalsReprints.nav

Permissions: http://www.sagepub.com/journalsPermissions.nav

Citations http://jom.sagepub.com/cgi/content/refs/33/6/987

The Effects of Team Diversity on Team Outcomes: A Meta-Analytic Review of Team Demography

Sujin K. Horwitz*

*Department of Management and Marketing, Cameron School of Business,
University of St. Thomas, Houston, TX 77006*

Irwin B. Horwitz

Management, Policy, and Community Health, University of Texas, School of Public Health, Houston, TX 77030

Over the past few decades, a great deal of research has been conducted to examine the complex relationship between team diversity and team outcomes. However, the impact of team diversity on team outcomes and moderating variables potentially affecting this relationship are still not fully answered with mixed findings in the literature. These research issues were, therefore, addressed by quantitatively reviewing extant work and provided estimates of the relationship between team diversity and team outcomes. In particular, the effects of task-related and bio-demographic diversity at the group-level were meta-analyzed to test the hypothesis of synergistic performance resulting from diverse employee teams. Support was found for the positive impact of task-related diversity on team performance although bio-demographic diversity was not significantly related to team performance. Similarly, no discernible effect of team diversity was found on social integration. The implications of the review for future research and practices are also discussed.

Keywords: team diversity; group diversity; team performance; meta-analysis

987

Introduction

As the U.S. workforce is becoming more diverse with the increasing globalization and fierce market competition, companies are using work teams consisting of employees with diverse backgrounds, knowledge, and expertise to augment their competitive advantage by improving their internal operations. Although in theory, creating teams with diverse talents seems to be an effective human resources strategy (Cox & Blake, 1991; Devine, Clayton, Philips, Dunford, & Melner, 1999; Easely, 2001), in practice, the use of diverse teams creates unique challenges and often results in suboptimal performance. Although team diversity can potentially create a positive organizational synergy, the same idiosyncratic expertise and experience that leads to advantages can also engender significant difficulties resulting from coordination, tension, and intra/intergroup conflict (Jackson, May, & Whitney, 1995; Jehn, Chatwick, & Thatcher, 1997; Jehn, Northcraft, & Neale, 1999).

Indeed, diversity is often portrayed as a "double-edged sword" in contemporary organizational theory. At one end of the spectrum, proponents of team diversity stress positive effects of member heterogeneity on team outcomes whereas others counter that many irreconcilable divisions among heterogeneous members lead to dysfunctional team interaction and suboptimal performance. In the realm of managerial research, these competing assessments of team diversity have also been manifested with mixed empirical findings, hence perpetuating a lack of consensus on how members' compositional variables influence team processes and outcomes. Considering the conflicting findings in the current team literature, it is not surprising that some contend that there are no consistent main effects of team diversity on organizational performance (Williams & O'Reilly, 1998).

Although teams are routinely assembled from individuals with varying degrees of demographic and cognitive abilities, it is unclear whether such heterogeneous composition leads to groups which outperform homogeneous teams. In particular, the direction and magnitude of effects of team diversity on team outcomes have been an important question that is still not fully understood. We, therefore, attempt to assess the use of team diversity by quantitatively reviewing empirical studies.

This study also serves as methodological and conceptual augmentation of previous meta-analyses on team diversity. First, the focal point of our study is the impact of team diversity on group-level outcomes as manifested in team performance and social integration. Consequently, the level of the analysis was strictly maintained at the group level, which is a departure from previous meta-analyses. In doing so, top management team (TMT) studies examining firm-level performance (e.g., return on investment or equity) were excluded as these types of archival financial data rely on long-term measures as compared to the intermediate effects of shared group outcomes. This exclusion of studies at the firm-level analysis was deemed necessary as combining correlations from different levels potentially confound results (Gully, Joshi, Incalcaterra, & Beaubien, 2002; Klein, Dansereau, & Hall, 1994). By preserving the level of analysis, we believe that we were able to more accurately capture the constructs residing in collective-level group perceptions than previous studies. In addition, we refined team outcome variables by subdividing them into three strategic domains often associated with workforce diversity: the quality of performance assessing the subjective and narrative aspect of team performance; the quantity of performance measuring

the objective nature of team performance; and social integration delving into the sociopsychological aspects of team outcomes. Although previous studies have combined varying constructs of team outcomes into one broad category in measuring team outcomes, such aggregation erroneously assumes that different outcome categories are equivalent with similar (if not equal) distributions, and hence potentially confounds results. Accordingly, the primary aim of our study is to augment and expand on existing models of team diversity both theoretically and methodologically to provide greater precision in estimates of the relationships between team diversity and team outcomes. In the section below, we review the variables of interest and elucidate hypotheses derived from an analysis of the literature.

Literature Review

Reflecting the surge of interest in teamwork in contemporary organizations, a plethora of theories and models investigating teamwork has been promulgated. Sociotechnical theory (Kolodny & Kiggundu, 1980; Trist & Bamforth, 1951), group process and productivity theory (Steiner, 1972), input–process–output models (Gladstein, 1984; Hackman & Morris, 1975; McGrath, 1984), and antecedent–outcome paradigms (Campion, Papper, & Medsker, 1996; Shea & Guzzo, 1987) are a few notable paradigms of team/group work that have shaped the team literature. The constructs and hypotheses detailed in the current study, however, are mainly derived from two competing perspectives often cited in the team literature, namely, the cognitive diversity hypothesis and the similarity–attraction paradigm, as they provide the most insights into team diversity variables and their potential effects on team outcomes (Miller, Burke, & Glick, 1998). The next section illuminates the major tenets of the cognitive diversity hypothesis and the counterarguments posited by similarity–attraction theory.

Two Competing Views of Team Diversity: Heterogeneity or Homogeneity, Which is Better?

Cognitive diversity in the team context is defined as the degree to which team members differ in terms of expertise, experiences, and perspectives (Miller et al., 1998). Using the theoretical arguments of the cognitive diversity hypothesis, several researchers have argued that team diversity has a positive impact on performance because of unique cognitive attributes that members bring to the team (Cox & Blake, 1991; Hambrick, Cho, & Chen, 1996). Ultimately, cognitive diversity among heterogeneous members promotes creativity, innovation, and problem solving, and thus results in superior performance relative to cognitively homogeneous teams. However, there have been counterarguments against the effects of team diversity as postulated by the cognitive diversity perspective. Most notably, researchers taking either the similarity–attraction paradigm or the social identity theory in examining teamwork often conclude that member heterogeneity has an adverse impact on team outcomes (Byrne, 1971; Byrne, Clore, & Worchel, 1966; Tajfel, & Turner, 1986; Tziner, 1985). According to proponents of such perspectives, varying member characteristics such as age, ethnicity, and expertise can be easily categorized by individual members and are negatively associated with team outcomes (Jackson et al., 1995; Milliken & Martins, 1996). Particularly, the similarity–attraction perspective has

argued that given the opportunity to select another member to interact within a group, individuals have a proclivity to select persons who are similar to themselves (Byrne et al., 1966; Lincoln & Miller, 1979). Furthermore, homogeneous teams work well together because of their shared characteristics, thereby increasing team cohesion and performance.

Rather than subscribing to a single perspective, we reflect on the propositions of both perspectives and further integrate them to form a basis for understanding the complex nature of team diversity. In investigating the relationship between team diversity and performance, much of the theoretical underpinning in this article is grounded in the cognitive diversity hypothesis while balancing this with the counterarguments presented by the similarity–attraction paradigm in examining the potential impact of team diversity on social integration. We, therefore, conceptualize various characteristics of team diversity as a parsimonious categorization in investigating its potential effects on team outcomes.

Dichotomization of Team Diversity: Task-related Versus Bio-Demographic Diversity

As scholars developed constructs in their study of team diversity, a variety of classifications emerged. For example, in a narrative review by Jackson et al. (1995), the researchers distinguished between readily detectable and less observable team diversity, in which the former represented bio-demographic markers, and the latter indicated ability, cognitive resources, and personal characteristics. Pelled (1996) similarly expanded the concept of team diversity by categorizing diversity into two major themes: levels of visibility and job-relatedness. In her model, *job-relatedness* was operationally defined as the extent to which the attribute reflects experience, skills, or perspectives pertinent to accomplishing tasks. In contrast, Harrison, Price, and Bell (1998) examined the impact of surface level (demographic) and deep level (attitudinal) diversity on social integration in teams. The researchers defined "surface-level" diversity as differences among team members in immediately observable biological characteristics, such as age, gender, and race/ethnicity. "Deep-level diversity," on the other hand, was conceptualized as differences among members' attitudes, beliefs, and values that were not readily detectable but over time learned through member interactions. Milliken and Martins (1996) similarly categorized diversity into two broad types, "observable individual differences" and "underlying attributes." In this study, team diversity was also dichotomized into two categories to consolidate the distinctions drawn in the team literature: bio-demographic diversity and task-related diversity. Bio-demographic diversity represents innate member characteristics that are immediately observable and categorized (e.g., age, gender, and race/ethnicity) whereas task-related diversity is acquired individual attributes (e.g., functional expertise, education, and organizational tenure) that have been postulated to be more germane to accomplishing tasks than bio-demographic diversity.

Multidimensions of Team Performance

Team performance is a multidimensional construct that encompasses several outcome measures such as quantitative production, qualitative team outcomes, and team cohesion. Dunphy and Bryant (1996) have noted that team research tends to focus on measures of

firms' operational and quantitative objectives as team outcomes such as volume of sales/ outputs and returns on equity. There still remains a paucity of research linking team performance to other strategic and qualitative objectives, although they have increasingly garnered more attention in recent team investigations. Therefore, our study examined three primary domains of team outcomes—quality, quantity, and social integration—to assess the overall operational, strategic, and psychological outcomes of team diversity.

Quality of Team Performance: Cox and Blake's Diversity Outcomes

In their review on the benefits of workforce diversity, Cox and Blake (1991) enumerated several competitive advantages of using diverse employees in organizations. The researchers contend that having diverse employees can increase organizational flexibility, creativity, and problem solving, improve resource acquisition, enhance marketing advantages, and reduce costs. Despite the popularity of diversity in team structures, to date there have been few empirical reviews that have systematically validated the competitive advantages stemming from team diversity proposed by Cox and Blake. Our study, therefore, uses the dimensions of decision making, creativity/innovation, and problem solving, consistent with Cox and Blake's conceptualization, as performance-related measures for assessing outcome quality. The section below addresses the three outcome variables of performance quality adopted from Cox and Blake's diversity paradigm with a summary of the relevant literature.

Decision making. Work teams often seek compliance and consensus in decision-making processes. Although compliance and consensus are often necessary for teams to carry out goals, an overemphasis on consensus-seeking behavior can also result in suboptimal decision making. Perhaps, the most well-known example of this is "groupthink" which can arise when groups place too much importance on attaining consensus and fail to debate important alternatives for fear of damaging group cohesion (Janis, 1972). Team diversity can often circumvent such myopia by bringing in differing perspectives and promoting healthy debates and dissents (Williams & O'Reilly, 1998). Indeed, several researchers have investigated the impact of team diversity on the quality and process of decision making in teams and found it to be quite positive. Dooley and Fryxell (1999), for example, revealed that member disagreement was associated with higher decision quality among strategic decision-making teams in U.S. hospitals. Peterson, Owens, Tetlock, Fan, and Martorana (1998) also found that successful TMTs encouraged debates and discussions as a way to stimulate decision-making processes. Likewise, Simons, Pelled, and Smith (1999) found that greater job-related diversity, such as education level and company tenure, positively influenced the quality of debate on decision making and, thus, affected TMT performance. In addition, some scholars have argued that having teams comprised of diverse members regarding age and experience creates a wider range of perspectives and experiences that improves team decision quality (Cox & Blake, 1991; Pelled, 1996).

However, investigators have also demonstrated that team heterogeneity can have negative effects on strategic decision-making (Cho, Hambrick, & Chen, 1994; Priem, 1990). Although member heterogeneity improves decision quality, widely varying perspectives and opinions

among members can also make reaching decision consensus difficult and time-consuming (Nemeth & Staw, 1989). This can be particularly deleterious in situations where quick decision making is essential. Souder (1987) found that functionally diverse teams had difficulties reaching agreements on integrated programs of action. As Amason and Schweiger (1994) noted, although a certain amount of diversity is necessary for improving the quality of strategic decision making, it can also increase the likelihood of person-related conflict that may impede cooperation among team members. Therefore, conflict arising from member heterogeneity has been found to have both beneficial and harmful effects on team decision making.

Creativity and innovation. Organizations are placing a greater emphasis on promoting creativity and innovation as a way to compete in turbulent markets and adapt to environmental uncertainty. In general, the consensus of organizational research has found that member heterogeneity often acts as a conduit for introducing creativity and innovation in teamwork (Albrecht & Hall, 1991; Payne, 1990). In an early experiment by Triandis, Hall, and Ewen (1965), problem-solving creativity in dyad teams composed of individuals with different attitudes and perspectives were judged to be higher than those with similar attitudes. Richard, McMillan, Chadwick, and Dwyer (2003) discovered that firm-level outcomes were influenced by the interaction of racial diversity and growth strategy; while similarly, racial diversity was demonstrated to enhance performance for banks pursuing an innovation strategy (Richard et al., 2003).

Although team member diversity has been shown to promote creativity and innovation, not all studies concur, and in some cases negative effects have been found. For example, when each member is more knowledgeable in one area relative to other members, creativity may be hindered (Ochse, 1990). Maznevski (1994) showed that when specialized language and jargon are used by certain team members, it may impede the communication, thereby making a full exchange of knowledge difficult. In another study, although team member heterogeneity promoted group brainstorming of creative ideas, heterogeneous teams did not outperform homogeneous groups (Diehl, 1992), As the findings regarding the effect of team diversity on creativity and innovation have been inconclusive, they were included as the measures of performance quality in this study to assess which effects might be strongest.

Problem solving. Some researchers have theorized that team member heterogeneity leads to more effective problem solving through widening group scanning abilities and alternative consideration relative to homogeneous teams (Cox & Blake, 1991; Eisenhardt & Schoonhoven, 1990; Keck, 1997). In particular, task-related diversity, such as dissimilarity in functional expertise and education, was found to improve team performance as it fostered a broader range of cognitive skills. Cohen and Levinthal (1990) contend that the absorptive capacity and problem-solving ability of individuals are likely to increase with variety in knowledge structures as reflected in diverse educational majors. Tjosvold (1988) found that open discussions of opposing views in marketing groups were associated with completing tasks, using resources more effectively, and delivering better services to customers. Carpenter and Fredrickson (2001) similarly reported that international experience and diverse educational background were positively related to firms' global strategic postures among TMTs.

Although positive effects of team diversity on problem-solving performance have been demonstrated, higher levels of variation in specific member characteristics have also been found to be negatively related to such outcomes. Dissimilarity in tenure, attitude, and experience, for example, may decrease interactions among members and, thus, negatively affect problem-solving processes (Tusi & O'Reilly, 1989). Furthermore, there is evidence that heterogeneous teams may experience more conflict and less trust leading to higher turnover, absenteeism, and dissatisfaction than homogeneous teams (Alder, 1991; Tsui, Egan, & O'Reilly, 1992; Zenger & Lawrence, 1989). Thus, the relationship of team member diversity and problem solving is complex and can potentially complicate team functioning and inhibit effective group problem solving.

Summary of the Review: Quality of Team Performance and Related Hypotheses

The literature review of the three outcome variables on the quality of team performance is marked by inconsistent and mixed results. Although there is a prevailing notion that team effectiveness can be greatly enhanced by diverse members as theorized by the cognitive diversity paradigm, firm conclusions cannot be drawn from the current literature. One possible reason for these inconsistencies is that there may be a variation of magnitude in the relationship between team diversity and team performance. As suggested by several researchers (Pelled et al., 1999; Webber & Donahue, 2001), different types of diversity may have varying impacts on team outcomes. In developing an innovative product, cognitive resources of members (i.e., functional expertise or industry experience) may matter more than members' innate demographic diversity (i.e., ethnicity or gender).

Grounded in the cognitive diversity perspective, we hypothesize that there is a positive relationship between member diversity and the quality of team performance.

> *Hypothesis 1-a:* There will be a positive relationship between task-related diversity and the quality of team performance.
> *Hypothesis 1-b:* There will be a positive relationship between bio-demographic diversity and the quality of team performance.

To explain the lack of the main effects of team diversity on performance, we further hypothesize that there are differing effects of team diversity on team performance in that task-related diversity has a stronger relationship with team performance than bio-demographic diversity.

> *Hypothesis 2:* The relationship between team diversity and team performance will be stronger for task-related diversity than bio-demographic diversity.

Quantity of Team Performance and Related Hypotheses

In the team literature, operational measures of team performance frequently include both quantitative and measurable outcomes, such as the amount of outputs produced and time to

complete a task (Cohen & Bailey, 1997; Drazin & Van de Ven, 1985). Research has indicated that there is a positive association between team diversity and these quantitative aspects of team performance. For example, Eisenhardt and Tabrizi (1995) demonstrated that functional diversity was associated with faster time-to-market for new product development efforts in the computer industry. Keller (2001) also observed that functional expertise had a positive indirect effect on both scheduling and budget performance of research and development teams. Reflecting the quantitative measures of performance used in the team literature, this study selected two measures to assess the quantitative aspects of team performance: (a) the number of ideas/outputs generated and (b) time to complete a team task.

> *Hypothesis 3-a:* There will be a positive relationship between task-related diversity and the quantity of team performance.
> *Hypothesis 3-b:* There will be a positive relationship between bio-demographic diversity and the quantity of team performance.

Social Integration in Teamwork and Related Hypotheses

Another salient goal of teamwork is to achieve a well-integrated team to effectively accomplish a task. Therefore, high levels of social integration have frequently been examined as an indicator of successful team establishment (Beeber & Schmitt, 1986; Gully, Devine, & Whitney, 1995; Smith et al., 1994). In small group research, several researchers posit that individual differences, often dissimilarity in demographic attributes, are negatively associated with social integration as these demographic markers are immediately identified and categorized by others, hence forming stereotypes among individuals. Jehn (1995, 1997), for example, classified intragroup conflict into two categories, affective (person-related) and substantive (task-related) conflict and further posited person-focused conflict is negatively related to group performance whereas task-related conflict tend to affect positively on group performance.

Several studies examining the effect of team diversity on social integration have indeed reported that it has a negative impact on teamwork. Pelled (1996), for example, observed that gender diversity resulted in intragroup conflict and lower performance ratings in work teams in electronics manufacturing facilities. Sessa (1993) also found that temporary teams in a hospital setting that varied in racial composition exhibited more conflicts than racially homogeneous ones. In a laboratory setting, Hinds, Carley, Krackhardt, and Wholey (2000) reported that undergraduate students whose members were racially dissimilar to themselves had the least proclivity for working in such teams. There is, however, some evidence contrary to these negative findings between team diversity and social integration. Smith et al. (1994), for example, did not find a direct relationship between team diversity and cohesion. Likewise, Jehn (1995) found neither individual nor group performance was negatively associated with relational conflict which stemmed from personal differences. More recently, Jehn et al. (1999) discovered that social category diversity (demographic member differences) increased member satisfaction and commitment contrary to their expectation.

To draw a more definitive conclusion on the relationship between team diversity and social integration, the team construct of social integration was examined as the proximal outcome of teamwork and further operationalized by two measures in this study: team member satisfaction and team cohesion (Goodman, Ravlin, & Schminke, 1987), with team member satisfaction reflecting the degree to which members of a team enjoy their working

relationships, whereas team cohesion refers to the extent to which team members attempt to remain intact to achieve team goals (Bettenhausen, 1991; Witteman, 1991). In doing so, we primarily used the theoretical rationales of the similarity–attraction paradigm and social-identity theory in formulating the hypotheses on the effects of team diversity on social integration because a large number of studies used these two perspectives as theoretical foundations for linking individual diversity and sociopsychological outcomes of teamwork.

> *Hypothesis 4:* There will be a negative relationship between team diversity and social integration among team members.

In addition, we further hypothesize that immediately observable demographic diversity has a stronger negative impact on social integration than task-related diversity.

> *Hypothesis 5:* The relationship between team diversity and social integration will be stronger for bio-demographic diversity than task-related diversity.

Theoretically Based Moderators

A critical issue to be addressed in our study is to identify and assess theoretically based, moderating variables that potentially influence the magnitude and direction of the relationships in question and further include them to expand the study. In doing so, we focused on four theoretical moderators (task complexity, team type, task interdependence, and team size) and three methodological moderators (study setting, criterion report type, and criterion measure type). The selection of the four theoretical moderators was guided by existing literature (Bowers, Pharmer, & Salas, 2000; Stewart, 2006; Webber & Donahue, 2001). When there was an absence of a relationship contrary to our hypotheses coupled with statistical ambiguity, theoretically driven moderators were tested to explore the inconclusive nature of the relationships among variables. Simultaneously, methodological differences in the included studies were also investigated to reduce variance in the results. It should also be pointed out that extant literature provided us with theoretical rationales on which to base hypotheses for the four theoretically derived moderators. No directional hypotheses were presented for the methodological moderators as they were tested in an exploratory manner in the presence of statistical heterogeneity among studies.

Task complexity. The impact of member diversity on team performance is likely to be affected by structural aspects of the task (Van de Ven & Ferry, 1980). For example, in accomplishing a highly complex and uncertain task, it is necessary for team members to pull together their diverse expertise to formulate strategies to deal with tasks under complex conditions. However, member diversity can be unnecessary or even counterproductive in dealing with simple, routine team tasks. Research indicates that the quality of discussions and debates which facilitate the successful accomplishment of complex tasks largely depends on members' cognitive diversity (Amason & Schweiger, 1994; Fiol, 1994; Jehn, 1995).

As can be inferred from past research, in highly complex and cognitive tasks, diverse expertise and functional backgrounds should theoretically be more beneficial than for routine, less specialized tasks. Indeed, Bowers et al. (2000) found a significant moderating effect of task complexity on the relationship between team diversity and performance. In a similar

vein, Stewart and Barrick (2000) found that task type moderated autonomy–performance relationships in teams. Attempts were, therefore, made in this study to code studies for differences in cognitive demands of team tasks.

> *Hypothesis 6:* Task complexity moderates the relationship between team diversity and team performance in that the relationship will be stronger for teams working on highly complex tasks than teams working on either low or medium complex tasks.

Team type. Organizational researchers have argued that team types can potentially moderate the effectiveness of teamwork (Cannon-Bower, Oser, & Flanagan, 1992; Cohen & Bailey, 1997). Among different typologies of team types in the current literature, Arrow and McGrath (1995) distinguished teams in terms of differences in their members, tasks, and tools. Likewise, Cohen and Bailey (1997) differentiated the team category into work teams, project teams, parallel teams, and TMTs. Existing research generally posits that although members of top management and project teams are more likely to be heterogeneous on task-related attributes (e.g., expertise and educational background) by the virtue of their highly specialized and often complex tasks, they are more likely to be homogeneous on bio-demographic attributes (e.g., age, race, and gender). In contrast to management and project teams, work teams tend to be heterogeneous in bio-demographic characteristics although being homogeneous regarding functional expertise and education level. Acknowledging potentially differential effects of team diversity as predicted in Hypothesis 2, the current study posits that project teams whose members are more likely to be heterogeneous in terms of task-related diversity have a stronger relationship with team performance than work teams.

> *Hypothesis 7:* Team type moderates the relationship between team diversity and team performance in that the relationship will be stronger for project teams than work teams.

Task interdependence. Task interdependence is defined as the degree to which completing tasks requires the interaction of team members (Shea & Guzzo, 1987; Stewart & Barrick, 2000). Several researchers have considered that the level of task interdependence is a contingency variable that either intensifies or mitigates the effects of other variables in teams (Burke et al., 2006; Duffy, Shaw, & Stark, 2000; Stewart & Barrick, 2000). When task interdependence is high, team members collectively work together to complete a task while sharing information and resources. In contrast, in a task requiring low interdependence, team members tend to operate more independently, thereby reducing the need for coordination and collaboration among members (Bass, 1980; Stewart, 2006). We postulate that the impact of team diversity on performance will be more pronounced under conditions in which a team task requires members to work interdependently and collaborate with others for accomplishment. Task interdependence was thus included as a theoretically derived moderator influencing the magnitude of the relationship between team diversity and team performance. Adopting the categorization of task interdependence often discussed in the literature, three primary types of task independence were coded in this study: (1) pooled interdependence—the lowest level of task interdependence; (2) sequential interdependence, which is frequently used in production or assembly lines; and (3) reciprocal/team interdependence (Saavedra, Earley, & Van Dyne, 1993; Thompson, 1967).

Hypothesis 8: Task interdependence moderates the relationship between team diversity and team performance in that the relationship will be stronger for teams working on highly interdependent tasks than teams working on either low or medium interdependent tasks.

Team size. Extant literature consistently suggests that team size affects team processes in a predictable manner. That is, although large teams can generate more outputs as additional members add resources and skills to teams, additional members also complicate the amount and nature of interaction and coordination, thereby decreasing satisfaction and cohesion among members (Gully et al., 1995; Magjuka & Baldwin, 1991). There seems to be dimin-ishing returns of team size particularly concerning member integration and team cohesive-ness. As team size increases, potency of team effectiveness can be mitigated by process loss and intragroup conflicts arising from additional members (Dennis & Valacich, 1994). Team size was thus examined as a potential moderator that particularly influences the relationship between team diversity and social integration.

Hypothesis 9: Team size moderates the relationship between team diversity and social integration in that the relationship will be stronger for large teams than small teams.

Methodological difference. Methodological differences in the included studies were also investigated to reduce variance in the results. Specifically, three methodological dif-ferences were coded and examined in our study: (a) study setting, (b) criterion report type, and (c) criterion measure type. Study setting was examined as a potential methodological moderator with the expectation that effects of team diversity on outcomes might be stronger in teams in real organizations where the stakes are higher as compared to student samples in laboratory settings. Dichotomized study setting categories were assigned to studies: (a) natural settings (i.e., real organizations) using intact teams performing real-life tasks and (b) laboratory settings, such as educational institutions, training centers, or mil-itary bases, using simulations, games, or artificially created tasks. Studies were also clas-sified into two categories based on who reported outcomes: self-reported assessment versus manager/rater-reported assessment with the expectation that there may be a ten-dency to inflate ratings on team outcomes in self-reported surveys relative to manager/rater-reported assessment of team outcomes. When performance measures were available for both supervisors and team members, the current study used supervisor rat-ings to reduce the likelihood of method bias. Finally, studies were examined with respect to how criteria were measured by dichotomizing them into subjective (e.g., self or rater survey assessment) and objective measures.

Method

Identification and Review of Studies

This investigation employed a meta-analytic technique to examine and integrate peer-reviewed articles on the topic of team diversity published between 1985 and 2006. This time

frame was selected because the area of team diversity grew into a central focus of the more general ongoing team research during this period. Articles for this review were identified through both computerized and manual searches of relevant databases and individual journals. The electronic databases included ABIinform, Expanded Academic Index, Business Source Complete, PsychARTICLES, and PsychInfo. Manual search of literature included several leading academic journals, such as *Administrative Science Quarterly*, *Journal of Applied Psychology*, *Journal of Academy of Management*, *Personnel Psychology*, *Group and Organization Studies/Management*, *Organizational Behavior and Human Decision Processes*, *Journal of Organizational Behavior*, *Journal of Management*, *International Journal of Conflict Management*, and *Small Group Research*. In keyword search, teams and work groups were treated as equivalent constructs in this review, as the majority of small group and team researchers have used the two terms interchangeably (Devine & Phillips, 2001; Guzzo, 1996; Ilgen, 1999). During the literature search process, the two terms were thus used synonymously in reference to a group of employees who interact to achieve organizational goals with some degree of interdependence.

The searches employed team (group) work, team (group) composition, team (group) diversity, team (group) heterogeneity, member characteristics, and team (group) performance, as the major keywords to narrow the vast amount of research done on teamwork. Keyword combinations and truncation were also used to broaden the literature base relevant to the topic. Initially, studies were included if they measured any of the constructs of interest in this study and provided sufficient statistical information to compute effect sizes. Three main criteria for inclusion were eventually established and followed to navigate through the vast number of studies conducted on team diversity: (1) correlational studies investigating the relationships between any of the team diversity variables and performance/social integration outcomes; (2) quantitative studies examining the effects of any of the moderating variables; and (3) studies that measured outcomes at the team level, which is fully explained in the ensuing section.

In sum, a total of 78 correlations from 35 peer-reviewed articles were included in this study. A coding form, as an information-gathering instrument, was developed for identifying pertinent information from studies. To assess the accuracy and reliability of coding, a second rater, who has a doctorate degree and considerable expertise in management coded a random sample of 20 studies included in the analysis. Discrepancies of the ratings were discussed and the raters eventually reached consensus on such issues.

Nonindependence. Multiple effect sizes from a single study violate the assumption of independence. Therefore, only one effect size per measure was extracted from each study unless they represented different subjects in this study (Gleser & Olkin, 1994). Researchers conventionally average effect sizes for a measure within a single study and this was the approach taken in the current study. For example, when multiple correlations were provided for the same subjects for the same measure, the mean correlation coefficient for the measure was calculated and used as a coefficient representing the relationship within that study.

Level of analysis. The level of analysis issue is crucial for research of organizational phenomenon, as organizations are nested in multiple levels (i.e., individuals, dyads, teams, and

departments), which often complicates a decision of the appropriate level of analysis. A number of researchers argue that theory should specify the level at which data are measured and analyzed for the construct in question (Chan, 1998; Morgeson & Hofmann, 1999; Rousseau, 1985). If an aggregation of one level of data to another is done, then there should be strong theoretical rationale as well as empirical justification for such aggregation (Van de Ven & Ferry, 1980). As the analysis used in this study was comprised of teams, investigations that measured outcomes at the team level were included, as were studies that collected data at the individual level which subsequently aggregated them to the team level. The aggregation of individual data to the team level is warranted, as the two team outcome variables, team performance and social integration, reside in collective perceptions of individual members. Team studies that reported data only at the firm level and several studies that used team-level predictor variables but had collected criterion variables at the firm level were excluded from this meta-analysis. For example, a study by Jackson and Joshi (2004) was dropped as it examined sales teams' performance by employing the company's archival data.

The level of analysis issue becomes more pronounced in the TMT literature. Largely relying on archival sources, a majority of the studies examining TMT gathered firm-level performance, such as ROE and ROI, to investigate the effects of TMT diversity. These types of archival financial data are inherently long-term oriented as compared to more intermediate nature of group outcomes, which was the focus of our study; therefore, TMT studies were excluded from our analysis. Several researchers further postulated that TMT heterogeneity may even have negative effects on firms' short-term efficiency because of a number of moderating and exogenous factors, such as the rate of change, turbulence, and rivalry within the industry (Certo, Lester, Dalton, & Dalton, 2006). Exclusion of TMT studies was a substantial deviation from previous meta-analyses (Bowers et al., 2000; Stewart, 2006; Webber & Donahue, 2001); however, we believed the exclusion of TMT studies employing firm-level archival data was necessary to maintain the level of analysis at the group level.

Meta-analytic technique and effect size. In this study, the primary effect size index was the correlation coefficient (*r*), as the majority of the studies on team diversity employed observational research rather than randomized experiments. To calculate effect sizes, statistical results from each study were transformed to an index of effect size, by employing Fisher's *r* to *z* transformation to minimize a potential bias to underestimate a population *r* (Fisher, 1970; Johnson & Eagly, 2000). Study effect sizes were also weighted by sample size to capitalize on the most reliably estimated study outcomes, generally those with large sample sizes (Hedges & Olkin, 1985; Snedecor & Cochran, 1980). Within the two statistical models used in the general meta-analytic approach, the current study employed a random-effects model, rather than a fixed-effects model, to provide a more conservative estimate of the relationships between team diversity and team outcomes. Although the results were computed under both models, results from the fixed-effects model were not discussed unless there were substantial differences in results between the two models. Finally, this meta-analysis used post hoc analyses to better understand the hypothesized relationships by using subgroup analyses. In doing so, a categorical model testing was conducted based on the 4 theoretically derived moderators and the 3 study characteristics. Following the Hedges and Olkin's approach, categorical models provide a between-classes effect, Q_B, which is analogous

<div align="center">

Table 1
Main Tests: Relationships Between Team Diversity
and Team Performance

</div>

Main Hypothesis	K	N	ρ	Var(ρ)	95% CI	Qw	df
Task-related diversity—Quality of team performance	15	1,209	.13 (.12)[a]	.002	.06↔.19 (.07↔.19)[a]	14.02	14
Task-related diversity—Quantity of team performance	9	704	.07 (.08)[a]	.001	.01↔.17 (.01↔.16)[a]	7.97	8
Bio-demographic diversity—Quality of team performance	14	1,093	−.006 (−.02)[a]	.005	−.09↔.08 (−.08↔.05)[a]	12.94	13
Bio-demographic diversity—Quantity of team performance	3	182	−.02 (−.02)[a]	.000	−.35↔.30 (−.35↔.30)[a]	0.04	2

Note: K = number of correlations; *N* = total sample size; ρ = estimated population parameter (weighted mean effect size); Var(ρ) = estimated variance of ρ; 95% CI = the upper and lower bound of the 95% confidence interval; *Qw* = homogeneity statistic; *df* = degree of freedom.
a. Figures in parenthesis are effect sizes and 95% CI calculated by employing the fixed-effects model. This study assumed the random-effects model. Therefore, the results from the fixed-effects model were not discussed unless there were substantial differences between the two models.

to a main effect in ANOVA, and a test of the homogeneity of the effect sizes within each class/subgroup. It should be noted that our initial coding included several more methodological moderators, such as predictor report type and nature of organization. However, if there were not enough studies in one of the components of a moderator, then it was dropped from further consideration.

<div align="center">

Results

</div>

Main and Moderator Analyses: Team Diversity and Team Performance

Table 1 presents results of the analyses testing the main hypotheses on the relationship between team diversity and team performance.

The first set of analyses examined the relationship between task-related diversity and the two categories of team performance, quality and quantity (Hypotheses 1-a and 3-a). The effect of task-related diversity on the quality of team performance was based on 15 independent effect sizes, and the mean weighted effect size was .13 (95% CI is .06-.19). Individual effect sizes ranged from −.10 to .39 and a significantly positive relationship between task-related diversity and the quality of team performance was found as hypothesized. Similarly, task-related diversity was positively related to the quantity of team performance based on the analysis of nine independent correlations (ρ = .07, 95% CI is .01-.17). Consistent with the expectations, a significant and positive impact of task-related diversity on team performance was demonstrated.

A total of 14 independent correlations were analyzed to examine the impact of bio-demographic diversity on the quality of team performance as proposed in Hypotheses 1-b.

Table 2
Moderator Tests: Relationships Between Bio-Demographic
Diversity and the Quality of Performance

Moderation Hypothesis	Q_B	df	K	N	ρ	95% CI	Qw
Task complexity	2.43	1	12	775			
High complexity		6	7	465	−.02	−.14↔.09	3.33
Medium complexity		4	5	310	.09	−.07↔.26	3.98
Team type	1.38	1	14	1,093			
Work teams		3	4	370	−.06	−.22↔.10	7.74
Project teams		9	10	723	.01	−.08↔.10	8.78
Criterion report type	7.49*	1	13	1,065			
Manager/rater-reported		2	3	135	−.05	−.13↔.03	1.38
Self-reported		9	10	930	.21	−.17↔.59	8.91
Criterion measure type	0.03	1	13	1,065			
Subjective measure		7	8	666	−.02	−.12↔.07	15.65
Objective measure		4	5	399	−.01	−.15↔.13	2.10
Study setting	1.55	1	14	1,093			
Organization		5	6	618	−.06	−.16↔.05	7.79
Laboratory		7	8	475	.04	−.07↔.15	7.82

Note: Q_B = between-class goodness-of-fit statistic K = number of correlations; N = total sample size; ρ = weighted mean effect size; 95% CI = the upper and lower bound of the 95% confidence interval; Qw = within-class goodness-of-fit statistic; df = degree of freedom.
*$p < .05$.

Contrary to our expectation, bio-demographic diversity exhibited virtually no relationship with the quality of team performance (ρ = −.006, 95% CI: −.09-.08). Likewise, bio-demographic diversity was not found to be related to the quantity of team performance based on the analysis of three independent correlations, thereby negating Hypothesis 3-b (ρ = −.02, 95% CI: −.35-.30). The relationship between the quantity of team performance and bio-demographic diversity is, however, an area in need of further investigation as these results are based on only three correlations. As shown in Table 1, the confidence intervals for the relationships between bio-demographic diversity and team performance were nondirectional with wide intervals, indicating the relationships were rather inconclusive. Further tests were thus conducted to see whether a priori moderators may explain the tenuous relationships; however, a subsequent subgroup analysis for the quantity of team performance could not be conducted because of the small numbers of studies in that category. For example, the task complexity moderator under the quantity of team performance could not be analyzed as all three studies were coded as examining a high complexity task. The section below, therefore, details the results of moderator tests on the relationship between bio-demographic diversity and the quality of team performance.

Task complexity. To examine the level of cognitive demand and complexity involved in tasks, the moderating role of task complexity was tested using three categories: (1) project-type task, which is a highly cognitive task; (2) service-type task, which requires a medium-level cognitive ability; and (3) production-type task, which is less cognitively demanding

than the other two categories. When descriptions of task complexity were available in previous articles that were reviewed, this information was also taken into consideration when coding for task complexity. Of 14 included studies examining the relationship between bio-demographic diversity and the quality of team performance, 7 studies were coded as examining a "high-complexity task" whereas 5 were coded as a "medium-complexity task." The remaining two studies, Cumming's (2004) and Somech's (2006), were dropped in the coding process, as they examined teams performing multiple tasks and did not provide adequate descriptions for the task classification. The mean difference between the subcategories (high-complexity and medium-complexity tasks) was not significant ($Q_B = 2.43$, $df = 1$, $p = .08$). Task complexity did not moderate the relationship between bio-demographic diversity and team performance. No support was found for Hypothesis 6.

Team type. While excluding TMTs, team types were coded at three levels as suggested by Cohen and Bailey (1997): (1) parallel teams, (2) project teams, and (3) work teams. If a study investigated mixed teams, such as a combination of project and work teams, the study was excluded from the analysis. All 14 studies under the quality of team performance reported team type although none of them examined parallel teams. Of the 14 studies, 10 studies examined project teams and 4 employed work teams. Results indicated that there was no moderating effect of team type on the relationship between bio-demographic diversity and the quality of team performance ($Q_B = 1.38$, $df = 1$, $p = .41$) contrary to our expectation as specified in Hypothesis 7.

Task interdependence. Although we initially planned to categorize studies based on the three types of task interdependence, because of insufficient data on low and medium task interdependence, studies were eventually dichotomized into two categories of task interdependence: high (either sequential or reciprocal/team) interdependence and low (pooled) interdependence. However, Hypothesis 8, regarding the potential moderating impact of task interdependence, could not be examined because of the lack of variability in task interdependence (none of the 14 studies were coded as having a "low task interdependence").

Methodological differences. Studies were classified into two categories based on who reported outcomes: self-reported assessment and manager/rater-reported assessment. Of 13 studies included in the criterion report type moderator analysis, 10 studies used self-reported outcome assessment while the remaining 3 employed manger/rater-reported assessment. Results indicated that criterion report type moderated the relationship between bio-demographic diversity and the quality of team performance. Studies using self-reported outcome measures have a significantly higher correlation than studies employing manager/supervisor-reported measures ($\rho = .21$ and $\rho = -.05$, respectively) with a significant between-group Q statistic ($Q_B = 7.49$, $df = 1$, $p < .05$). As expected, there was a tendency to inflate ratings on team outcomes in a self-reported assessment than a manager/rater-reported assessment of team outcomes. In contrast, neither criterion measure type nor study setting moderated the

Table 3
Main Tests: Relationships Between Team Diversity and Social Integration

Main Hypothesis	K	N	ρ	Var(ρ)	95% CI	Qw	df
Team diversity—Social integration	37	2,114	–.03 (–.03)[a]	.000	–.08↔.02 (–.08↔.02)[a]	28.26	36
Task-related diversity—Social integration	15	889	–.04 (–.04)[a]	.002	–.12↔.03 (–.12↔.03)[a]	13.18	14
Bio-demographic diversity—Social integration	22	1,225	–.02 (–.02)[a]	.000	–.08↔.04 (–.08↔.04)[a]	14.74	21

Note: K = number of correlations; N = total sample size; ρ = estimated population parameter (weighted mean effect size); Var(ρ) = estimated variance of ρ; 95% CI = the upper and lower bound of the 95% confidence interval; Qw = homogeneity statistic; df = degree of freedom.
a. Figures in parenthesis are effect sizes and 95% CI calculated by employing the fixed-effects model. This study assumed the random-effects model. Therefore, the results from the fixed-effects model were not discussed unless there were substantial differences between the two models.

relationship between bio-demographic diversity and the quality of team performance (Q_B = .03, df = 1, p = .87 and Q_B = 1.55, df = 1, p = .28, respectively).

Main and Moderator Analyses: Team Diversity and Social Integration

Table 3 presents results of the analyses testing the main hypotheses on the relationship between team diversity and social integration.

Social integration was hypothesized to be negatively related to team diversity (Hypothesis 4). Thirty seven independent correlations were analyzed to examine the relationship between the two, and results indicated that there was a very small negative relationship between team diversity and social integration (ρ = –.03, 95% CI: –.08-.02). Both task-related and bio-demographic diversity were separately examined with respect to their potentially differential effects on social integration as specified in Hypothesis 5. The separate analyses also yielded very small negative effect sizes. The mean effect size for task-related diversity was –.04 (95% CI: –.12-.03), whereas the mean effect size for bio-demographic diversity was –.02 (95% CI: –.08-.04). The small mean effect sizes coupled with nondirectional confidence intervals suggest that there was virtually no relationship between team diversity and social integration. It appears that neither type of team diversity was significantly related to social integration. Consequently, varying impacts of the two types of team diversity on social integration were not detected in this study. Further moderator tests were conducted to see whether the lack of relationship could be attributed to the theoretically driven moderating variables and the study characteristics.

Team size. Team size was examined as a theoretically based moderator that affects the magnitude of the relationship between team diversity and social integration as suggested by existing research (Bowers et al., 2000; Stewart, 2006). The team size moderator was initially categorized into three groups: (1) small (fewer than 5 members), (2) medium (6-10

Table 4
Moderator Tests: Relationships Between Team Diversity and Social Integration

Moderation Hypothesis	Q_B	Df	K	N	ρ	95% CI	Qw
Team size	2.01	1	27	1,597			
Medium size		12	13	759	.02	−.05↔.11	7.46
Small size		13	14	838	−.04	−.12↔.03	9.88
Criterion report type	7.48**	1	37	2,114			
Manager/rater-reported		2	3	251	−.19	−.47↔.08	0.26
Self-reported		33	34	1,863	−.01	−.05↔.04	20.52
Study setting	0.09	1	37	2,114			
Organization		22	23	1,333	−.02	−.09↔.02	6.67
Laboratory		13	14	781	−.03	−.09↔.06	21.50

Note: Q_B = between-class goodness-of-fit statistic K = number of correlations; N = total sample size; ρ = weighted mean effect size; 95% CI = the upper and lower bound of the 95% confidence interval; Qw = within-class goodness-of-fit statistic; *df* = degree of freedom.
**$p < .01$.

members), and (3) large (more than 10 members). Of 27 studies included in the team size moderator analysis, none of them were, however, coded as examining large teams, thereby producing a dichotomized classification of team size. As presented in Table 4, the mean difference between the two team size categories (small and medium) was not significant at .05 level ($Q_B = 2.01$, *df* = 1, *p* =.10). Contrary to the expectation, team size did not moderate the relationship between team diversity and social integration.

Based on the initial results, we suspected that the lack of the moderation effect of team size may have been attributed to an attenuation of the correlations from the dichotomization of team size in the analysis. For the categorical model testing for the team size moderator, the studies were artificially categorized into subgroups, although the true measurement level of team size is continuous. It was thus conceivable that the categorical model testing based on the artificial dichotomization of team size may have failed to detect the potential moderating effect of team size on the relationship between team diversity and social integration. To determine more precisely on the relationship in question, a continuous model testing was further conducted for the team size moderator (Hedge & Olkin, 1985). A mean team size was calculated from each study and the relationship between effect sizes and the mean team sizes was tested by using a liner regression model to discern whether the model could explain a significant portion of the variation in effect sizes across the studies. However, mean team size was not identified as a significant predictor as the model was found to be statistically insignificant ($Q_r = .30$, *df* = 1, *p* = .58). No support was, therefore, found for Hypothesis 9.

Methodological differences. All 37 studies examining the relationship between team diversity and social integration employed survey-type subjective measures to assess their team outcomes; therefore, the criterion measure type moderator could not be analyzed. For the study setting moderator, 37 correlations were analyzed and results indicated that there was no moderating role of study setting in the relationship between team diversity and social integration ($Q_B = .09$, *df* = 1, *p* =.75). However, criterion report type moderated the

relationship in that studies with managers/raters reporting team outcomes exhibited a significantly stronger negative relationship with social integration than those with self-reported team outcomes (ρ = –.19, CI: –.47-.08 and ρ = –.01, CI: –.05-.04, respectively) with a significant between-group Q statistic (Q_B = 7.48, df = 1, p < .001). Similar to the rating inflation in self-reported surveys detected in the bio-demographic diversity–team performance relationship, individuals rated their self-perceived social integration more favorably than their manager/ rater counterparts.

Summary of the Main and Moderator Analyses

Support for Hypotheses 1-a and 3-a, found as task-related diversity, was positively related to both quality and quantity of team performance. However, there was no significant relationship between bio-demographic diversity and the two subcategories of team performance contrary to our expectation detailed in Hypotheses 1-b and 3-b. Consequently, Hypothesis 2 regarding differential effects of team diversity on team performance was not examined in our study. Similarly, team diversity did not have a significant impact on social integration, thereby failing to confirm Hypotheses 4 and 5. Post hoc tests were conducted to see whether theoretically based moderators and methodological differences played any role in the absence of these relationships. Of the 3 theoretically derived moderators, the task interdependence moderator could not be tested for the relationship between bio-demographic diversity and team performance as the included studies exhibited no variability in the level of task interdependence. The remaining 2 conceptual moderators, task complexity and team type, did not have a significant impact on the relationship. Therefore, moderation Hypotheses 6 and 7 were not supported whereas Hypothesis 8 could not be examined in our study. Of the 3 methodological moderators, we found the moderating role of criterion report type in the relationship between bio-demographic diversity and team performance. As expected, studies using self-reported assessment had a more positive relationship with team performance than studies employing manager/rater assessment of team performance, confirming individual tendency to inflate performance ratings in self-reported outcome measures. For the lack of the relationship between team diversity and social integration, team type was hypothesized to moderate the relationship. However, neither dichotomized team size nor continuous mean team size had a moderating effect on the relationship, thereby negating Hypothesis 9. Concerning the methodological moderators, we found that criterion report type moderated the relationship between team diversity and social integration in that the negative relationship was stronger for manager-reported team outcomes than for self-reported team outcomes.

Discussion

We employed a meta-analysis to integrate extant work on team diversity and provide estimates of the relationship between team diversity and team outcomes. There are several key implications drawn from our meta-analytic endeavor. First, task-related diversity was found to be positively related to both quality and quantity of team performance as hypothesized. By demonstrating this positive link between task-related diversity and team performance,

this study confirms that diversity presented in team members that are highly related to tasks facilitates team performance despite many factors influencing team outcomes. This finding is an empirical confirmation of "value-in-diversity" in team settings. By reconnecting this often-missed link between task-related diversity and team performance, we believe that the current study provides another step toward understanding the complex nature of member diversity and team outcomes.

No relationship was, however, detected between bio-demographic diversity and team performance. Consequently, differential effects of team diversity on team performance could not be examined because of the absence of the relationship in our study. On the other hand, this very absence of the relationship between bio-demographic diversity and team performance implies that different types of team diversity indeed have different effects on team performance. That is, whereas task-related diversity can be instrumental in team effectiveness, bio-demographic diversity may actually not affect team performance in any meaningful way. It appears that the beneficial linkage between bio-demographic diversity and team performance suggested in the team literature has been overstated particularly considering the extremely weak to nonexistent relationship demonstrated in this meta-analysis.

We also examined the moderating effects of the theoretical and methodological moderators when data were available, to further examine the tenuous relationship between bio-demographic diversity and team performance. Task complexity, however, did not moderate the relationship. Similarly, no discernible effect of team type was detected on the null relationship between bio-demographic diversity and performance. However, this finding should be interpreted with caution as some of the subgroups analyses are based on rather a few correlations. For example, in testing the team type moderator, only 4 correlations were analyzed in the work team subgroup whereas 10 were examined in the project team subgroup. As several researchers have cautioned, subgroups analyses based on a small number of correlations in meta-analysis can be unreliable and tend to lower the power to detect moderating effects and, thus, strong conclusions from such analyses cannot be made (Cohen, 1992; Johnson & Eagly, 2000). Consequently, it is possible to attribute the insignificant moderating effect of team type to the lack of statistical power rather than the lack of theoretical significance. Finally, insufficient data on low task interdependence prevented us from conducting a full set of moderation tests on the relationship between bio-demographic diversity and team performance. We postulate this significant lack of low task interdependence in team studies is reflective of the fact that team tasks, by their very nature, are characterized by higher levels of interdependence than individual tasks. Of the 3 methodological moderators, we found that criterion report type moderated the relationship between bio-demographic diversity and team performance. As expected, there was a tendency to inflate ratings on team outcomes in self-reported surveys than manager/rater-reported assessment of team outcomes.

In conclusion, the findings of our study suggest that there is no discernible effect of bio-demographic diversity on team performance, which concurs with previous meta-analyses. Furthermore, variance in demographic traits has little impact on team performance regardless of various moderating situations as shown in the moderator tests. The lack of the relationship between bio-demographic diversity and team performance suggests that forming teams solely

based on demographic attributes would not necessarily maximize the benefits of diversity in teams; simply increasing the amount of diversity in teams is not an effective strategy. Reflecting on these findings, in creating teams of heterogeneous members, it would then be ideal for organizations to consciously create a high-performing team with members regarding more task-relevant heterogeneity while focusing less on bio-demographic attributes.

The analyses of social integration based on 37 correlations found no significant relationship between team diversity and social integration. As there was a substantial statistical heterogeneity among the included studies, post hoc analyses based on the theoretically derived and metrological moderators were conducted to better understand the inconclusive nature of the relationship. The a priori moderator, team size, however, did not moderate the relationship. These null findings are rather surprising particularly considering the large number of empirical studies reporting on the negative impacts of both team diversity and team size on the level of social integration. One possible explanation for the absence of such relationships might be the temporal impact on the relationship between team diversity and social integration. As suggested by previous research, team tenure may influence the relationship between team diversity and social integration (Harrison et al., 1998; Horwitz, 2005; Watson, Kumar, & Michaelsen, 1993; Webber & Donahue, 2001). It is plausible that member satisfaction and cohesion improve during the duration of a team project. The frequency of meetings and the degree/depth of interactions among members can eventually mitigate adverse outcomes. Team dynamics, the nature and intensity of interactions, and relationships among diverse members can change during teamwork because members tend to integrate and develop a sense of team identity over time. The scope and length of member meetings may also influence the level of social integration in teams. However, as the studies included in this meta-analysis are mostly survey or observational studies and rarely reported the duration and frequency of member interactions, we were unable to control for this factor.

Another possible explanation for the lack of the relationship between team diversity and social integration would be the potential impact of the organizational context on social integration in teams. Attributes of an organization's environment, such as teamwork support structures and leadership commitment, can influence member interactions and, thus, social integration. For example, team training is frequently used in organizations as a means to increasing the efficacy of teamwork (Modrick, 1986; Moreland & Myaskovsky, 2000; Paris, Salas, & Cannon-Bowers, 2000). Subsequently, social integration among team members is more likely to be efficacious when employees attending team training perceive high levels of supervisory support and leadership commitment on their involvement in teams. Recently, Stewart (2006) meta-analytically confirmed that leadership was positively related to team performance.

Implications

Implications for Future Research

Future research regarding temporal impacts of the team diversity on team outcomes will greatly enhance the current understanding of dynamic nature of teamwork. As previously noted, team longevity is likely to affect team diversity and team performance as the

nature of interactions and relationships among diverse members change during a team project. The predicative role of bio-demographic diversity on team outcomes seems to be especially dynamic in that negative affective outcomes in the beginning of the relationship can dissipate over the time and even transform such negativity into positive influences in teamwork. The current team literature, however, lacks studies investigating this changing nature of team interactions and associated outcomes. Therefore, longitudinal studies and observation of teamwork would be fruitful in uncovering the dynamic relationships between team diversity and outcomes.

Another important line of research lies in exploring the potential curvilinear relationship between diversity and similarity in teamwork. The current team research has a tendency to view member diversity and member similarity as mutually exclusive constructs (Ofori-Dankwa & Julian, 2002; Quinn, 1988). However, there have been increasing interests in a potential curvilinear relationship between member diversity/similarity and team performance. Recently, two paradigms of the curvilinear models of team diversity/similarity have been postulated to investigate the effects of member diversity on teamwork: the inverted U model and the upright U model. Earley and Mosakowski (2000) have advocated the upright U function relating team heterogeneity to team effectiveness and suggested that given sufficient time, either homogeneous or highly heterogeneous teams are likely to be more effective than moderately heterogeneous teams. In their experiments, the researchers observed that highly heterogeneous teams in terms of nationality developed a shared team identity over time, which in turn facilitated team performance in the long run. Jetten, Spears, and Manstead (1998), in contrast, supported the inverted U taxonomy of team diversity/similarity, noting that a balance flown from a combination of member differences and similarities maximize positive organizational outcomes. In line with Jetten et al.'s logic, Morris, Davis, and Allen (1994) observed that extensive emphasis on one group's characteristics over another was negatively related with the spirit of entrepreneurship in firms, hence advocating a balanced combination of member characteristics in facilitating such organizational outcomes. Despite their theoretical discrepancies regarding the potential effects of team diversity, both models propose a curvilinear relationship between member diversity and team outcomes while calling for the paradigm shift away from the simple liner relationship often portrayed in the team literature. Future exploration of these curvilinear models of team diversity will possibly reveal more about the complex nature of team diversity.

Another area of potential research would be meta-analytically investigating the impact of intrinsic dimensions of member diversity on team performance. A large number of empirical studies have been cross-disciplinarily conducted to examine underlying, innate individual attributes, such as personality types, social/emotional intelligence, ability level, and cultural values, in teamwork (Duffy et al., 2000; Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005; Mohammed & Angell, 2003; Offermann, Bailey, Vasilopoulos, Seal, & Sass, 2004). However, existing research largely focuses on the dichotomized team diversity while only a few quantitative review were conducted to summarize the effects of intrinsic member differences on teamwork (Bowers et al., 2000; Devine & Philips, 2001; Stewart, 2006). Therefore, a synthesis of empirical research on intrinsic member attributes would be quite valuable to furthering our understanding of member diversity's effect on team performance

Finally, there should be a refinement of the process model of team diversity, particularly with respect to moderators that may influence the relationships between team diversity and team outcomes. Although the conceptual framework presented in our study investigated four theoretical moderators to present a parsimonious model, it is likely that other important moderating variables exist. For example, a moderating impact of frequency and duration of member interactions on social integration would be one such area that advances the current team literature. At the same time, it is evident that there is ample room for more empirical studies on the team variables examined in this study. In spite of the prolific research done on the topic over the past two decades, when studies were categorized under each performance category and moderator, the number of studies that could be meta-analyzed was sparse. We found that empirical studies examining quantitative team outputs at the group level are startlingly small in number. For example, none of the included team studies linked team diversity to idea generation, which is one of the most cited advantages to use diverse teams in an organizational decision-making process. The paucity of such studies at the group level was quite surprising particularly considering the prolific stream of TMT research investigating quantitative outcomes in TMTs. Therefore, it will be fruitful for researchers to continue examining the variables discussed in this study and further explore potential variables and paths to expand team diversity models.

Conclusion

Over the past two decades, researchers have reported inconsistent findings on the relationship between team diversity and team outcomes. In this study, we aimed to assess some of the equivocal findings in the literature and refined the team outcome variables conceptually as well as methodologically. In particular, we meta-analyzed the effects of team diversity at the group level using Cox and Blake's (1991) diversity paradigm to empirically test their hypothesis of synergistic performance resulting from diverse employee teams. Support was found for the positive impact of task-related diversity on team performance. In contrast, bio-demographic diversity had no relationship with team performance. Similarly, we found no discernible effect of team diversity on social integration. Despite the inability to demonstrate some of the hypothesized relationships, the support for the benefits of task-related diversity is noteworthy from the theoretical perspective, as this positive link between task-related diversity and performance represents the cumulative findings across studies.

Given the prevalent use of heterogeneous teams in modern workplaces, this quantitative review also provides organizational practitioners with a much-needed empirical corroboration of the benefits of diversity in teams and further demonstrates what forms of team diversity are more important than others with respect to organizational strategic outcomes such as problem solving and innovation. The findings of our study, therefore, suggest that diversity in teams can potentially provide organizations with competitive advantages if they consider these results in determining the composition of teams while discarding a simple, myopic understanding that team diversity has a uniform effect on team outcomes. We believe that shifting the emphasis from individual attributes to compositional and relational structures at a group level would ultimately enhance organizational efficacy.

References

References marked with an asterisk indicate studies included in the meta-analysis.

Adler, N. J. 1991. *International dimensions of organizational behavior*. Boston, MA: PWS-KENT.

Albercht, T. L., & Hall, E. 1991. Facilitating talk about new ideas: The role of personal relationships in organizational innovation. *Communication Monographs*, 58: 273-288.

Amason, A. C., & Schweiger, D. M. 1994. Resolving the paradox of conflict, strategic decision making and organizational performance. *International Journal of Conflict Management*, 5: 239-253.

*Ancona, D. G., & Caldwell, D. F. 1992. Demography and design: Predictors of new product team performance. *Organizational Science*, 3: 321-342.

Arrow, H., & McGrath, J. E. 1995. Membership dynamics in groups at work: A theoretical framework. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior*: Vol. 17, pp. 373-411. Greenwich, CT: JAI.

Bass, B. M. 1980. Team productivity and individual member competence. *Small Group Research*, 11: 431-504.

*Bayazit, M. 2003. Should I stay should I go? Predicting team members' intent to remain in the team. *Small Group Research*, 34: 290-321.

Beeber, L. S., & Schmitt, M. H. 1986. Cohesiveness in groups: A concept in search of a definition. *Advances in Nursing Science*, 8: 1-11.

Bettenhausen, K. L. 1991. Five years of group research: What we have learned and what needs to be addressed. *Journal of Management*, 17: 345-381.

Bowers, C. A., Pharmer, J. A., & Salas, E. 2000. When member homogeneity is needed in work teams: A meta analysis. *Small Group Research*, 31: 305-327.

Burke, S. S., Stagl, K. C., Klein, C., Goodwin, G. F., Salas, E., & Halpin, S. M. 2006. What type of leadership behaviors are functional in teams? A meta-analysis. *Leadership Quarterly*, 17: 288-307.

Byrne, D. 1971. *The attraction paradigm.* New York: Academic Press.

Byrne, D., Clore, G., & Worchel, P. 1966. The effect of economic similarity–dissimilarity as determinants of attraction. *Journal of Personality and Social Psychology*, 4: 220-224.

*Cady, S. H., & Valentine, J. 1999. Team innovation and perceptions of consideration: What difference does diversity make? *Small Group Research*, 30: 730-750.

Campion, M. A., Papper, E. M., & Medsker, G. H. 1996. Relations between work team characteristics and effectiveness: A replication and extension. *Personnel Psychology*, 49: 429-452.

Cannon-Bowers, J. A., Oser, R., & Flanagan, D. L. 1992. Work teams in industry: A selected review and proposed framework. In R. W. Swezey & E. Salas. (Eds.), *Teams: Their training and performance*: 355-377. Norwood, NJ: Ablex.

Carpenter, M. A., & Fredrickson, J. W. 2001. Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal*, 44: 533-545.

Certo, S. T., Lester, R. H., Dalton, C. M., & Dalton, D. R. 2006. Top management teams, strategy, and financial performance: A meta-analytic examination. *Journal of Management Studies*, 43: 813-839.

Chan, D. 1998. Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, 83: 234-246.

*Chatman, J. A., & Flynn, F. J. 2001. The influence of demographic heterogeneity on the emergence and consequences of cooperative norms in work teams. *Academy of Management Journal*, 44: 956-974.

Cho, T. S., Hambrick, D. C., & Chen, M. 1994. Effects of top management team characteristics on competitive behaviors of firms. *Best Paper Proceedings of the Academy of Management*, 12-16.

*Chowdhury, S. 2005. Demographic diversity for building an effective entrepreneurial team: Is it important? *Journal of Business Venturing*, 20: 727-746.

Cohen, J. 1992. A power primer. *Psychological Bulletin*, 112: 155-159

Cohen, S. G., & Bailey, D. E. 1997. What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management*, 23: 230-290.

Cohen, W. M., & Levinthal, D. A. 1990. Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35: 128-152.

Cox, T., & Blake, S. 1991. Managing cultural diversity: Implications for organizational competitiveness. *Academy of Management Executive*, 5(3): 45-56.

*Cummings, J. N. 2004. Work groups, structural diversity, and knowledge sharing in a global organization. *Management Science*, 50: 352-364.

*Dahlin, K. B., Weingart, L. R., & Hinds, P. 2005. Team diversity and information use. *Academy of Management Journal*, 48: 1107-1123.

Dennis, A. R., & Valacich, J. S. 1994. *Multiple dialogues in computer brainstorms* (Working paper). Bloomington: Indiana University.

Devine, D. J., Clayton, L. D., Philips, J. L. Dunford, B. B., & Meliner, S. B. 1999. Teams in organizations: Prevalence, characteristics, and effectiveness. *Small Group Research*, 30: 678-711.

Devine, D. J., & Philips, J. L. 2001. Do smart teams do better: A meta-analysis of cognitive ability and team performance. *Small Group Research*, 32: 507-532.

Diehl, M. 1992. *Production losses in brainstorming groups: The effects of group composition on fluency and flexibility of ideas.* Paper presented at the Joint Meeting of the European Association of Experimental Social Psychology and the Society for Experimental Social Psychology, Leuven, Belgium.

Dooley, R. S., & Fryxell, G. E. 1999. Attaining decision quality and commitment from dissent: The moderating effects of loyalty and competence in strategic decision-making teams. *Academy of Management Journal*, 42: 369-402.

*Drach-Zahavy, A., & Freund, A. in press. Team effectiveness under stress: A structural contingency approach. *Journal of Organizational Behavior*.

*Drach-Zahavy, A., & Somech, A. 2001a. Team heterogeneity and its relationship with team support and team effectiveness. *Journal of Educational Administration*, 40: 44-66.

*Drach-Zahavy, A., & Somech, A. 2001b. Understanding team innovation: The role of team processes and structures. *Group Dynamics: Theory, Research, and Practice*, 5: 111-123.

Drazin, R., & Van de Ven, A. H. 1985. Alternative forms of fit in contingency theory. *Administrative Science Quarterly*, 30: 514-539.

Duffy, M. K, Shaw, J. D., & Stark, E. M. 2000. Performance and satisfaction in conflicted interdependent groups: When and how does self-esteem make a difference? *Academy of Management Journal*, 43: 772-782.

Dunphy, D., & Bryant, B. 1996. Teams: Panaceas or prescriptions for improved performance. *Human relations*, 49: 677-699.

Earley, P. C., & Mosakowski, E. 2000. Creating hybrid team cultures: An empirical test of transnational team functioning. *Academy of Management Journal*, 43: 26-49.

Easely, C. A. 2001. Developing, valuing, and managing diversity in the new millennium. *Organizational Development Journal*, 19(4): 38-50.

Eisenhardt, K. M., & Schoonhoven, C. B. 1990. Organizational growth: Linking founding team strategy, environment, and growth among U.S. semiconductor ventures, 1978-1988. *Administrative Science Quarterly*, 35: 504-529.

Eisenhardt, K. M., & Tabrizi, B. N. 1995. Accelerating adaptive processes. Product innovation in the global computer industry. *Administrative Science Quarterly*, 4: 84-110.

Fiol, C. M. 1994. Consensus, diversity, and learning in organizations. *Organization Science*, 5: 403-420.

Fisher, R. A. 1970. *Statistical methods for research workers* (14th ed.). London: Collier-Macmillian.

*Foo, M. D., Sin, H. P., & Yiong, L. P. 2006. Effects of team inputs and intrateam processes on perceptions of team viability and member satisfaction in nascent ventures. *Strategic Management Journal*, 27: 389-399

*Foo, M. D., Wong, P. K., & Ong, A. 2005. Do others think you have a viable business idea? Team diversity and judges' evaluation of ideas in a business plan competition. *Journal of Business Venturing*, 20: 385-402.

Gladstein, D. L. 1984. Groups in context: A model of task group effectiveness. *Administrative Science Quarterly*, 29: 499-517.

*Gleser, L. J., & Olkin, I. 1994. Stochastically dependent effect sizes. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis*: 339-355. New York: Russell Sage.

Goodman, P. S., Ravlin, E., & Schminke, M. 1987. Understanding groups in organizations. *Research in Organizational Behavior*, 9: 121-173.

Gully, S. M., Devine, D. J., & Whitney, D. J. 1995. A meta-analysis of cohesion and performance: Effects of level of analysis and task interdependence. *Small Group Research*, 26: 497-520.

Gully, S. M., Joshi, A., Incalcaterra, K. A., & Beaubien, J. M. 2002. Meta-analysis of team-efficacy, potency, and performance: Interdependence and level of analysis as moderators of observed relationships. *Journal of Applied Psychology*, 87: 819-832.

Guzzo, R. A. 1996. Fundamental considerations about work groups. In M. A. West (Ed.), *Handbook of work group psychology*: 3-21. San Francisco: Jossey-Bass.

Hackman, J. R., & Morris, C. G. 1975. Group tasks, group interaction process, and group performance effectiveness: A review and proposed integration. In L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*: Vol. 8, pp. 45-99. New York: Academic Press.

Halfhill, T., Sundstrom, E., Lahner, J., Calderone, W., & Nielsen, T. M. 2005. Group personality composition and group effectiveness: An integrative review of empirical research. *Small Group Research*, 36: 83-105.

Hambrick, D. C., Cho, T. S., & Chen, M. J. 1996. The influence of top management team heterogeneity on firms' competitive moves. *Administrative Science Quarterly*, 41: 659-684.

*Harrison, D. A., Price, K. H., & Bell, M. P. 1998. Beyond relational demography: Time and the effects of surface- and deep-level diversity on work group cohesion. *Academy of Management Journal*, 41: 96-107.

*Harrison, D. A., Price, K. H., Gavin, J. H., & Florey, A. T. 2002. Time, teams, and task performance: Changing effects of surface-and deep-level diversity on group functioning. *Academy of Management Journal*, 45: 1029-1045.

Hedges, L. W., & Olkin, I. 1985. *Statistical methods for meta-analysis*. Orlando, FL: Academic Press.

Hinds, P. J., Carley, K. M., Krackhardt, D., & Wholey, D. 2000. Choosing work group members: Balancing similarity, competence, and familiarity. *Organizational Behavior and Human Decision Processes*, 81: 226-251.

*Hobman, E. V., & Bordia, P. 2006. The team identification in the dissimilarity–conflict relationship. *Group Processes and Intergroup Relations*, 9: 483-507.

Horwitz, S. K. 2005. The compositional impact of team diversity on performance: Theoretical consideration. *Human Resource Development Review*, 4: 219-245.

Ilgen, D. R. 1999. Teams embedded in organizations: Some implications. *American Psychologist*, 54: 129-139.

Jackson, S. E., & Joshi, A. 2004. Diversity in social context: A multi-attribute, multilevel analysis of team diversity and sales performance. *Journal of Organizational Behavior*, 25: 675-702.

Jackson, S. E., May, K. E., & Whitney, K. 1995. Understanding the dynamics of diversity in decision-making teams. In R. A. Guzzo & E. Salas (Eds.), *Team effectiveness and decision making in organizations*: 204-261. San Francisco: Jossey-Bass.

Janis, K. A. 1972. *Victims of groupthink*. Boston: Houghton Mifflin.

Jehn, K. A. 1995. A multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40: 256-282.

Jehn. K. A. 1997. A qualitative analysis of conflict types and dimensions in organizational groups. *Administrative Science Quarterly*, 42: 530-557.

*Jehn, K. A., Chatwick, C., & Thatcher, S. M. B. 1997. To agree or not to agree: The effects of value congruence, individual demographic dissimilarity, and conflict on workgroup outcomes. *International Journal of Conflict Management*, 8: 287-305.

*Jehn, K. A., Northcraft, G. B., & Neale, M. A. 1999. Why differences make a difference: A field study of diversity, conflict, and performance in workgroups. *Administrative Science Quarterly*, 44: 741-763.

Jetten, J., Spears, R., & Manstead, A. S. 1998. Defining dimensions of distinctiveness: Group variability makes a difference to differentiation. *Journal of Personality and Social Psychology*, 74: 1481-1492.

Johnson, B. T., & Eagly, A. H. 2000. Quantitative synthesis of social-psychological research. In H. T. Reis & Judd, C. M. (Eds.), *Handbook of research: Methods in social personality psychology*: 496-528. Cambridge, UK: Cambridge University Press.

Keck, S. L. 1997. Top management team structure: Differential effects by environmental context. *Organization science*, 8: 143-156.

*Keller, R. T. 1994. Technology-information processing fit and the performance of R&D project groups: A test of contingency theory. *Academy of Management Journal*, 37: 167-179.

*Keller, R. T. 2001. Cross-functional project groups in research and new product development: Diversity, communications, job stress, and outcomes. *Academy of Management*, 44: 547-555.

Klein, K. J., Dansereau, F., & Hall, R. J. 1994. Levels issues in theory development, data collecting, and analysis. *Academy of Management Review*, 19: 195-229.

Kolodny, H. F., & Kiggundu, M. N. 1980. Towards the development of a sociotechnical systems models in woodlands mechanical harvesting. *Human Relations*, 33: 623-645.

*Krebs, S. A., & Hobman, E. V. 2006. Virtual teams and group member dissimilarity: Consequences for the development of trust. *Small Group Research*, 37: 721-741.

Lincoln, J., & Miller, J. 1979. Work and friendship ties in organizations: A comparative analysis of relational networks. *Administrative Science Quarterly*, 24: 181-199.

*Lovelace, K., Shapiro, D. L., & Weingart, L. R. 2001. Maximizing cross-functional new product teams' innovativeness and constraint adherence: A conflict communications perspective. *Academy of Management Journal*, 44: 779-793.

Magjuka, R. J., & Baldwin, T. T. 1991. Team-based employee involvement programs: Effects of design and administration. *Personnel Psychology*, 44: 793-812.

*Martins, L. L., Milliken, F. J., Wiesenfeld, B. M., & Salgado, S. R. 2003. Racioethnic diversity and group members' experience: The role of the racioethnic diversity of the organizational context. *Group and Organization Management*, 28: 75-106.

*Mason, C. M. 2006. Exploring the processes underlying within-group homogeneity. *Small Group Research*, 37: 233-270.

Maznevski, M. L. 1994. Understanding our differences: Performance in decision-making groups with diverse members. *Human relations*, 47: 531-552.

McGrath, J. E. 1984. *Groups: Interactions and performance*. Englewood Cliffs, NJ: Prentice-Hall.

Miller, C. C., Burke, L. M., & Glick, W. H. 1998. Cognitive diversity among upper-echelon executives: Implications for strategic decision processes. *Strategic Management Journal,* 19: 39-58.

Milliken, F. J., & Martins, L. L. 1996. Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review*, 21: 402-433.

Modrick, J. A. 1986. Team performance and training. In J. Zeidner (Ed.), *Human productivity enhancement: Training and human factors in system design*: Vol. 1, pp. 130-166. New York: Praeger.

Mohammed, S., & Angell, L. C. 2003. Personality heterogeneity in teams: Which differences make a difference for team performance? *Small Group Research*, 34: 651-677.

*Mohammed, S., & Angel, L. C. 2004. Surface- and deep-level diversity in workgroups: Examining the moderating effects of team orientation and team process on relationship conflict. *Journal of Organizational Behavior*, 25: 1015-1039.

Moreland, R. L., & Myaskovsky, L. 2000. Exploring the performance benefits of group training: Transactive memory or improved communication? *Organizational Behavior and Human Decision Processes*, 82: 117-133.

Morgeson, F. P., & Hofmann, D. A. 1999. The structure and function of collective constructs: Implications for multilevel research and theory development. *Academy of Management Review*, 24: 249-265.

Morris, M. H., Davis, D. L., & Allen, J. W. 1994. Fostering corporate entrepreneurship: Cross-cultural comparisons of the importance of individualism versus collectivism. *Journal of International Business Studies*, 25: 65-89.

Nemeth, C. J., & Staw, B. M. 1989. The tradeoffs of social control and innovation in groups and organizations. *Advances in Experimental Social Psychology*, 22: 175-210.

Ochse, R. 1990. *Before the gates of excellence: The determinants of creative genius.* Cambridge; NY: Cambridge University Press.

Offermann, L., Bailey, J. R., Vasilopoulos, N. L., Seal, C., & Sass, M. 2004. The relative contribution of emotional competence and cognitive ability to individual and team performance. *Human Performance*, 17: 219-243.

Ofori-Dankwa, J. C., & Julian, S. D. 2002. Toward diversity and similarity curves: Implications for theory, research, and practice. *Human Relations*, 55: 199-224.

*O'Reilly, C. A., Caldwell, D. F., & Barnett, W. P. 1989. Work group demography, social integration, and turnover. *Administrative Science Quarterly, 3*4: 21-37.

Paris, C. R., Salas, E., & Cannon-Bowers, J. A. 2000. Teamwork in multi-person systems: A review and analysis. *Ergonomics*, 43: 1052-1075.

Payne, R. 1990. The effectiveness of research teams: A review. In M. A. West & J. L. Farr (Eds.), *Innovation and creativity at work*: 101-122. Chichester, UK: Wiley.

Pelled, L. H. 1996. Demographic diversity, conflict, and work group outcomes: An intervening process theory. *Organizational Science*, 7: 615-631.

*Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. 1999. Exploring the black box: An analysis of work group diversity, conflict, and performance. *Administrative Science Quarterly*, 44: 1-28.

Peterson, R. S., Owens, P. D., Tetlock, P. E., Fan, E. T., & Martorana, P. 1998. Group dynamics in top management teams: Groupthink, vigilance, and alliterative models of organizational failure and success. *Organizational Behavior and Human Decision Processes*, 73: 272-305.

*Phillips, K. W., Northcraft, G. B., & Neale, M. A. 2006. Surface-level diversity and decision-making in groups: When does deep-level similarity help? *Group Processes and Intergroup Relations*, 9: 467-482.

Priem, R. L. 1990. Top management team group factors, consensus, and firm performance. *Strategic Management Journal*, 11: 469-478.

Quinn, R. 1988. *Beyond rational management*: *Mastering the paradoxes and competing demands of high performance*. San Francisco: Jossey-Bass.

*Raver, J. L., & Gelfand, M. J. 2005. Beyond the individual victim: Linking sexual harassment, team processes, and team performance. *Academy of Management Journal*, 48: 387-400.

*Reagans, R., & Zuckerman, E. W. 2001. Network, diversity, and productivity: The social capital of corporate R&D teams. *Organization Science*, 12: 502-517.

Richard, O., McMillan, A., Chadwick, K., & Dwyer, S. 2003. Employing an innovation strategy in racially diverse workforces: Effects on firm performance. *Group and Organization Management*, 28: 107-126.

*Rodriguez, R. A. 1998. Challenging demographic reductionism: A pilot study investigating diversity in group composition. *Small Group Research*, 29: 744-759.

Rousseau, D. M. 1985. Issues of level in organizational research. In L. L. Cummings & B. Staw (Eds.), *Research in organizational behavior*: Vol. 7, pp. 1-37. Greenwich, CT: JAI.

Saavedra, R., Earley, P. C., & Van Dyne, L. 1993. Complex interdependence in task-performing groups. *Journal of Applied Psychology*, 78: 61-72.

*Sargent, L. D., & Sue-Chan, C. 2001. Does diversity affect group efficacy? The intervening role of cohesion and task interdependence. *Small Group Research*, 32: 426-450.

Sessa, V. I. 1993. Why team demographics have an influence on team effectiveness: Conflict as a mediating variable. Paper presented at the annual meeting of the Academy of Management, Atlanta, GA.

Shea, G. P., & Guzzo, R. A. 1987. Group effectiveness: What really matters? *Sloan Management Review*, 28(3): 25-31.

Simons, T., Pelled, L. H., & Smith, K. A. 1999. Making use of difference: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal*, 42: 662-674.

Smith, K. G., Smith, K. A., Olian, J. D., Sims, H. P., O'Bannon, D. P., & Scully, J. A. 1994. Top management team demography and process: The role of social integration and communication. *Administrative Science Quarterly*, 39: 412-438.

Snedecor, G. W., & Cochran, W. G. 1980. *Statistical methods* (7th ed.). Ames: Iowa University Press.

*Somech, A. 2006. The effects of leadership style and team process on performance and innovation in functionally heterogeneous teams. *Journal of Management*, 32: 132-157.

*Sosik, J. J., & Jung, D. I. 2002. Work-group characteristics and performance in collective and individualistic cultures. *Journal of Social Psychology*, 14: 5-23.

Steiner, I. D. 1972. *Group process and productivity*. New York: Academic Press.

Stewart, G. 2006. A meta-analytic review of relationships between team design features and team performance. *Journal of Management*, 32: 29-54.

Stewart, G., & Barrick, M. R. 2000. Team structure and performance: Assessing the mediating role of intrateam process and the moderating role of task type. *Academy of Management Journal*, 43: 135-148.

Souder, W. E. 1987. *Managing new product innovation.* Lexington, MA: Lexington Books.

Tajfel, H., & Turner, J. C. 1986. The social identity theory of intergroup behavior. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations*: 7-24. Chicago: Nelson-Hall.

Thompson, J. D. 1967. *Organization in action*. New York: McGraw-Hill.

Tjosvold, D. 1988. Cooperative and competitive interdependence: Collaboration between departments to serve customers. *Group and Organization Studies*, 13: 274-279.

Triandis, H. C., Hall, T. E., & Ewen, R. B. 1965. Member homogeneity and dyadic creativity. *Human Relations*, 18: 33-54.

Trist, E. L., & Bamforth, K. W. 1951. Some social and psychological consequences of the longwall method of coal-getting. *Human Relations*, 4: 3-38.

Tsui, A. S., Egan, T. D., & O'Reilly, C. A. 1992. Being different: Relational demography and organizational attachment. *Administrative Science Quarterly*, 37: 549-579.

Tsui, A. S., & O'Reilly, C. A. 1989. Beyond simple demographic effects: The importance of relational demography in superior-subordinate dyads. *Academy of Management Journal*, 32: 402-423.

Tziner, A. 1985. How team composition affects task performance: Some theoretical insights, *Psychological Reports*, 57: 1111-1119.

Van de Ven, A. H., & Ferry, D. L. 1980. *Measuring and assessing organizations*. New York: John Wiley.

*Van Der Vegt, G. S., & Bunderson, J. S. 2005. Learning and performance in multidisciplinary teams: The importance of collective team identification. *Academy of Management Journal*, 48: 532-547.

Watson, W., Kumar, K., & Michaelsen, L. K. 1993. Cultural diversity's impact on interaction mediating role of intra-team process and the moderating role of task type. *Academy of Management Journal*, 36: 590-602.

Webber, S. S., & Donahue, L. M. 2001. Impact of highly and less job-related diversity on work group cohesion and performance. *Journal of Management*, 27: 141-162.

Williams, K. Y., & O'Reilly, C. A. 1998. Demography and diversity in organizations. In B. M. Staw & R. M. Sutton (Eds.), *Research in organizational behavior*: Vol. 20, pp. 77-140. Stamford, CT: JAI.

Witteman, H. 1991. Group member satisfaction: A conflict-related account. *Small Group research*, 22: 24-58.

*Yeh, Y., & Chou, H. 2005. Team composition and learning behaviors in cross-functional teams. *Social Behavior and Personality*, 33: 391-402.

Zenger, T. D., & Lawrence, B. S. 1989. Organizational demography: The differential effects of age and tenure distributions on technical communication. *Academy of Management Journal*, 23: 355-376.

Biographical Notes

Sujin K. Horwitz is an assistant professor of Management and Marketing in the Cameron School of Business at the University of St. Thomas in Houston. She received her PhD from the University of Minnesota. Her research interests include diversity training and outcomes, cross-cultural HR issues, and leadership training in multidisciplinary settings.

Irwin B. Horwitz is an assistant professor in Management, Policy and Community Health at the University of Texas' School of Public Health in Houston. He received his PhD in Human Resources and Industrial Relations from the University of Minnesota. His area of research interests are in workplace safety, leadership, and organizational theory.