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Bridging Micro and
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# Bridging Domains in Workplace Demography Research: A Review and Reconceptualization

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*Research on unraveling the complex effects of workplace demography has grown exponentially in the past two decades, reflecting enduring academic interest in the topic. This research spans multiple macro and micro theoretical domains and has examined demography effects at individual, group, or firm levels of analysis. However, past research in this area has revealed equivocal and inconclusive findings. Based on a review of more than two decades of research, the authors present the argument that future developments in this research will occur not in isolation at a specific level of analysis but rather at the interstices of multiple levels. The authors offer a framework for future research that bridges macro and micro domains as a way to resolve past discrepant findings in this area of research.*

***Keywords:*** *workplace demography; diversity; multilevel research*

Research on unraveling the complex effects of workplace demographics has grown exponentially in the past two decades, reflecting enduring academic interest in the topic. Broadly, past research in this area has sought to answer this question: Does workplace demography influence various work outcomes at individual, work group, or firm levels? (For reviews, see

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Carpenter, Geletkanycz, & Sanders, 2004; Jackson, Joshi, & Erhardt, 2003; Riordan, 2000.) This question spans multiple macro and micro theoretical domains and requires the conceptualization of demography constructs at multiple levels—that is, individual, group, or firm levels of analysis.

While research efforts directed at this question continue to grow, findings have been by and large equivocal and have provided only inconclusive answers. Based on a review of more than two decades of research on this topic, we present the argument that future developments in workplace demography research will occur not in isolation at a specific level of analysis but rather by bridging macro and micro theoretical domains in this area. *Demography* is defined as the relational and compositional demographic attributes of individuals and collectives (Tsui & Gutek, 1999). Throughout this article, we apply the term *workplace demography* to incorporate multiple streams of management research that have examined the relational effects of individual demographic dissimilarity relative to the group on individual outcomes as well as the compositional effects of work group–level or firm-level demographic diversity on group and firm outcomes.

There has been a growing acknowledgement in this area that multilevel approaches that bridge macro and micro levels of analysis are best suited to resolve the mixed and inconclusive findings of past research (Jackson et al., 2003; Riordan, 2000) and for grappling with the complexity and inherent nestedness of demographic phenomena (Jackson et al., 2003; Jackson & Joshi, 2010; Joshi, Liao, & Jackson, 2006). For example, at the micro level, in a recent meta-analysis Joshi and Roh (2009) demonstrated the sensitivity of team-level diversity effects to higher level contextual variables, such as occupational demography and industry setting, while underlining the potential for future multilevel research in this area. The authors noted that such research efforts should be based on bridging macro-level theoretical traditions with current micro-level theoretical approaches in the area of work group diversity (Joshi & Roh, 2009). At the macro level, as well, in the area of top management team (TMT) research, there has been a call for opening up the black box by incorporating micro-level processes to explicate the effects of TMT diversity on firm performance (see Barrick, Bradley, Kristof-Brown, & Colbert, 2007; Hambrick, 2007).

In response to these recent calls, we develop a set of guidelines for building bridges across the rich traditions of research that have evolved at various micro and macro levels in demography research. This bridging process involves a two-way approach of linking macro-level (i.e., firm-level) theoretical perspectives to micro-level (i.e., individual- or group-level) research in demography research, and vice versa. By viewing workplace demography research through this "bridging" lens, we critically evaluate the applicability of predominant theories at a given level of analysis and incorporate additional theoretical perspectives, across levels, to resolve any inconsistent patterns in findings to date.

We begin with an overview of demography constructs that have been applied at individual, team, and firm levels of analysis and identify current challenges and trends in this area. Next, we present an overview of two decades of research on the topic of workplace demography. This discussion is organized along two dimensions—the level of analysis at which demography has been operationalized and the level of analysis at which outcomes have been identified in past research. Based on these two dimensions, we identify three streams of research in the area of workplace demography—individual dissimilarity (or relational demography)

**Table 1**
**Building Blocks of Multilevel Diversity Theory: Demography Constructs at Different Levels**

| Demography Construct | Level of Analysis | Operationalization |
|---|---|---|
| Individual demography | Individual | Individual scores of demographic attributes |
| Relational demography (1) | Individual | D-score (Euclidean distance) |
| Relational demography (2) | Cross | Interaction of individual demographic attribute × demographic composition of unit |
| Relational demography (3) | Individual | Perceived dissimilarity |
| Unit diversity—separation | Unit | Standard deviation |
| Unit diversity—variety | Unit | Blau's index or Teachman's index |
| Unit diversity—disparity | Unit | Coefficient of variation or Gini coefficient |
| Unit diversity—faultline | Unit | Faultline strength |

research, team diversity research, and firm or TMT diversity research. After identifying research at each level of analysis, we review predominant theoretical approaches and empirical findings. Finally, based on current trends in each of these areas, we identify opportunities for bridging these levels and discuss methodological approaches to accomplish these bridging efforts in demography research.

## The Building Blocks of Demography Research: Demography Constructs at Different Levels

As Kozlowski and Klein (2000) noted, constructs are the building blocks of organizational theory. In demography research, constructs may exist at different levels. In this section, we provide a critical overview of the various constructs that have been applied at different levels in past research and identify current trends in the measurement and operationalization of demography constructs at the individual, group, or firm levels of analysis. At the individual level, we discuss current approaches to measuring dissimilarity relative to the work group, and at the unit level (i.e., group, business unit, firm), we consider approaches to measuring diversity as a compositional construct that represents the aggregate demographic properties of work groups and firms. In Table 1, we summarize the demography constructs at different levels of analysis.

### *Individual-Level Demography Constructs*

At the *individual* level, under the relational demography framework researchers have conceptualized an individual's demographics *relative* to the work group or unit that he or she is affiliated with (i.e., individual's [dis]similarity to the group) as antecedents of individual outcomes such as satisfaction, performance, or turnover. As reviewed by Riordan and Wayne (2008), researchers have used three approaches to measure demographic similarity or dissimilarity at the individual level: a difference score (D score), an interaction term, and a perceptual measure.

Individual dissimilarity to the group as a D score measured by Euclidean distance, or the square root of the average squared distance of an individual relative to all other members of the group (Tsui & Gutek, 1999), is the most commonly used measurement approach to individual-level demographic dissimilarity. However, scholars have pointed out several methodological limitations to this approach (e.g., Edwards, 1994). The D-score approach assumes that the effects of diversity are based on average dyadic differences between group members and assumes that all types and directions of differences are equal. As a result, Euclidean distance-based measures mask directional differences and nonsymmetrical effects, collapse separate components of dissimilarity into a single score, ignore the possibility that different components of the D score may affect the outcomes differently, and are subject to being skewed by outliers (e.g., being greatly different from just one person in the group may dramatically influence an individual's D score even though the individual may be quite similar to the rest of the group members; Edwards, 1994). Therefore, researchers argue that the D-score approach may provide biased estimates of the effects of relational demography and that in some cases these effects are likely to be statistical artifacts (for reviews, see Riordan & Wayne, 2008; Tonidandel, Avery, Bucholtz, & McKay, 2008).

Given these limitations, researchers have applied an alternative interactive term to capture the contingent effects of an individual's demographics relative to the demographics of the work unit (i.e., Individual Demographic Attribute × Demographic Composition of Unit; e.g., Chatman & O'Reilly, 2004; Ferris, Judge, Chachere, & Liden, 1991; Mellor, 1995; Riordan & Shore, 1997). Researchers have suggested the use of multilevel analysis technique such as random coefficient modeling (RCM) to model the interaction term approach (i.e., Level 1: Individual Demographic Attribute × Level 2: Team Demographic Composition). RCM can explicitly account for the nested nature of the data (i.e., individuals are nested within work units) and can simultaneously estimate the impact of factors at different levels (i.e., individual demographic attributes at the individual level, and demographic composition of the work unit at the unit level) on individual-level outcomes, while maintaining appropriate levels of analysis for the predictors (Bryk & Raudenbush, 1992). The interaction approach does not have the aforementioned limitations of the D-score approach. Nonetheless, it has its own limitations, including low statistical power (e.g., Aguinis, 2004; Aguinis, Beaty, Boik, & Pierce, 2005) and masking meaningful differences between pairs of individuals within the group (for a review, see Riordan & Wayne, 2008).

A third approach to individual-level demographic dissimilarity is to measure *perceived dissimilarity* by directly assessing the focal individual's perceived differences from others. The perceptual approach tests the assumption that perceived rather than actual differences predict differences in workplace outcomes (e.g., Kirchmeyer, 1995; Liao, Chuang, & Joshi, 2008). The perceptual approach, however, also has some limitations. For example, the results are more likely subject to percept–percept inflation if the outcome variables are also obtained through self-report. In addition, like the D-score approach, the perceptual approach does not innately test for asymmetrical effects (Riordan & Wayne, 2008).

In summary, the three approaches to assessing individual-level demography constructs are not equivalent to each other either conceptually or mathematically (Riordan & Wayne, 2008). Each of these approaches has its limitations. In choosing individual-level demography

constructs, researchers need to be aware of the conceptual meaning and methodological weakness of each approach.

## *Unit-Level Demography Constructs*

*Unit-level demography constructs* represent configural or compositional unit properties of work group and work units (Kozlowski & Klein, 2000), describing the pattern or configuration of unit members' demographic characteristics at an aggregate level. The unit can be a team, a department, an organization, an industry, or other collective entities. At the work group, business unit, or firm levels, researchers have examined diversity in relation to outcomes such as performance, effectiveness, creativity, and innovation.

Unit-level diversity constructs include various forms of *demographic diversity measures*. Over the past four decades, for *categorical* diversity attributes such as race or gender, the predominant approach to measuring work group–level diversity has been applying Blau's (1977) index. Blau's index is measured as $(1 - \Sigma P_i^2)$, where $P$ is the proportion of individuals in $i$th category. For continuous demographic variables such as age or tenure, the predominant approach has been using the coefficient of variation, which is the ratio of the standard deviation of the demographic attribute in the work unit to the mean of the attribute in the work unit.

However, recent theoretical and methodological developments suggest that there are different types of diversity that require different conceptualization and measurement approaches and that there should be a match between conceptualization and measurement. Specifically, Harrison and Klein (2007) have proposed three distinct types of unit-level diversity constructs, including separation, variety, and disparity. First, diversity as *separation* refers to differences, disagreement, or opposition in characteristics, position, or opinion among unit members. Demographic diversity as separation captures the dispersion or variance in members' continuous demographic characteristics such as team members' age or tenure in the firm. Separation can be operationalized as the standard deviation of continuous measures such as age or tenure. Second, diversity as *variety* refers to differences in kind or category of demographic background, information, knowledge, or experience among unit members. Demographic diversity as variety captures the differences in members' categorical demographic characteristics such as ethnicity and gender in the work unit. Variety is typically operationalized by Blau's index or Teachman's index. Third, diversity as *disparity* refers to differences in concentration of valued social assets or resources such as pay and status among unit members. Disparity can be operationalized as the coefficient of variation or Gini coefficient. Harrison and Klein point out that past research has often committed the folly of conceptualizing separation or variety while operationalizing disparity. For example, although the coefficient of variation has been the most widely applied diversity index for continuous variables (Williams & O'Reilly, 1998), Harrison and Klein note that in many of these cases researchers actually meant to measure separation, not disparity. Therefore, the standard deviation instead of the coefficient of variation should have been used. The mismatch between conceptualization and measurement would generate misleading conclusions.

The aforementioned unit-level diversity constructs focus on the specific demographic attribute one at a time. Another stream of research has applied a faultlines-based approach

to simultaneously measure multiple diversity attributes at the unit level. A *faultline* is said to exist in a team when two or more relatively homogeneous and distinct subgroups form on the basis of multiple shared attributes (Gibson & Vermeulen, 2003; Lau & Murnighan, 1998; Thatcher, Jehn, & Zanutto, 2003). Researchers have developed demographic faultline measures, for example, faultline strength (Shaw, 2004), to compare the level of intrasubgroup alignment with the amount of between-subgroup misalignment on multiple demographic attributes. Recently, an SAS algorithm has also been developed to calculate faultline strength (Chung, Shaw, & Jackson, 2006). Once again, the choice of unit-level demography constructs in any research should be based on careful consideration of theoretical appropriateness of the research question under consideration.

Overall, our review indicates that there is no single best way to operationalize demography constructs at a given level of analysis. In developing research that bridges macro and micro levels, researchers' choices must be governed by theoretical and methodological appropriateness. As we discuss in the subsequent sections, the bridging research guidelines proposed provide directions regarding the conceptualization of dissimilarity and diversity.

## Overview of Demography Research at Multiple Levels: Findings Over Two Decades

In this section, we provide a brief overview of three areas of research in the area of workplace demography that coincide with the three questions raised in the introduction.[1] The first stream of research reviewed below has examined the effects of individual demographic dissimilarity on individual-level outcomes such as satisfaction, commitment, and intent to turnover. The second stream of literature has examined the effects of team-level demographic diversity on team outcomes such as performance, effectiveness, creativity, team conflict, and cohesion. A third stream of research has considered whether firm-level diversity and TMT demographic composition influence firm-level outcomes. Based on these overviews, we identify potential areas for bridging the micro and macro streams of research that have evolved at each of these levels.

### *Individual Dissimilarity Effects on Individual-Level Outcomes*

Over the past two decades, a growing body of research under the framework of relational demography has sought to uncover the complex consequences of employee dissimilarity (Riordan, 2000; Tsui & Gutek, 1999). Researchers have argued that when individuals are demographically dissimilar to their work groups they feel less socially integrated and committed to their organization; these individuals also feel less optimistic about future career advancement and more likely to turnover (Elfenbein & O'Reilly, 2007; Jackson, Brett, Sessa, Cooper, Julin, & Peyronnin, 1991; Riordan & Shore, 1997; Tsui, Egan, & O'Reilly, 1992). The similarity attraction paradigm (Byrne, 1971) or the attraction-selection-attrition model (ASA; Schneider, 1987) and self-categorization theory (Turner, 1987) have been the dominant

theoretical frameworks in the area of relational demography. The similarity attraction paradigm suggests that an individual's similarity to a work group leads to liking and attraction, leading to a host of positive work outcomes such as commitment, satisfaction, and better peer relations, while people who are dissimilar to a work group or who do not fit in well are more likely to experience dissatisfaction and to leave (Byrne, 1971). Organizations, in general, evolve toward establishing interpersonal homogeneity within units by attracting, selecting, and retaining similar people rather than dissimilar others (Schneider, 1987).

A key premise of the social categorization theory is that to maintain high self-esteem people categorize self and others according to salient characteristics such as race, gender, or other group membership and seek to increase their positive social identity by drawing comparisons that favor their own social categories or group memberships over other categories or memberships (Turner, 1987). This categorization and identification often lead to in-group and out-group biases that elicit negative perceptions about dissimilar others, such as stereotyping, prejudice, or anxiety, but increase communication, integration, trust, or liking with similar in-group members (Riordan, 2000; Williams & O'Reilly, 1998).

*Literature search and summary of findings*. We conducted a comprehensive literature search for the years 1984 (marking Wagner, Pfeffer, and O'Reilly's seminal paper in this area) through 2009 by employing multiple search techniques to identify prior empirical research that examined the relationship between relational demography and work outcomes. Initially, we searched computerized databases such as PsycINFO, ABI/Inform, and SocIndex, using keywords such as *relational demography* or *demographic dissimilarity* as well as search terms associated with specific relational demography attributes. The electronic search was supplemented by a manual search of the reference lists from previous reviews on this topic (Riordan, 2000; Tsui & Gutek, 1999). Our search yielded 39 empirical studies in the field of relational demography, conducted over past 25 years.

Our review indicates that gender-, race-, and age-based dissimilarities in the work group remain the most often studied aspects of relational demography (more than 70% of all studies). These attributes have been considered most often in relation to perceptions about peers and work groups such as quality of working relationships with peers, social integration, and conflict in the work group. However, across these attributes it appears that a majority of relationships reported in the research were nonsignificant. Among the significant relationships reported, gender- and ethnicity-based dissimilarities had more negative implications for the quality of peer relationships reported (such as trust and attraction to group members). Other dissimilarity attributes, based on less visible aspects of dissimilarity, such as personality or values, accounted for 20% of the reported findings. Among these dissimilarity attributes, personality dimensions were those most often considered.

Average effect sizes ($r$) across dissimilarity attributes (based on bivariate correlations between dissimilarity and outcome measures) varied and ranged from .00 to .32 (in absolute values). The direct effects of gender-, race-, and age-based dissimilarity measures ranged from .00 to .11 in absolute values. Specifically, the average effect of gender dissimilarity on peer relations was negative (mean $r = -.05$); race/ethnicity dissimilarity had a positive effect on withdrawal behaviors such as turnover intention (mean $r = .07$). Although less studied in past research, the effects of less visible dissimilarity attributes appeared to be relatively more

evident in work outcomes. For example, the largest effects were reported for value-based dissimilarity on work withdrawal (mean $r = .32$) and job performance (mean $r = -.27$).

In summary, a majority of the research in this area has focused on dissimilarity in terms of gender, race, and age, and the results in this area have been inconsistent. In some studies, an individual's demographic dissimilarity to the team has been negatively associated with outcomes such as job satisfaction, organizational commitment, and perceived organizational support (e.g., Chattopadhyay, 2003; Liao, Joshi, & Chuang, 2004; Lichtenstein & Alexander, 2000; Riordan & Weatherly, 1999), while in other studies these aspects of demographic dissimilarity had no effect on workplace outcomes (e.g., Flynn & Shore, 1994; Kirchmeyer, 1995; Klein, Lim, Saltz, & Mayer, 2004). Often, within a single study, some aspects of demographic dissimilarity had positive outcomes, some had negative outcomes, and some had no significant effects (e.g., Bacharach & Bamberger, 2004; Chattopadhyay, 1999; Iverson & Buttigieg, 1997; Pelled, Xin, & Weiss, 2001). In the next section, we discuss how these specific trends can be better understood by bridging current theoretical approaches with macro-level theoretical perspectives developed in the area of sociology and social stratification that provide alternate explanations for why various dimensions of dissimilarity have differential effects in organizations.

### *Team Diversity Effects on Team-Level Outcomes*

At the *team* level of analysis, researchers have examined the effects of team demographic composition (or team diversity) on various team-level outcomes. This research draws on social categorization theory and information-processing perspectives to examine whether the composition of teams predicts key work-related outcomes (van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998). Past reviews (e.g., Jackson et al., 2003) indicate that most studies assume that diversity influences affective reactions and social processes within teams such as information-processing and social categorization–based processes. Social processes in turn are assumed to provide the explanations for the effects of diversity on team performance. Typical performance outcomes are goal achievement, group productivity, and team innovation; typical behavioral processes in these studies include communication, information sharing, and learning behaviors (see Jackson et al., 2003).

Work team diversity researchers have often distinguished between demographic and more task-relevant diversity attributes (Jackson, May, & Whitney, 1995; Jehn, Northcraft, & Neale, 1999). Demographic diversity attributes such as gender, ethnicity/race, or age are cognitively accessible, pervasive, and immutable and are associated with social categorization processes (Fiske, 1998; van Knippenberg, De Dreu, & Homan, 2004). In contrast, task-related aspects of diversity, such as educational, functional, or tenure-based diversity, are associated with skill-based and informational differences among work group members (Jackson et al., 1995). These aspects of diversity are assumed to constitute the team's cognitive resource base and are associated with information elaboration-based processes (see van Knippenberg et al., 2004). However, empirical findings in this area do not always support this classification of team diversity. Less task-related attributes such as gender diversity may be associated with elaboration-based outcomes, and task-related attributes might have categorization-based effects in teams (van Knippenberg et al., 2004). Moreover, recently some researchers have

noted that whether diversity attributes have categorization- or elaboration-based outcomes may be contingent on contextual variables at multiple levels (Joshi & Roh, 2009).

*Literature search and summary of findings*. To examine the pattern of past empirical findings in the work team diversity area, we conducted another extensive literature search. Our search was based on previous comprehensive reviews on the topic including both narrative (e.g., Jackson et al., 2003; Jackson & Joshi, 2010; van Knippenberg & Schippers, 2007; Williams & O'Reilly, 1998) and quantitative (e.g., Horwitz & Horwitz, 2007; Joshi & Roh, 2009) reviews. Effect size information was obtained from a recent meta-analysis conducted by Joshi and Roh (2009) that examined the team diversity–performance relationship using 39 empirical studies in the field.

Among various types of team diversity measures, we found that race/ethnicity and gender diversity were most often considered in past empirical studies (more than 30% of all studies). Other attributes such as age and more task-related diversity attributes (e.g., functional background, tenure, and education) were also examined in past research. Less research attention has been given to less visible diversity attributes such as personality or value diversity within a team (about 20% of all studies). A growing number of studies in this time period examined the effects of faultline-based measures, but this approach still remains rare in the field (about 5% of all studies conducted so far). With respect to outcomes of team diversity, team performance was the most often examined (about 40% of all studies). Team processes such as group integration, information sharing, and learning behavior, as well as affective outcomes such as relational conflict, were also often considered in past literature (cf. Jackson et al., 2003; Joshi & Roh, 2007).

Similar to the findings in reviewing relational demography research, our review of team diversity research indicates that more than a half of studies reported null effects of diversity on team outcomes, and this pattern appears to be similar for both demographic and task-related diversity measures (cf. Jackson et al., 2003; Joshi & Roh, 2007). Mean effect sizes also varied across diversity attributes. As reported in a recent meta-analysis by Joshi and Roh (2009), direct relationships (based on bivariate correlations) between demographic diversity attributes (e.g., gender, race/ethnicity, age) and team performance outcomes were negative (mean $r = -.03$). Correlations between more task-oriented diversity (e.g., functional background, education, tenure) and performance outcomes were positive (mean $r = .04$), and this positive effect was mainly driven by functional background diversity (mean $r = .13$; Joshi & Roh, 2009).

Three approaches to addressing these patterns of findings have emerged in recent research: Researchers have proposed a reconceptualization of diversity variables (Harrison & Klein, 2007), called for greater emphasis on contextual moderators (Joshi & Roh, 2009), and incorporated mediating mechanisms explaining diversity effects (van Knippenberg et al., 2004). In the next section, we discuss how these three approaches to resolving mixed findings can be further strengthened by bridging micro and macro theoretical domains.

## *TMT and Firm-Level Diversity Effects on Firm Outcomes*

*TMT diversity research*. At the firm level, researchers have examined the effects of TMT diversity on critical firm-level outcomes. Since Hambrick and Mason's (1984) introduction

of the upper echelons perspective, there has been a considerable amount of research attention on the effect of TMT characteristics, such as demographic diversity, on firm-level outcomes. The upper echelons perspective suggests that top managers' demographic characteristics are reasonable proxies for underlying differences in cognitions, values, and perceptions, and thus, differences in demographic backgrounds can significantly affect the process of strategic choices and resultant performance outcomes (Hambrick & Mason, 1984). Demographic attributes such as functional and educational background, tenure, and age can be considered as observable proxies for the psychological constructs that shape the team's interpretation of the internal and external situation and facilitate formulation of appropriate strategic alternatives (Carpenter et al., 2004; Hambrick & Mason, 1984). Consistent with the information-processing/decision-making perspective, upper echelons researchers have generally argued that diversity is associated with informational differences among team members that constitute a team's cognitive resources; thus, TMT diversity can lead to improved performance by facilitating idea generation and bringing in multiple perspectives for problem solving and strategy formulation (Hambrick & Mason, 1984).

*Literature search and summary of findings*. Our initial search was based on a recent meta-analysis by Certo, Lester, Dalton, and Dalton (2006), and we expanded our search to include more recent studies and studies that examined various firm-level strategic choice outcomes. To locate relevant studies, we searched the computerized databases and also conducted a manual search of the reference lists from previous major reviews on this topic (Carpenter et al., 2004; Webber & Donahue, 2001). Our search yielded 57 empirical studies in past TMT diversity research conducted from 1989 through 2009. Effect size information was obtained from a meta-analytic study conducted by Roh and Joshi (2009).

We found that past TMT diversity research has predominantly focused on the effects of task-related diversity attributes such as functional background, education, and tenure, as well as a demographic diversity based on age (more than 80% of all TMT diversity studies). Less research attention has given to other demographic attributes (e.g., gender, race/ethnicity; see Roberson & Park, 2007), less visible attributes such as personality (Boone & Hendriks, 2009), or demographic faultlines (Li & Hambrick, 2005) in TMT settings. With regard to firm-level outcomes, researchers relied on more distal performance measures such as financial performance (e.g., return on assets, revenue, sales) or market-based performance (book-to-market ratio, Tobin's *Q*). More proximal firm outcomes reflecting the strategic decisions of top managers included outcomes such as international expansion, strategic diversification, strategic change, R&D investment, and innovation.

Our meta-analytic review indicates that overall TMT diversity effects on firm's performance and strategic outcomes varied across diversity attributes, and the effect sizes–based bivariate correlations ranged from –.06 to .12. Consistent with Certo et al.'s (2006) findings, while functional background diversity generally had positive effects on firm-level outcomes (effect sizes ranging from .03 to .09), other task-oriented and demographic attributes such as tenure, education, and age diversity had no consistent direct effects on firm performance or strategic outcomes. Among the significant relationships reported, other than the effects of functional background diversity, tenure diversity appeared to be more positively related to firms' strategic change outcomes (mean $r = .12$). Educational background diversity also had

a positive association with innovation-oriented firm outcomes (mean $r = .06$). Age diversity appeared to be negatively associated with firm outcomes (effect sizes ranging from –.06 to .00), but most reported relationships were nonsignificant.

Overall, our review indicated that despite the widespread impact of the upper echelons theory in strategic management research, the general pattern of findings in this area has yielded inconsistent findings. While some studies have reported a positive association between TMT diversity and firm outcomes (Bantel & Jackson, 1989; Eisenhardt & Schoonhoven, 1990), others have found that diversity negatively predicts firm performance (Haleblian & Finkelstein, 1993; Murray, 1989) or have reported nonsignificant direct effects of diversity on performance outcomes (Ferrier, 2001; West & Schwenk, 1996). The findings are mixed not only across studies but also within studies; findings are mixed across diversity attributes such as education, tenure, or functional background (Carpenter & Fredrickson, 2001; Smith, Smith, Olian, Sims, O'Bannon, & Scully, 1994). Summarizing this pattern of mixed findings, a recent meta-analysis on this topic reported few direct effects of TMT diversity on firm performance outcomes (Certo et al., 2006).

To further clarify these effects of TMT diversity on firm outcomes, some researchers have underscored the importance of boundary conditions shaping TMT diversity outcomes (Finkelstein & Hambrick, 1996). Drawing on a contingency perspective, researchers have argued that TMT characteristics are likely to be reflected in firm outcomes under certain circumstances—only after taking into account the TMT's strategic and social context (Carpenter, 2002; Certo et al., 2006). For example, Carpenter (2002) examined whether a team's social context (an average tenure of TMT members) moderates the diversity–performance relationship and found that TMT background heterogeneity was significantly associated with firm performance in short-tenured samples but not in longer tenured TMTs. Another group of scholars has also suggested that incorporating micro-level team processes into TMT diversity research would be particularly relevant to open up the black box of the TMT diversity–firm outcome links (Barrick et al., 2007; Simsek, Veiga, Lubatkin, & Dino, 2005; Smith et al., 1994). For instance, Smith and colleagues (1994) found that TMT demography indirectly related to performance through team processes such as communication and social integration among members. In the next section, we consider implications of these recent developments in the field and incorporate additional bridging opportunities that incorporate micro-level theoretical perspectives such as the ASA framework and social categorization theory that might further fuel these developments.

*Firm-level diversity research*. While much research attention so far has been given to the individual-level effects of dissimilarity, work team diversity effects, or TMT diversity effects, relatively little attention has been devoted to the firm-level consequences of *firm-level* diversity in the past literature. To locate studies that examined the effect of firm diversity on firm-level consequences (e.g., firm performance, overall firm effectiveness), we conducted an extensive literature search, and our search yielded only a dozen empirical studies published in peer-reviewed journals and some dissertations and working papers available online.

When examining the pattern of firm diversity effects on firm-level outcomes, we found that the empirical evidence cumulated to date is not sufficient and far from being clear. Effect sizes based on bivariate correlations varied widely, from –.32 to .13 (based on eight studies

that provided relevant statistics). For example, in some studies, researchers suggested positive consequences of workforce diversity such as higher firm performance (e.g., Dwyer, Richard, & Chadwick, 2003; Richard, 2000; Richard, McMillan, Chadwick, & Dwyer, 2003; Wright, Ferris, Hiller, & Kroll, 1995). Drawing on the resource-based view of the firm, Richard (2000) argued that cultural diversity in human capital serves as a source of sustained competitive advantage for firms because it creates value that is both difficult to imitate and rare. Supporting this argument, he found a positive linear association between firm racial diversity and firms' financial performance measures (e.g., productivity) when firms adopted a growth-oriented business strategy (Richard, 2000). In another set of studies, however, the effects of diversity on firm-level outcomes were reported as unclear or even negative (e.g., Allmendinger & Hackman, 1995; Sacco & Schmitt, 2005). For example, Allmendinger and Hackman (1995) found that in symphony orchestras the percentage of women in an orchestra reduced overall group functioning due to the emotional conflict that a gender heterogeneous group may experience. Similarly, Sacco and Schmitt (2005) reported that firm racial diversity was negatively related to profitability outcomes. In the same study, however, the authors did not find any significant associations of other demographic attributes such as gender and age diversity with unit profitability (Sacco & Schmitt, 2005). To explicate this mixed evidence, recently a limited number of studies explored a curvilinear relationship between diversity and firm performance, but the results are less clear. For example, in a series of studies, Richard, Barnett, Dwyer, and Chadwick (2004) found some evidence of a U-shaped association between race diversity in the workforce and firm's financial performance under certain circumstances such as firms with high innovative orientation (Richard et al., 2004) and in a stable or service-oriented industry environment (Richard, Murthi, & Ismail, 2007); no clear pattern was found for gender diversity (Richard et al., 2004). In contrast, in a longitudinal study of nationally represented firms, Frink, Robinson, Reithel, Arthur, Ammeter, and Ferris (2003) found an inverted U-shaped relationship between gender composition and firm performance outcomes in service, wholesale, and retail industrial settings.

In sum, past empirical studies conducted at a firm level of analysis have revealed an unclear pattern of diversity effects—positive, negative, curvilinear, or nonsignificant. To resolve this mixed evidence and to better understand the firm diversity–firm outcome links, some researchers suggested theoretical refinement of past theories by incorporating multilevel contingency factors that can shape diversity effects with firms, such as business strategy (Richard, 2000), industrial and environmental characteristics (Frink et al., 2003; Richard et al., 2007), and community demographics (Sacco & Schmitt, 2005). Below, we consider additional opportunities in this area that are based on the application of micro-level social psychological perspectives that can guide future research and have been hitherto less considered.

## Bridging Micro and Macro Domains in Demography Research

Based on the literature review across three predominant levels at which diversity or dissimilarity research has been conducted, we surmise that there are several overlapping as well as distinct theoretical perspectives that have been applied at the individual, team, and firm levels of analysis. Furthermore, our review indicates that at each level of analysis—individual,

team, and firm—effect sizes based on bivariate correlations between diversity attributes and various work outcome measures varied widely and findings were predominantly nonsignificant in relation to outcomes considered. These mixed findings raise several questions regarding theoretical and methodological approaches to assessing the effects of dissimilarity and diversity at the individual, team, and firm levels of analysis. In this section, we discuss how some emergent trends can be better served through bridging theories across macro and micro levels. Our effort is to provide additional directions that would be primarily based on bridging opportunities across micro and macro levels. Toward this end, we offer six bridging research guidelines related to the three streams of research reviewed above. Table 2 summarizes the bridging guidelines, corresponding research questions, and methodological approaches outlined in the subsequent sections.

### *Bridging Opportunities in Research on Individual Outcomes of Dissimilarity*

Research on the individual-level outcomes of dissimilarity (i.e., relational demography) has primarily relied on social identity/self-categorization perspectives and the ASA framework to propose that an individual's dissimilarity to the work group can influence his or her satisfaction, commitment, performance, and intent to and actual turnover. As we noted in our review, findings in this area have been weak and inconclusive particularly with respect to gender-, race/ethnicity-, and age-based dissimilarity, leading us to suggest that current theoretical and methodological approaches in this area need to be reexamined. We also noted that these demographic variables have received the most attention in past research.

In this section, we highlight theoretical perspectives that have been developed in the macro domain of sociology (i.e., social stratification and organizational demography) that can provide opportunities to form theoretical bridges that provide better explanations of individual-level dissimilarity outcomes, specifically those based on gender, race/ethnicity, and age. These macro-level perspectives highlight the role that the larger organizational context can have in determining individual-level dissimilarity outcomes and can potentially resolve two types of issues that have arisen in this area that cannot be addressed by current theoretical applications of ASA and social categorization theory. The first issue that remains unresolved by current micro-level theoretical approaches in this area relates to the differential effects of different aspects of demographic dissimilarity. For example, as reviewed above, the effects of gender dissimilarity have differed from the effects of ethnic dissimilarity or tenure and educational dissimilarity (e.g., Bacharach & Bamberger, 2004; Chattopadhyay, 1999; Iverson & Buttigieg, 1997; Pelled et al., 2001). Prevalent theoretical approaches in this research would suggest that any dimension of dissimilarity should have similar effects on individual outcomes such as intent to turnover, commitment, or satisfaction and would not explain these mixed findings.

The second issue that has drawn attention in recent individual dissimilarity research and would also not be resolved based on current applications of ASA or self-categorization theory are the asymmetric effects of gender, ethnic, and age dissimilarity. For example, in several studies, researchers have found that the outcomes of dissimilarity differ for men

**Table 2**
**Framework for Bridging Research Guidelines**

| Bridging Research Guidelines | Illustrative Research Questions | Suggested Methodological Approaches |
|---|---|---|
| Bridging Opportunities in Research on Individual Outcomes of Dissimilarity | | |
| 1. Researchers should consider the effects of demographic composition of the organization (representation of women/minorities at higher levels; correlations between tenure; and other demographic attributes such as age, gender, and ethnicity) while examining the relationship between individual dissimilarity and outcomes such as commitment, satisfaction, and turnover. | Do the effects of gender dissimilarity on turnover intentions vary for men versus women as a function of the proportions of women at the managerial level?<br>In organizations that are diverse based on gender but not ethnicity, will the effects of ethnic dissimilarity be negative and that of gender dissimilarity nonsignificant? | Cross-level models<br>Mixed determinants models<br>Mixed effects models |
| Bridging Opportunities in Research on Team Outcomes of Diversity | | |
| 2. Researchers should consider the demographic composition of the organizational context (representation of women/minorities at higher levels; correlations between tenure and other demographic attributes such as age, gender, and ethnicity) as a boundary condition under which team diversity would influence processes such as categorization or information elaboration that mediate the relationship between team demographic diversity and performance outcomes. | Are diverse teams more likely to display information-elaboration rather than categorization-based processes in demographically diverse organizational units?<br>Are diverse teams more likely to display categorization-based rather than information-elaboration processes in demographically diverse organizational units? | Cross-level models<br>Mixed determinants models<br>Mixed effects models |
| 3. Researchers should consider the demographic composition of the organization (representation of women/minorities at higher levels; correlations between tenure and other demographic attributes such as age, gender, and ethnicity) while operationalizing team diversity constructs as variety, separation, or disparity. | Will demographic diversity at the team level operate as variety in demographically integrated organizations and as separation or disparity in horizontally or vertically segregated organizations? | Cross-level models<br>Mixed determinants models<br>Ethnographic case study |

*(continued)*

**Table 2 (continued)**

| Bridging Research Guidelines | Illustrative Research Questions | Suggested Methodological Approaches |
|---|---|---|
| Bridging Opportunities in Research on Firm Outcomes of Top Management Team (TMT) Diversity | | |
| 4. Researchers should also consider the structure, culture, and strategy of the organization as antecedents of TMT diversity over time. | Do changes in organizational culture reflecting more cooperative rather than individualistic norms lead to greater TMT diversity over time?<br>Does the adoption of a more innovation-oriented business strategy lead to greater TMT diversity over time?<br>Do changes in CEO decision-making style from a more centralized to decentralized style lead to greater TMT diversity over time? | Longitudinal analyses |
| 5. Researchers should incorporate information elaboration and social categorization as processes mediating the relationship between TMT diversity and firm performance outcomes while acknowledging organizational factors (such as leadership, strategy, and investments in diversity management) as moderators of this relationship. | Do CEO attitudes toward diversity or changes in diversity management investments over time moderate the relationship between TMT diversity and firm performance over time? | Multilevel longitudinal analyses |
| Bridging Opportunities in Research on Firm Outcomes of Firm Diversity | | |
| 6. Researchers should consider community demographics and history of intergroup relations in the firm and community while examining the relationship between firm demographic diversity and outcomes such as firm performance and innovation. | Does ethnic conflict in the community influence ethnic dynamics within a firm?<br>Does ethnic conflict in the community trigger categorization-based processes within the firm, with negative consequences for firm performance? | Case studies and ethnographic approaches |

versus women, whites versus nonwhites, or younger versus older employees (e.g., Chatman & O'Reilly, 2004; Chattopadhyay, 1999; Stewart & Garcia-Prieto, 2008). Recently, researchers have begun to incorporate status-based views to understand these asymmetric effects (see Chattopadhyay, Tluchowska, & George, 2004). We propose that additional macro-level sociological perspectives would also be vital for resolving both sets of issues in individual dissimilarity research.

In the area social stratification, within the domain of sociology, there exists an extensive body of research that has examined the effects of industry, occupation, and organizational practices in reinforcing inequality based on race, gender, and age in terms of wages, promotions, training, and authority in the workplace (Baron & Bielby, 1980; England, 1992). This domain of research seems particularly important for understanding why demographic dissimilarity in the work group may have different implications across various dissimilarity attributes as well as demographic subgroups. Depending on the nature of inequality in a given organizational context, a specific dimension of dissimilarity may become more salient (e.g., gender vs. age or race) or dissimilarity may have asymmetric outcomes for demographic subgroups (e.g., gender dissimilarity has different implications for men vs. women).

In contrast to economic explanations of inequality that focus on human capital differences, these studies have suggested that institutional and organizational practices account for pervasive inequality in the workplace (Bridges & Nelson, 1989; Petersen & Saporta, 2004; Tilly, 1998). Sociologists have also found that unequal access to training and other avenues for career development, rather than human capital differences, tend to reinforce inequalities in organizational rewards between white men and other demographic groups (DiTomaso, Post, & Parks-Yancy, 2007; Reskin, 1988; Tomaskovic-Devey & Skaggs, 1999). Additionally, sociologists point to social closure as a key mechanism by which inequality is perpetuated in organizations (Ibarra, 1992, 1993; Kanter, 1977). As demonstrated in Ibarra's seminal work in this area, social closure can occur when women and minorities (who are underrepresented in positions of organizational authority) are denied access to social networks that are important for gaining access to information and support in organizations (Ibarra, 1992, 1993). Together, these perspectives that suggest that unequal access to formal and informal career development and social networks can explain inequalities based on gender and ethnicity in organizations need greater consideration in individual dissimilarity research (see also Skaggs & DiTomaso, 2004).

Organizational demography research further enables us to delineate how the demographic composition of the organization can reflect and reinforce power and status differentials based on demographics (Pfeffer, 1983). Demographic features of the organization—such as representation of women or minorities at higher levels and the correlation between attributes such as age, gender, or ethnicity and job level or tenure—are viewed as reflections of the unequal access and power differentials in organizations with implications for dissimilarity-based outcomes (Lawrence, 1988; Pfeffer, 1983). For example, based on the perspectives outlined above, we can surmise that in an organization where women are underrepresented at the highest levels, power and status differences are likely to coincide with gender differences, and gender dissimilarity (as opposed to age or race dissimilarity) may emerge as a salient aspect of dissimilarity to the work group. In organizations where there exists a gap in wages and promotion opportunities between ethnic minority and majority employees, ethnic dissimilarity is more likely to be a salient basis for social comparisons and influence critical outcomes such as satisfaction and commitment. Thus, the macro-level perspectives on demographic inequality, outlined above, provide important insights for understanding the differential effects of various aspects of demographic dissimilarity.

Another possibility for bridging with individual dissimilarity research lies in research on asymmetric outcomes of individual dissimilarity (Chatman & O'Reilly, 2004; Chattopadhyay et al., 2004). The macro perspectives reviewed above would suggest that organizational

practices reflected in the demographic composition of organizations at higher levels will have implications for whether demographically underrepresented groups are likely to be paid lower and have differential access to formal and informal opportunities for career development. Thus, we may expect that the effects of dissimilarity to the work group may be asymmetric, that is, stronger for women and minorities in organizations where these groups are poorly represented at higher levels (Chattopadhyay et al., 2004). With respect to age, as well, organizational demography researchers have suggested that in some settings where age is strongly correlated with tenure, job-level age-based norms are likely to be more salient (Lawrence, 1988). Thus, the age-based demography of the organization can also explain asymmetric outcomes of dissimilarity for older versus younger workers. Extending these observations and combining these trends in individual dissimilarity research with the macro perspectives in the area of social stratification and organizational demography, our overall recommendation would be to "bring the organization in" to individual dissimilarity research in order to resolve the mixed and inconclusive findings in past research. Based on these macro-level theoretical considerations, we propose the following bridging research guideline:

> *Bridging Research Guideline 1:* Researchers should consider the effects of demographic composition of the organization (representation of women or minorities at higher levels, correlations between tenure and other demographic attributes such as age, gender, and ethnicity) while examining the relationship between individual dissimilarity and outcomes such as commitment, satisfaction, and turnover.

### *Bridging Opportunities in Research on Team Outcomes of Diversity*

Like research in the area of individual dissimilarity, research on the outcomes of team-level diversity has also relied primarily on the social identity/self-categorization theory or the ASA framework. Like research on individual dissimilarity outcomes, findings in this area also remain mixed and inconclusive. In fact, similar to the research on individual dissimilarity, researchers have found that different dimensions of diversity have different effects on team outcomes and also that a majority of effects reported to date have been nonsignificant, which calls into question current theoretical and methodological approaches in this area. Three specific trends that have emerged as a response to these equivocal findings are efforts at reconceptualizing team diversity (e.g., Harrison & Klein, 2007), identifying processes that account for diversity effects on team effectiveness or performance (van Knippenberg et al., 2004), and specifying boundary conditions shaping diversity outcomes (Joshi & Roh, 2009). We propose that each of these trends can be better understood by incorporating additional macro-level perspectives.

As discussed above, the sociological views in the area of social stratification and organizational demography discussed above would also be relevant for better understanding the outcomes of team-level diversity. To illustrate an avenue for bridging team diversity research and macro-level perspectives, consider the finding reported in a recent meta-analysis that team gender and ethnic diversity had the most negative effects in high-technology contexts

relative to service and manufacturing settings (Joshi & Roh, 2009). The focal level of analysis in this study was the work team. At the firm level of analysis, a study conducted in a high-technology context by DiTomaso and colleagues (2007) found that, across 24 firms, white men experienced more favorable career outcomes relative to any other demographic group. Bridging findings from the team-level meta-analysis by Joshi and Roh with the firm-level study by DiTomaso and colleagues provides a more nuanced view of why diversity based on gender or ethnicity in teams will have negative consequences in high-technology settings. DiTomaso and colleagues reported that white men occupy a high-status position (reflected in these favorable employment outcomes) in the high-technology industry and may be considered the "normative in-group" relative to other demographic groups. In this setting, work groups would also be characterized by status differences based on gender and ethnicity so that contributions by women may be minimized and gender may be a basis for social categorization rather than information elaboration. Thus, by bridging this firm- and team-level study, we are able to identify important boundary conditions shaping outcomes in teams (i.e., industry context), highlight which diversity attribute is likely to be significant (i.e., gender and ethnicity), and specify a process (i.e., categorization rather than elaboration) by which these outcomes will influence diversity outcomes.

Organizational demography research identifies several important antecedents in team diversity research that would help guide similar considerations at the team level. The degree to which an organization is structurally segregated can be a powerful influence on identification based on social category and on conflict among demographic groups (Cox, 1993; Ely, 1994; Wharton, 1992). In structurally segregated organizations, the balance of power and status is skewed in favor of the dominant demographic group; these status and power differentials can undermine intergroup harmony and cooperation within the team (Cox, 1993; Pfeffer, 1983). Thus, the organizational context can be an indicator of either bias—exclusionary and discriminatory processes that operate against specific demographic groups—or cooperative norms that emphasize greater inclusion and integration between demographic groups. Therefore, characteristics of the organizational context can make some aspects of diversity more salient than others as well as trigger either social categorization or information elaboration processes in teams.

*Bridging Research Guideline 2:* Researchers should consider the demographic composition of the organizational context (representation of women or minorities at higher levels, correlations between tenure and other demographic attributes such as age, gender, and ethnicity) as a boundary condition under which team diversity would influence processes such as categorization or information elaboration that mediate the relationship between team demographic diversity and performance outcomes.

Further, the very operationalization of diversity may be guided by the nature of organizations in which groups are embedded. Harrison and Klein's (2007) typology of diversity constructs as disparity, variety, and separation, which we discussed earlier, is especially relevant in this regard. Past measurement approaches to diversity such as the Blau's index or the coefficient of variation are based on the assumption that diversity attributes are uniformly represented in a research setting (associated with a variety approach to operationalizing

diversity). However, more often, an organization's demographic compositions may be skewed or bimodal, thus violating this assumption. Predominant theoretical approaches to team diversity also are based on the assumption that diversity in a group represents a variety of opinions and perspectives. However, the macro theoretical perspectives reviewed above suggest that in some organizational contexts demographic differences may be vertically segregated; that is, demographics would be correlated with hierarchical levels in the organization. Also, organizations could be horizontally segregated; that is, various departmental or functional affiliations may be correlated with demographics such as gender or ethnicity (Reskin, McBrier, & Kmec, 1999; Skaggs & DiTomaso, 2004). Both theoretically and methodologically, this suggests that in operationalizing diversity as variety, disparity, or separation researchers should carefully consider the demographics of the organizational setting in which research is conducted. For example, if researchers were interested in studying gender diversity in a team, based on the distribution of men and women across hierarchical levels or functional areas, we can surmise that gender diversity may operate in terms of variety (if the distribution across levels and occupations is uniform and gender is uncorrelated with hierarchical rank or functional skills), separation (if men and women occupy very distinct functional areas and therefore may represent opposing views or knowledge in teams), or disparity (if men occupy higher level and higher paid positions relative to women).

Thus, by considering the various macro-level perspectives outlined above, researchers can take a more focused approach to identifying and measuring diversity variables. Thus, based on these macro-level considerations, we propose:

> *Bridging Research Guideline 3:* Researchers should consider the demographic composition of the organization (representation of women or minorities at higher levels, correlations between tenure and other demographic attributes such as age, gender, and ethnicity) while operationalizing team diversity constructs as variety, separation, or disparity.

## *Bridging Opportunities in Research on Firm-Level Diversity Outcomes*

As we noted above, studies at the firm level have drawn on the upper echelons perspective and the resource-based view of the firm to propose firm-level diversity outcomes (Hambrick & Mason, 1984; Richard, 2000). Similar to research trends in the areas of individual dissimilarity and team diversity research, past research in TMT and firm diversity has also revealed mixed and inconclusive findings (Certo et al., 2006; Reskin et al., 1999). In response to these trends, researchers in these domains have responded by calling for greater attention to black-box issues (Barrick et al., 2007; Carpenter et al., 2004; Hambrick, 2007; Lawrence, 1997; Simsek et al., 2005) and greater appreciation of contingencies shaping TMT or firm diversity (Carpenter, 2002; Finkelstein & Hambrick, 1996; Richard et al., 2007). In the sections below, we discuss the applicability of theories developed at the micro level as a bridge across levels that may further enrich these trends in TMT and firm-level diversity research.

*Bridging opportunities in TMT diversity research*. Applications of micro-level psychological perspectives in TMT research are not new (see Bantel & Jackson, 1989; Jackson et al., 1991).

More recently, researchers have also called for greater consideration of micro-level interpersonal processes as mediators explaining the TMT diversity and firm performance link (see Barrick et al., 2007; Hambrick, 2007). Hambrick suggests that upper echelons scholars investigate "the psychological and social processes by which executive profiles are converted into strategic choices . . . to open up the black box" (p. 337). Recently, researchers have devoted increasing attention to this issue by examining specific team processes in TMT settings such as decision-making comprehensiveness (Simon, Pelled, & Smith, 1999), cohesion in a team (Barrick et al., 2007), behavioral integration (Li & Hambrick, 2005), or conflict among top managers (Knight et al., 1999) as intervening mechanisms that explain the TMT diversity and firm performance relationship (see also Roh & Joshi, 2009).

Our aim is to propose opportunities that would be nonredundant relative to these past efforts. One opportunity is related to the question that is emerging in TMT diversity literature—where do TMTs come from (Beckman & Burton, 2008; Boone, van Witteloostuijn, & de Brabander, 2004)? In extant demography research, demography constructs typically serve as the key predicting variables. Researchers usually treat demography as exogenous factors and examine given individuals' or units' demographic characteristics and what individual or unit outcomes will result. We propose an alternative approach to consider a unit's demographic characteristics as an endogenous variable and model it as a function of the influences from both the unit and the level above the unit. The ASA model (Schneider, 1987), which has been primarily applied at the micro level, implies that individuals of certain demographic characteristics will be attracted to, selected into, and retained by organizations that have strategy, structure, and culture that fit with or embrace these characteristics. Thus, based on this framework, over time, TMT diversity should reduce as dissimilar team members leave. To date, ASA has been applied to TMT research to understand the effects of TMT demographic composition on outcomes such as turnover (e.g., Jackson et al., 1991). We believe that another direction for future research may be to consider TMT diversity based as an *outcome* of the aforementioned organizational characteristics. For example, the organization's structure reflects strategic choices made by the founders and can influence the selection of executives to the TMT and also provides cues as to which roles are associated with greater power as well as decisions made within the TMT (Beckman & Burton, 2008). Over time, as the firm undergoes changes in terms of its strategy, the composition of the TMT is also likely to change. The ASA framework offers valuable insights on how these firm-level changes in strategy and structure may influence the attraction, selection, and retention of executives in TMTs. Based on bridging the ASA framework with more recent research on the antecedents of TMT diversity we propose:

> *Bridging Research Guideline 4:* Researchers should consider the structure, culture, and strategy of the organization as antecedents of TMT diversity over time.

Another area for bridging could be in terms of applying the categorization elaboration model offered by van Knippenberg and colleagues (2004) to understand the mixed effects of work team diversity. Van Knippenberg and colleagues specify two sets of micro-level processes that explain the effects of diversity on performance. These processes would be relevant for understanding the effects of TMT diversity on firm performance as well. The first

process, elaboration, is defined as "the exchange of information and perspectives, individual-level processing of the information and perspectives, the process of feeding back the results of this individual-level processing into the group, and discussion and integration of its implications" (van Knippenberg et al., 2004: 1011). This group-level exchange, processing, and integration of diverse information includes communication among members (Earley & Mosakowski, 2000), information utilization (Dahlin, Weingart, & Hinds, 2005), task conflict (Jehn et al., 1999), and comprehensiveness of decision making (Simons et al., 1999). Several studies have examined information elaboration processes as mechanisms mediating the TMT diversity–firm performance relationship (Boone & Hendriks, 2009; Knight et al., 1999; Simons et al., 1999; Simsek et al., 2005; Smith et al., 1994). Van Knippenberg and others (2004) further argue that certain conditions need to be met to activate the information elaboration process and to make its impact more salient. They propose that when the group task has strong information-processing and decision-making components and when group members are highly motivated and capable of processing rich and diverse information and perspectives, diversity is more likely to be associated with the information elaboration process (van Knippenberg et al., 2004).

Van Knippenberg and colleagues (2004) argue that a second process, social categorization, also exists in diverse teams, but the extent to which dissimilarities among members lead to social categorization is contingent on three conditions: cognitive accessibility (the ease with which the social categorization implied by the differences is cognitively recognized), normative fit (the extent to which the categorization makes subjective sense to group members), and comparative fit (the extent to which the categorization yields subgroups with high intragroup similarity and high intergroup differences). When these conditions are met, the social categorization aspects of diversity may be enacted and lead to in-group/out-group bias (i.e., intergroup bias favoring more similar in-group members over different others) that can eventually manifest in negative consequences for team functioning (van Knippenberg et al., 2004).

Taking these arguments, we surmise that the role of the CEO's or founder's philosophy regarding diversity and investments in diversity management practices over time may prime categorization versus information elaboration processes in TMTs. For example, in organizational settings where women and minorities are underrepresented and there is a lack of support for diversity policies, the cognitive accessibility, normative, and comparative fit of demographic categories is likely to be higher, leading to social categorization processes based on demographics in TMTs. Depending on whether information elaboration versus categorization processes are primed, TMT diversity will manifest in firm outcomes such as strategic change, innovation, and return on assets or equity. Thus, based on these micro-level perspectives, we propose:

> *Bridging Research Guideline 5:* Researchers should incorporate information elaboration and social categorization as processes mediating the relationship between TMT diversity and firm performance outcomes while also acknowledging organizational factors (such as leadership, strategy, and investments in diversity management) as moderators of this relationship.

*Bridging opportunities in research on firm diversity*. As we noted earlier, compared to the three domains of literature reviewed above, research in the area of firm diversity is scarce.

Further research on this topic has failed to reveal direct linear effects of firm diversity on performance outcomes. Curvilinear effects reported have been contingent on the industry setting in which firms are embedded. Macro theoretical perspectives applied in this area include the organizational demography perspective (Pfeffer, 1983) and the resource-based view of the firm (Richard et al., 2007). In general, an emergent theme in this area has been to incorporate environmental contingencies such as industry setting in explaining the firm diversity–performance relationship (Richard, 2000; Richard et al., 2007). Aligned with this trend, we propose that incorporating additional social psychological perspectives on intergroup relations (Allport, 1954; Blalock, 1956; Sherif, Harvey, White, Hood, & Sherif, 1961) will also be of value and point to contingencies outside of the business environment that can shape firm diversity effects.

Brief, Umphress, Dietz, Burrows, Butz, and Scholen (2005) have noted a long tradition in community research that has considered the role of proximity between minority and white individuals on intergroup relationships (Blalock, 1956; Giles, 1977). This research is based on the premise that perceptions of resource scarcity enhance the threat perceived from out-group members. As a result, dominant in-group members view increasing proportions of out-group members as a threat and respond by forming prejudicial attitudes toward them (Sherif, 1966; Sherif et al., 1961). Based on this premise, researchers have looked at the effect of the demographic composition of communities on the attitudes of white and minority individuals. At the community level of analysis, research suggests that the metropolitan concentrations of blacks was associated with occupational and income inequality in some geographic locations (Taylor, 1998). The proportion of blacks in communities has also been associated with higher levels of prejudice among white individuals (Blalock, 1956; Pettigrew, 1959; Taylor, 1998). Corroborating this research in an organizational setting, Brief and his colleagues (2005) found that the closer whites lived to blacks, the more likely they were to perceive interethnic conflict in their communities and respond negatively to black coworkers within the organization.

Within the sociopsychological domain, the intergroup contact perspective also suggests that the nature of interactions with diverse individuals outside the organization can shape the nature of interactions within organizations. Pettigrew (1998) noted that optimal intergroup contact requires sustained long-term interactions with out-group members and highlights the role of individuals' past experiences with the out-group members, and their value differences may shape the manner in which they approach intergroup contact situations. Further, Pettigrew noted that the level of intergroup conflict in the immediate community might play a role in shaping the manner in which individuals approach intergroup contact situations. These perspectives suggest that individuals' past experiences and encounters in the nonwork domain can shape their interactions with out-group members and intergroup relationships at work with consequences for firm performance. Within the domain of psychology, Alderfer's (1987) embedded intergroup relations perspective also draws attention to the importance of considering past history of ethnic relations in organizations as a predictor of ethnicity-based dynamics within an organization. Based on these micro-level perspectives, we propose that for researchers examining firm demographic diversity as an antecedent of performance outcomes considering the role of community relations as well as the history of intergroup relations in the focal organization would be important.

With reference to recent research efforts to outline the curvilinear effects of firm diversity on performance, micro-level perspectives would suggest accounting for changing intergroup relations in the immediate community as well as within the organization as additional contingencies. Based on these micro-level considerations we propose:

*Bridging Research Guideline 6:* Researchers should explicitly consider the community demographics and history of intergroup relations in the firm and community while examining the relationship between firm demographic diversity and outcomes such as firm performance and innovation.

## Methodological Framework for Future Demography Research

So far we have provided an overview of four predominant areas in workplace demography research that span micro and macro domains. Based on a review of these areas, we have distilled sources of discrepancies in the research findings as well as highlighted some trends aimed at resolving these discrepancies. In addition, we have sought to bridge micro demography research with macro theoretical perspectives and macro demography research with micro theoretical perspectives and offered bridging research guidelines for future research in this area. These guidelines also open up the discussion for enlarging the repertoire of methodological approaches in the field. Below, we discuss three specific methodological directions that offer potential tools for building upon these research guidelines—multilevel methods, case study and ethnographic approaches, and longitudinal analyses.

### *Multilevel Models*

As discussed with respect to Bridging Research Guidelines 1, 2, and 3, integrating micro and macro demography research involves the inclusion of both individual-level and unit-level demography constructs in multilevel theory building and model testing. In proposing various multilevel demography models, we follow the typology for multilevel models developed and discussed in detail by Klein, Dansereau, and Hall (1994) and Kozlowski and Klein (2000), along with some newer developments in this direction (e.g., Edwards & Lambert, 2007). Aguinis, Pierce, Bosco, and Muslin (2009) suggest that multilevel models have gained prominence in the past decade of management research. Our own review of the field suggests that in the area of demography such studies are scarcer. The bridging guidelines that we offered above suggest numerous possibilities that are particularly suited for testing via multilevel analyses.

Cross-level and mixed determinants models are particularly relevant for incorporating antecedents at multiple levels of analyses. A cross-level effect model specifies the direct or moderating effect of a higher level construct on lower level outcomes. A mixed determinants model specifies the effects of multilevel determinants on a lower level outcome. For example, a basic cross-level model would consider how business unit–level demographic composition may influence team-level performance or moderate the effects of team-level diversity on team performance. A mixed determinants model would consider how business unit–level diversity along with team-level diversity would influence team performance. RCM can be

used to assess cross-level and mixed determinants models. For example, when the predictor is a higher level construct, that is, firm- or business unit–level diversity, RCM can be used to estimate the top-down impact of diversity on team performance. When the predictors include both a team-level construct (i.e., team diversity) and business unit–level diversity, RCM can be used to estimate their simultaneous influences on team performance.

In addition, *mixed effects models* can incorporate *outcome*s at multiple levels of analyses in relation to antecedents at multiple levels. For example, organizational demography, team diversity, and individual-level dissimilarity may have implications for individual-level intent to turnover as well as team-level performance. A mixed effects model would allow us to incorporate outcomes at the team level as well as at the individual level of analysis in relation to business unit– or firm-level diversity climate, with team diversity and individual dissimilarity as antecedents. To estimate such a model, we would need to conduct two sets of RCM analyses. In the first set of analyses, team performance is the outcome variable, and a two-level RCM analysis assesses the simultaneous effects of organizational demography (Level 2) and team diversity (Level 1) on team performance. In the second set of analyses, individual intent to turnover is the outcome variable, and a three-level RCM analysis assesses the concurrent effects of organizational demography (Level 3), team diversity (Level 2), and individual dissimilarity (Level 1) on individual turnover intention.

In addition, to assess models involving both mediations and moderations, Edwards and Lambert (2007) advocate a moderated path analysis approach, which produces a group of models that highlight the first-stage effect (from the independent variable to the mediator), second-stage effect (from the mediator to the dependent variable), direct effect (from the independent variable to the dependent variable), and indirect effect (from the independent variable to the dependent variable through the mediator) at different values of the moderator. For example, such a model may be applied to test the simultaneous effects of individual-, team-, and unit-level demographic constructs on individual and team performance via the mediation of a specific process such as social categorization or information elaboration and the moderation of organizational variables such as demographic composition or climate.

As we noted in the previous sections, the theoretical assumptions underlying micro and macro levels of demography research are often similar. For example, social categorization theory has been invoked to understand the effects of individual dissimilarity on individual attitudes and performance (Liao et al., 2008; Tsui et al., 1992), as well as the effects of team demographic diversity on team process and performance outcomes (Jackson et al., 2003; van Knippenberg et al, 2004; Williams & O'Reilly, 1998). At the firm level, TMT diversity researchers draw on information-processing perspectives to propose that some aspects of diversity such as educational background and tenure provide teams with a cognitive resource base that enables more superior decision making (Carpenter & Fredrickson, 2001; Hambrick & Mason, 1984; Smith et al., 1994). A similar argument is made at the work group level (Jackson et al., 2003).

*Homologous multilevel models* offer opportunities to integrate these various approaches to understanding diversity or dissimilarity outcomes in organizations. Homologous models test whether relationships at one level of analysis are generalizable to parallel constructs across other levels of analysis. As noted by Chen, Bliese, and Mathieu (2005), homologous models provide a

> logical basis from which to start considering multilevel relationships. If researchers find that relationships are homologous across multiple levels of analysis it adds to the parsimony and breadth of theories. In contrast, if relationships prove not to be homologous across levels it signals a boundary condition and a need to refine theories and to better understand how processes operate at each distinct level. (p. 376)

In this way, homologous multilevel models may be especially valuable for identifying the generalizability or the boundary conditions associated with a specific theoretical framework such as social categorization theory or information-processing perspectives. Such an effort may also enhance the practical relevance of demography research by providing insights on interventions that may be designed at the individual, group, or firm levels.

Given the growing sophistication of these methods, we surmise that the field is particularly well suited for further development by applying the various multilevel methods described above. Of course, such research is likely to be more challenging then single-level approaches. Like any multilevel research, sampling issues are a major challenge for multilevel demography research and are more complicated than sampling for demography research conducted at one single level. As a general sampling principle, researchers must strive to ensure that samples show adequate variability on the constructs of interests, at all relevant levels in the model (Kozlowski & Klein, 2000). In addition, since the higher level constructs involved in multilevel demography research often represent configural unit properties (e.g., gender diversity, ethnic diversity), either we should strive for 100% response rate if we rely on individual members to supply this individual demographic information, or we should use a reliable external source (e.g., an expert informant or the company's archival data) to obtain the complete data. The latter approach is probably more desirable given the wide adoption of human resources information systems that typically store employee demographic information.

### *Case Studies and Ethnographic Approaches*

Qualitative approaches are gaining ground in management research (Aguinis et al., 2009). We propose that for following Bridging Research Guidelines 3 and 4 specifically, ethnographic and case study methodologies would also be important. As an example of such an approach, consider Gusfield's (1957) classic analysis of the Women's Christian Temperance Union (WCTU), a reformist organization that existed in the early part of the 20th century. The study showed that the repeal of Prohibition in 1933 led to intense cohort-based conflict in the WCTU. This conflict was driven by a need of the more tenured members to maintain power and control in the organization, and it led to turnover among less tenured members and ultimately to a decline of the WCTU (Gusfield, 1957). This study highlights how a single event (repeal of Prohibition) triggered conflict based on tenure differences in this organization and ultimately led to its demise.

Similar approaches to studying diversity in organizations may pertain to, for example, the role of race riots in determining race-based relationships or a gender discrimination lawsuit predicting gender dynamics in organizations and the lawsuit's implications for organizational performance. Relevant in this regard is Alderfer's (1987) embedded intergroup relations

approach that has been primarily applied to studying race relations in organizations; this approach suggests that intergroup encounters in organizations mirror intergroup relationships in the larger social structure. Therefore, in identifying diversity attributes and hypothesizing about diversity effects, researchers should pay attention to community and organizational intergroup relations (Alderfer, Tucker, Morgan, & Drasgow, 1983). The case study or ethnographic approach introduced above would seem particularly well suited for this purpose.

We propose that qualitative methods would also be valuable in general for setting a programmatic agenda for studying diversity effects (see Chatman & Flynn, 2005, for such an approach). This programmatic approach could involve the following four steps: In Step 1, the researcher's observation of specific diversity-related issues emerging in a particular organization may lead to the development of an initial research model. For example, debates over retiree benefits in a company may signal underlying intergenerational conflict between age-based cohorts. In this context, examining dynamics relevant to age cohort–based diversity may be a pertinent area of inquiry. In Step 2, researchers may extend these observations to develop a theoretically driven causal model regarding the relationship between generational differences and resource allocation behavior in an experimental setting. In Step 3, researchers may return to the field to validate findings from the experimental studies through qualitative or survey-based measures that tap into the role of intergenerational dynamics in the development of group norms or cooperative behavior in groups. In Step 4, researchers may further refine the initial theoretical model and pose newer research questions regarding the role of intergenerational processes and its impact in organizations and extend this model to other organizational contexts. In general, such approaches offer several opportunities for future diversity research.

### *Longitudinal Approaches*

Longitudinal models would be particularly appropriate for engaging with several aspects of the bridging research guidelines discussed earlier. For example, we noted that in general TMT diversity research has considered the demographic composition of the TMT as a predictor of firm performance and that less attention is focused on the antecedents of TMT diversity. However, the ASA model (Schneider, 1987), which has been primarily applied at the micro level, would imply that individuals of certain demographic characteristics will be attracted by, selected into, and retained by organizations that have strategies, structures, and cultures that fit with or embrace these characteristics. To fully test the implications of this theory at the TMT level, it may also be important to apply longitudinal approaches that consider whether founders' strategic choices and changes in a firm's strategy over time influence the composition of the TMT. In addition, researchers may examine whether investments in diversity management practices over time lead to greater TMT diversity and lower turnover rates of minorities and women from TMTs.

As an illustration, based on Bridging Research Guideline 5, we might consider a multilevel longitudinal model that examines how both *time invariant* and *time variant* factors can influence the effects of TMT diversity on firm performance over time. In this model, the outcome variable, firm performance, can be assessed repeatedly during the study period. At

the lower level, or the within-TMT level, TMT composition can be modeled as a time variant predictor of firm performance and measured repeatedly and concurrently with the measure of firm performance. At the higher level, or the between-TMT level, we may examine the founder's prodiversity attitude as a moderator for the within-TMT-level relationship between TMT diversity and firm performance. Assuming the founder's prodiversity attitude is relatively stable during the study period, it can be modeled as a time invariant factor. In addition, investments in diversity management may be considered as a time variant moderator for the relationship between TMT diversity and firm relationship, and it can be measured repeatedly over the study period. A similar approach can also be taken to incorporate the effects of changing community demographics on the relationship between firm diversity and performance over time (Bridging Research Guideline 6). Multilevel analytical methods described earlier can be used to estimate such longitudinal models.

## Conclusion

In the past two decades, two parallel themes have dominated organizational efforts at managing workplace diversity. The first theme has emphasized a business case for diversity. Under this banner, practitioners and scholars have sought to establish a positive relationship between workplace diversity and business performance as a way to justify growing investments in diversity management practices (see Kochan et al., 2003). A second theme is reflected in several high-profile gender and race discrimination lawsuits filed against prominent firms such as Walmart, Texaco, Merrill Lynch, and Coca-Cola Enterprises. These lawsuits indicate that concerns regarding gender and race inequities continue to stay in the forefront. On the academic front, research on the effects of individual demographic dissimilarity relative to work groups, team diversity, and firm or TMT diversity has been by and large equivocal. One possibility underlying this mixed terrain of findings may be that TMT- and firm-level research has not engaged sufficiently with micro-level theoretical perspectives. We also note that some individual and team-level research has ignored the impact of more macro-level environments in which interpersonal interactions between demographically different individuals are nested. We have attempted to make the case that a research agenda involving the bridging of micro and macro domains in this area is one way to resolve some of the discrepancies noted in past research, and we have provided some preliminary research guidelines and methodological directions in this regard. The guidelines developed in this article provide several directions for reconceptualizing workplace demography research by expanding the theoretical perspectives and methodological approaches to frame a phenomenon of interest. We hope that research guidelines proposed in this article open up several new avenues for future workplace demography research.

### Note

1. An expanded list of all articles included in reviews presented in this section and detailed effect size information is available from the authors upon request.

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