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DEMOGRAPHY AND DIVERSITY IN ORGANIZATIONS:
A REVIEW OF 40 YEARS OF RESEARCH

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ABSTRACT

It is now accepted wisdom that a major challenge facing managers in the next century will be an increasingly diverse workforce. But what conclusions can be drawn from the research on demography and diversity about meeting this challenge? Is there, as some researchers suggest, a "value in diversity", or, as suggested by others, does diversity make group functioning more difficult? The purpose of this paper is to provide a systematic review of the literature on organizational demography and diversity as it applies to work groups and organizations. We review over 80 studies relevant for understanding the effects of demography as it applies to management and organizations. Based on this review, we summarize what the empirical evidence is for the effects of diversity and suggest areas for further research.

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Much research and popular writing on the management challenges of the next century begin with a recognition of the changing nature of work and the workforce (Johnston & Packer, 1987; Offerman & Gowing, 1990). While this observation is true, it is sometimes difficult to translate these macro shifts in demography into the practical problems faced by participants and managers. What are the issues that managers in the new environment will face and how do these compare to managers of the previous generation? To make these differences concrete, consider the task faced by the supervisor of a hypothetical marketing team in a consumer products company in 1955 compared with the same task in 2005.

> In 1955 the firm has just hired three new employees who will join a product marketing group to handle the growth of new business brought on by the baby boom. The department is headed by a manager, a 35-year-old white male with a college degree, who has been with the firm since joining the company after serving with the Navy in WWII. The current group has four members, all white males ranging in age from 25 to 35. All joined the company with the intent of making a career within the firm. Three of the four have college degrees and two of them have served in the military. One of them is a first-generation Italian. The three new members are also white males. One of them has a college degree, two served in the military during the Korean conflict, and one is an immigrant from Europe.
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> In 2005 the firm again hires three new employees to join a product marketing team to handle the growth of new business resulting from the expansion of the Hispanic population in the Southwest. The team is headed by a 28-year-old female MBA who joined the firm two years ago after a successful stint at an advertising firm. The current cross-functional team has four members, two women and two men. The two women are Asian and Hispanic, one a first-generation Chinese with a degree in marketing and the other an immigrant from Mexico with a degree in Chicano studies. One of the two males has a junior college degree, the other a GED high school diploma. One is a 49-year-old black with extensive experience in radio and television advertising who served in the military during Vietnam. The other is a 24-year-old white male who is gay. None of the team has been with the firm for more than five years.

Consider the very different challenges in successfully managing these two groups. In 1955 the manager dealt with what is comparatively a very homogeneous group with little variation in the composition in terms of sex, race, education, values, and previous experience. To be effective at managing a similar group 50 years later, a manager must be able to accommodate large differences in these same attributes. Yet, in both instances success of the group depends on its ability to function as a group and to meet its customer's needs. The manager in 2005 faces a more difficult task than an equivalent manager 50 years earlier, although the nature of the work remains essentially the same.

This is the kind of demographic diversity that is critical to understand in American organizations in the next decade. Over the next decade women and people of color are expected to fill 75 percent of the 20+ million jobs created (Friedman & DiTomaso, 1996; Loden & Rosener, 1991). By the year 2000 the workforce is expected to have nearly equivalent numbers of men and women (Jackson, Stone, & Alvarez, 1993), and about 17 percent of new entrants into the workforce will be African Americans (Ferdman, 1992). In addition, differences in variables, such as

functional background, education, and experience, which have always been pervasive in organizations, will further complicate the situation. The diverse individuals entering the workforce will not only be different in terms of their visible or ascriptive characteristics, they may also have less experience and educational attainment. Furthermore, the use of work teams to coordinate and manage work in organizations will mean broader spans of control, fewer supervisors, and more reliance on self-management by teams. These trends, plus increased immigration, the globalization of firms, and an aging workforce, all increase the need to understand the effects of diversity on group and organizational outcomes.

Although there has been much popular reference to the changing demography of the workforce, diversity is not new to scholars. In the past 40 years research on the effects of diversity on group process and performance has been conducted by researchers in many domains. Psychologists, economists, sociologists, anthropologists, communication and education researchers, and organizational scholars have conducted laboratory and field studies examining the effects of sex, race, age, education, tenure, and personality variables on group performance (e.g., Allport, 1954; Aronson, Blaney, Stephan, Sikes, & Snapp, 1978; Blau, 1977; Hallinan & Smith, 1985; Lazear, 1997). Some researchers have argued that diversity, when properly used, can be beneficial for organizations and ultimately improve performance, also known as the "value-in-diversity hypothesis" (Cox, Lobel, & McLeod, 1991), while others have shown strong evidence that diversity is deleterious to group functioning (e.g., Brewer, 1979; Guzzo & Dickson, 1996; Messick & Massie, 1989; Triandis, Kurowski, & Gelfand, 1994). Milliken and Martins (1996, p. 403), in a comprehensive review of the diversity literature, concluded that "diversity appears to be a double-edged sword, increasing the opportunity for creativity as well as the likelihood that group members will be dissatisfied and fail to identify with the group." This is the challenge that organizations face.

There are two differences between these camps of scholars that will be used as an organizing framework in this review. First, most of the research that supports the claim that diversity is beneficial for groups has been conducted in the laboratory or classroom setting, instead of examining intact working groups within an organizational context. In the laboratory the results sometimes show that group diversity can improve the quality of a given decision or the creativity of an idea (e.g., Kent & McGrath, 1969; Priem, Harrison, & Muir, 1995). The research on intact working groups, on the other hand, paints a less optimistic view of the effects of diversity on group functioning. It provides evidence of the possible dysfunctional aspects of heterogeneity in groups, including increased stereotyping, in-group/out-group effects, dysfunctional conflict, and turnover (e.g., Linville & Jones, 1980; O'Reilly, Snyder, & Boothe, 1993; Pelled, 1996; Tsui, Egan, & O'Reilly, 1992). Throughout this review we will distinguish between findings from the laboratory or other controlled settings such as the classroom, and those based on actual work groups as found in organizations. We conclude that there is

much more ambiguity in the findings from the field. Reasons for this ambiguity will be discussed in the final section of this chapter.

Second, much of the literature that supports the claim that diversity is beneficial for groups is often based on variation in individual attributes such as personality, ability, and functional backgrounds, and not on ascriptive attributes such as ethnicity and sex (e.g., Altman & Haythorn, 1967; Hoffman, 1959; Levy, 1964; Triandis, Hall, & Ewen, 1965; Zeleny, 1955). With the changes in the demography of the workforce, understanding the effects of visible attributes is even more important than it used to be. Although there is evidence from laboratory research that diversity in ascriptive characteristics can be beneficial to groups (Cox, Lobel, & McLeod, 1991; Watson, Kumar, & Michaelsen, 1993), this is based on only a few studies when considered against the large number of field studies suggesting that heterogeneity in race and gender often have negative effects on group process and performance (e.g., Cummings, Zhou, & Oldham, 1993; Kizilos, Pelled, & Cummings, 1996; Riordan & Shore, 1997; Zenger & Lawrence, 1989).

Based on a number of previous reviews of the diversity literature (Alderfer & Thomas, 1988; Davis-Blake, 1992; Guzzo & Dickson, 1996; Jackson, 1992; Jackson, Stone, & Alvarez, 1993; Konrad & Gutek, 1987; Milliken & Martins, 1996; Phinney, 1996; Stewman, 1988; Triandis et al., 1994) as well as our own search, we reviewed over 80 studies of the effects of diversity on group process and performance. This is not intended to be an encyclopedic review of all demography and diversity research, but focuses on demographic diversity relevant for groups and organizations. Our intent is to assess what we know and what we don't know about the effects of diversity in organizational settings. To do this, we first clarify what is meant by "diversity" and then define what we mean by "group performance." We then consider the three primary theories underlying much of the research on organizational demography and diversity: social categorization, similarity/attraction, and informational diversity and decision making. Next we review the effects of the most common demographic variables used in the research (i.e., tenure, age, sex, race and ethnicity, and background). For each of these five demographic variables we examine the evidence for its impact on group process and performance. We conclude with the implications for future research and theory.

THE MEANING OF "DIVERSITY" AND "PERFORMANCE" IN ORGANIZATIONS

In a recent review of the literature on groups and teams in organizations, Guzzo and Dickson (1996, p. 331) concluded that, in spite of its recent popularity, there is little consensus on what constitutes "diversity" and how it affects group performance. They suggest that "there is a real need to develop theory and data on the ways in which dissimilarity among members contributes to task performance" (p. 331). For example, Jackson, Stone, and Alvarez (1993, p. 53) use diversity "to refer to situations in which the actors of interest are not alike with respect to some attribute(s)." They further differentiate between demographic and personal attributes. The former being immutable characteristics such as sex, race, or age, while the latter are subjectively construed characteristics such as status, expertise, or style. Konrad and Gutek (1987) focus on characteristics of group composition that are salient, have some social meaning, and elicit predictable reactions from others. Decision-making researchers typically define diversity in terms of variation in expertise or information (Wittenbaum & Stasser, 1996), but not demographic or group affiliation. Organizational demography researchers have concentrated mainly on characteristics that are visible, such as age, race, or sex, or job-related attributes such as functional background and tenure (e.g., Bantel & Jackson, 1989; Wagner, Pfeffer, & O'Reilly, 1984; Wiersema & Bird, 1993). While useful, these studies do not provide a common metric from which to judge the effects of diversity on groups. What is clear is that diversity is not a unitary construct (Phinney, 1996; Smith, Smith, Olian, Sims, O'Bannon, & Scully, 1994). Therefore, in order to understand the effects of diversity on group performance, it is important to be clear what the terms "diversity" and "group performance" mean.

Defining "Diversity"

For purposes of this review, we adopt a social psychological perspective on diversity and draw on social categorization theory (Turner, 1987) to define it. As Triandis, Kurowski, and Gelfanc (1994, p. 790) note in their comprehensive review of diversity, all humans tend to be ethnocentric such that "in intergroup relations people tend to use any attributes that happen to be available (are most salient) to make these categorizations, even if these attributes are trivial or explicitly random." This approach echoes Allport (1954) who observed that individuals have a natural tendency to use categories to simplify the world of experience. Therefore, for our purposes, the effects of diversity can result from any attribute people use to tell themselves that another person is different. A specific situation and social construction may make salient certain attributes whether or not they are relevant to the task. If salient, these distinctions, regardless of how task-relevant they are, may lead to in-group/out-group distinctions and potentially affect group functioning (e.g., Ethier & Deaux, 1994; Mullen, 1983).

Two features of this broad definition are particularly relevant for understanding the effects of diversity in organizations. First, any attribute or social category that is underrepresented in a given group is likely to become salient as a possible basis for categorization (Kanter, 1977). For instance, being a Southerner in a group of Northerners or a poet among mathematicians highlights differences that might otherwise not be salient. Second, as several studies have noted, certain demographic characteristics such as race, sex, and age, are more visible and likely to be salient under most circumstances (e.g., Cummings, Zhou, & Oldham, 1993;

Pelled, 1996; Tsui, Egan, & O'Reilly, 1992). Previous research has shown that salient or visible characteristics are those most frequently used for social categorization (Rothbart & John, 1993; Stangor, Lynch, Duan, & Glass, 1992). Hence, although a large number of possible attributes can be used to differentiate individuals, those that are most salient or visible in a given situation are expected to be the most important markers of diversity.

This definition is largely consistent with other researchers who have distinguished between types of diversity based upon how observable or readily detectable the attributes are and their relevance for performance (e.g., Cummings, Zhou, & Oldham, 1993; Jackson, 1992; Pelled, 1997). Attributes that are readily detectable, such as race, age, and sex may be more likely to be used for categorization than less salient attributes such as education, experience, or personality characteristics. However, some visible characteristics such as age, sex, and race/ethnicity, may be low in job-relatedness, while education and experience are high. From a social categorization viewpoint, any characteristic made salient in a given situation may be the basis for categorization (Tajfel, 1982). Once evoked, stereotypes, biases, and prejudices are likely to be based upon these differences, leading ultimately to poorer process and performance, independent of their job-relatedness (Stephan, 1985).

With this definition in mind we have chosen to thoroughly review the following demographic characteristics; age, sex, race/ethnicity, organizational and group tenure, and educational and functional background. Several other variables that have been examined in the research will be discussed briefly in a final part of the review. We believe that the five variables mentioned have been the most thoroughly researched to date and are those characteristics relevant for U.S. managers to understand given the changing demographics of the labor force.

Defining "Group Performance"

Second, drawing on Hackman (1987), we consider "work groups" to be composed of individuals who both see themselves and are seen by others as an interdependent social entity embedded in a larger organization whose performance affects others, such as suppliers or customers. Task interdependence among group members is a necessary condition. In Hackman's (1987) view, "group performance" is defined by three criteria: (1) the productive output of the group meets or exceeds the performance standards of the customer; (2) the social processes used in carrying out the work maintain or enhance the capability of the members to work together on subsequent team tasks; and (3) the group experience satisfies rather than frustrates the personal needs of the group members. This definition calls attention to the fact that when considering group performance one must consider not only group-produced outputs, but also the consequences the group has for its members, and the capacity of the group to perform in the future (Gladstein, 1984).

This definition is important when reviewing the research on diversity since it calls attention to the fact that in organizations "group performance" includes the expectation that the group will function over a long period of time. This means that research based on artificial, short-lived groups with intellective tasks requiring a decision but no sustained interdependence, while useful for testing some theories, is not a complete foundation for judging the effects of diversity in an organizational context. Such groups might be appropriate for assessing theories of information use and decision making but do not permit an assessment to be made of the effects of processes such as conflict and cohesion on the long-term viability of the group. For these ends, research needs to focus on intact working groups in which members are interdependent over extended periods. The difference in conclusions about the effects of diversity on group process and performance based on laboratory and field studies will be highlighted later in the review.

THE THEORETICAL UNDERPINNINGS OF DIVERSITY RESEARCH

Researchers have used a number of theories to explain the effects of diversity on organizational process and performance. Different theories often lead researchers to offer plausible but contradictory predictions of the effects of diversity on groups and individuals. This section begins with a brief discussion of the three most common theoretical bases for investigating diversity: social categorization, similarity/attraction, and informational diversity and decision making. While not comprehensive, these theories, or their variants, are used in the majority of studies of organizational demography and diversity and are important for interpreting the empirical evidence. Based on these three perspectives, we provide a model that summarizes and integrates the majority of research reviewed in the following section and highlights similarities and differences among the theoretical predictions offered.

Social Categorization

The theory most often used by demography researchers asserts that variations in the demographic composition of work groups or teams affects group process (e.g., conflict, cohesion, communication), and that this process, in turn, affects group performance. The majority of this research is predicated upon the logic of social categorization theory (Tajfel, 1981; Turner, 1987) and social identification theory (Hogg & Abrams, 1988; Turner, 1982). The basic elements of these theories are straightforward. First, individuals are assumed to have a desire to maintain a high level of self-esteem. This is often done through a process of social comparison with others. In making these comparisons, individuals must first define themselves. They do this through a process of self-categorization in which they classify

themselves and others into social categories using salient characteristics such as age, race, organizational membership, status, or religion. This process permits a person to define him- or herself in terms of a social identity (Tajfel & Turner, 1986), either as an individual as a member of a social category or a member of one group compared to members of other groups. Insofar as the self-categorization process permits the individual to assume a positive self-identity, he or she may seek to maximize intra-group or intergroup distinctions and to perceive others as less attractive (Kramer, 1991). Research has documented that categorizing people into groups, even on trivial criteria, can lead members to perceive out-group members as less trustworthy, honest, and cooperative than members of their own (arbitrary) group (Brewer, 1979; Tajfel, 1982). For example, Stephan (1985) has shown that once the categorization has occurred, positive behaviors of in-group members and negative behaviors of out-group members are attributed to stable, internal causes.

The process of self-categorization has been shown to be both fundamental and powerful. Messick and Massie (1989) noted that the process of self-categorization often relies on "primitive generic social categories such as race, gender, and age." "Otherness" is typically seen as a deficiency (Loden & Rosener, 1991). This process results in increased stereotyping, polarization, and anxiety. In heterogeneous groups these effects have been shown to lead to decreased satisfaction with the group, increased turnover, lowered levels of cohesiveness, reduced within-group communication, decreased cooperation, and higher levels of conflict (e.g., Crocker & Major, 1989; Martin & Shanrahan, 1983; Moreland, 1985; Stephan & Stephan, 1985; Triandis, Kurowski, & Gelfand, 1994).

Further, the effects of self-categorization have been shown, under some circumstances, to lead to self-fulfilling expectations; that is, individuals evoke in others behavior that matches their expectations (Klayman & Ha, 1987; Snyder, Tanke, & Berscheid, 1977). For instance, Word, Zanna, and Cooper (1974) showed how interviewers of African Americans conducted shorter interviews with more displays of negative nonverbal cues. Such signals are likely to evoke similar responses from the recipients, leading to what Zamarripa and Krieger (1983, p. 205) refer to as "the chaining of nonproductive behavior." Researchers in this tradition conclude that stereotyping and prejudice are largely inevitable stemming from the automatic categorization process associated with cognitions of differences (Hamilton, 1979; Tajfel, 1981).

An extension of the social categorization approach to understanding the impact of diversity on cognitions and group process is proposed by Gaertner and his colleagues (e.g., Gaertner & Dovidio, 1986; Gaertner, Mann, Murrell, & Dovidio, 1989; Gaertner, Mann, Dovidio, Murrell, & Pomare, 1990). They propose that under some circumstances social categorization may lead to what they refer to as "aversive racism." This refers to the compensatory actions taken when individuals, confronted with a situation which threatens to make negative or prejudiced attitudes salient, react by amplifying those positive behaviors in ways that reaffirm

their egalitarian convictions. For example, in diverse groups this tendency may lead individuals to pointedly override any biased attitudes or behaviors, lest they and others see them as biased.

Although social categorization has been traditionally thought of as a theory of intergroup relations, the majority of empirical research on diversity and demography has proceeded by noting how individuals within groups may differ from one another, sometimes referred to as "relational" demography. In either case, diversity can promote the creation of in-groups/out-groups and other cognitive biases (e.g., Ely, 1994; Pelled, 1997; Riordan & Shore, 1997; Smith et al., 1994; Tsui, Egan, & O'Reilly, 1992). Results from these studies typically confirm the negative effects of diversity on group process and outcomes.

Similarity / Attraction

Another common theoretical foundation for studies of diversity rests on the similarity/attraction paradigm (e.g., Berscheid & Walster, 1978; Byrne, 1971). In his original paper on organizational demography, Pfeffer (1983) pointed out that it was the distribution of demographic differences in groups and organizations that could effect process and performance. Pfeffer called attention to the fact that the demographic composition of groups could result in variations in communication, cohesion, and integration. Underpinning these effects was the degree to which members perceived themselves to be similar to or different from others in the group.

The findings from decades of research on similarity/attraction confirm the theory's basic predictions; that is, similarity on attributes ranging from attitudes and values to demographic variables increases interpersonal attraction and liking (e.g., Byrne, Clore, & Worchel, 1966). Individuals who are similar in background may share common life experiences and values, and may find the experience of interaction with each other easier, positively reinforcing, and more desirable. Similarity provides positive reinforcement for one's attitudes and beliefs, while dissimilarity is seen as a punishment. For instance, similarity/attraction theory has been embedded in the principle of homophily and the effects it may have on communication in groups (Rogers & Bhowmik, 1971). In a free choice situation, when an individual can interact with any of a number of people, there is a strong tendency for him or her to select a person that is similar (e.g., Burt & Reagans, 1997; Lincoln & Miller, 1979). Homophily has been observed in friendship and voluntary interactions (Blau, 1977; McPherson & Smith-Lovin, 1987), as well as in organizational settings (e.g., Brass, 1985; Ibarra, 1992; Mehra, Kilduff, & Brass, 1996). Several laboratory studies demonstrate that heterogeneity leads to decreased communication, message distortion, and more errors in communication (e.g., Barnlund & Harland, 1963; Triandis, 1960).

Some of the earliest organizational demography research was based on the notion that similarity/attraction would operate to make heterogeneous groups less

effective. For instance, McCain, O'Reilly, and Pfeffer (1983) used similarity/attraction theory to hypothesize that members of academic departments who were significantly younger or older than the majority of their colleagues would be those most likely to leave. Tsui and O'Reilly (1989) invoked similarity/attraction to explain the effect of demographic differences between superiors and subordinates on outcomes such as performance evaluation ratings and friendship. An assumption in these studies is that a similar time of entry into the organization may be associated with increased homophily; that is, individuals who enter the organization at the same time have increased opportunities for interaction and shared experiences (Pfeffer, 1985). This gives them more opportunity to discover similarities in background and values than individuals who enter the organization in different cohorts. In addition, people who have already been in the group or organization will have already developed extensive communication networks which may be difficult to penetrate for new entrants (Katz, 1980; Roberts & O'Reilly, 1979). Numerous other studies of diversity in organizations have also invoked this theoretical framework (e.g., Flatt, 1996; Jackson, Brett, Sessa, Cooper, Julin, & Peyronnin, 1991; Pfeffer & O'Reilly, 1987; Zenger & Lawrence, 1989).

The similarity/attraction paradigm yields predictions that are consistent with social identity and social categorization theories. Jackson, Stone, and Alzarez (1993), for example, noted that social categorization and social identity offer a partial explanation for similarity/attraction theory in that reinforcement of one's attitudes and beliefs helps maintain a positive self-identity. The empirical findings from these studies are, in the main, also consistent in showing that dissimilarity often results in group process and performance loss, including less positive attitudes, less frequent communication, and a higher likelihood of turnover from the group, especially among those who are most different (Jehn, Northcraft, & Neale, 1997; O'Reilly, Snyder, & Boothe, 1993; Riordan & Shore, 1997).

Information/Decision Making

Also predicated partly on the similarity/attraction framework, a third theoretical perspective on the effects of diversity on groups explores how information and decision making can be affected by variations in-group composition (e.g., Gruenfeld, Mannix, Williams, & Neale, 1996; Wittenbaum & Stasser, 1996). For example, given that there is a propensity for individuals to communicate more with similar others, individuals in diverse groups may have greater access to informational networks outside their work group. This added information may enhance group performance even as the diversity has negative impacts on group process. Researchers have found some support for this proposition (Ancona & Caldwell, 1992; Jehn, Northcraft, & Neale, 1997; Zenger & Lawrence, 1989). Similarly, the same tendency to seek similarity within a group can lead the group to fail to capture all information possessed by group members, either through the isolation of

members who are different or the emphasis on common knowledge (Gigone & Hastie, 1993).

Information and decision-making theories propose that variance in group composition can have a direct positive impact through the increase in the skills, abilities, information, and knowledge that diversity brings, independent of what happens in the group process (Tziner & Eden, 1985). Demographically diverse individuals are expected to have a broader range of knowledge and experience than homogeneous individuals. For example, the proponents of immigration argue that diversity promotes creativity in the workforce. To accomplish this, Lazear (1997) argues that new immigrants must have information that is different from the existing workforce, have information that is relevant or useful, and must be able to communicate this to others. From this perspective, diversity is valuable when it adds new information. Clearly, this positive impact of diversity can be expected when the task can benefit from multiple perspectives and diverse knowledge, such as innovations, complex problems, or product design. Researchers largely agree that functional or background diversity provides the range of knowledge, skills, and contacts that enhances problem solving (e.g., Ancona & Caldwell, 1992; Bantel & Jackson, 1989; Pelled, Eisenhardt, & Xin, 1997). "Members who have entered the organization at different times know a different set of people and often have both different technical skills and different perspectives on the organization's history" (Ancona & Caldwell, 1992, p. 325).

Little information and decision-making research has been conducted exploring the effects of visible demographic characteristics on group decision making. A few laboratory studies have suggested that sex and ethnic or nationality differences may have positive effects on group process (cooperation) by expanding the number of alternatives considered and the perspectives taken (Kent & McGrath, 1969; Kirchmeyer & Cohen, 1992; McLeod & Lobel, 1992; Watson, Kumar, & Michaelsen, 1993). For instance, Cox, Lobel, and McLeod (1991, p. 828) argued that "differences in cultural norms and values among ethnic groups in the United States will manifest themselves in different work-related behaviors....Asians, Hispanics, and Blacks have roots in nations with collectivist tradition, whereas Anglos have roots in the Euro-Anglo tradition of individualism." They argue that these differences may be related to cooperative behavior, with minority individuals and ethnically diverse groups manifesting more cooperative behavior than Anglos or homogeneous groups of Anglos. These studies, although provocative, are few in number and not strongly supported by studies on organizational work groups.

An Integrated Model

Figure 1 provides an overall perspective showing how these three theoretical perspectives link variations in the composition of groups to group process and outcomes. Each begins with the proposition that demographic variation within groups will affect the ability of the group to function. From a decision-making perspec-

tive, diversity in the composition of the group is proposed to increase the information available for problem solving and, in turn, enhance the ability of the group to generate correct or creative solutions to problems; that is, the emphasis is on an enhanced capability for problem solving. Although never explicitly investigated, it is reasonable to presume that the effect of increasing information availability has a curvilinear effect such that some initial diversity has more value than subsequent increments; that is, there is a diminishing value to added information.

Social categorization and similarity/attraction theories highlight the potentially divisive effects of increased cognitive biases and decreased liking on group functioning that result from "otherness." Diversity is proposed to result in increased conflict, factionalism, and communication difficulties. These processes are often hypothesized to result in a diminished ability of the group to solve problems, in spite of possible gains in information, and a reduced commitment to the group by individuals since a divisive group is less likely to satisfy its member's needs. Again, while not explicitly hypothesized, it is likely that increasing diversity has an exponential effect such that some small increase in diversity is less likely to be disruptive to group process than subsequent increases; that is, having one dissimilar member in a group creates less disturbance than two or more (e.g., Peterson & Nemeth, 1996).

As also suggested in Figure 1, the effects of diversity can be moderated by the situation. Since some of the potentially negative effects of increased diversity result from cognitive processes (e.g., stereotyping), it is reasonable that the same cognitive processes may offer a means for reducing the negative effects. For instance, creating a common identity or goal may, as Sherif (1936) demonstrated over 50 years ago, reduce in-group/out-group biases and promote solidarity. More recently, research has shown that strong, collectivistic cultures may reduce invidious social categorization effects (e.g., Chatman, Polzer, Barsade, & Neale, 1997; O'Reilly & Chatman, 1996). Similarly, other actions that call attention to similarities or differences may accentuate or diminish social categorization and similarity processes. Some types of diversity training may unwittingly highlight differences and create exclusive rather than inclusive categorizations (Nemeth & Christensen, 1996). Finally, other contextual influences such as technology or task design may also increase or decrease normative and informational influences on interpretations. For example, jobs may be designed that signal to people that they are interdependent or independent (Jehn, Northcraft, & Neale, 1997). These contextual influences can act to focus attention in ways that can subtly focus interpretations on similarities or differences. As such, they may unwittingly help or hinder group process and performance.

Summary

Overall, the theoretical foundations for most research on diversity and demography in organizations rest on variants of these three primary theories; social cat-

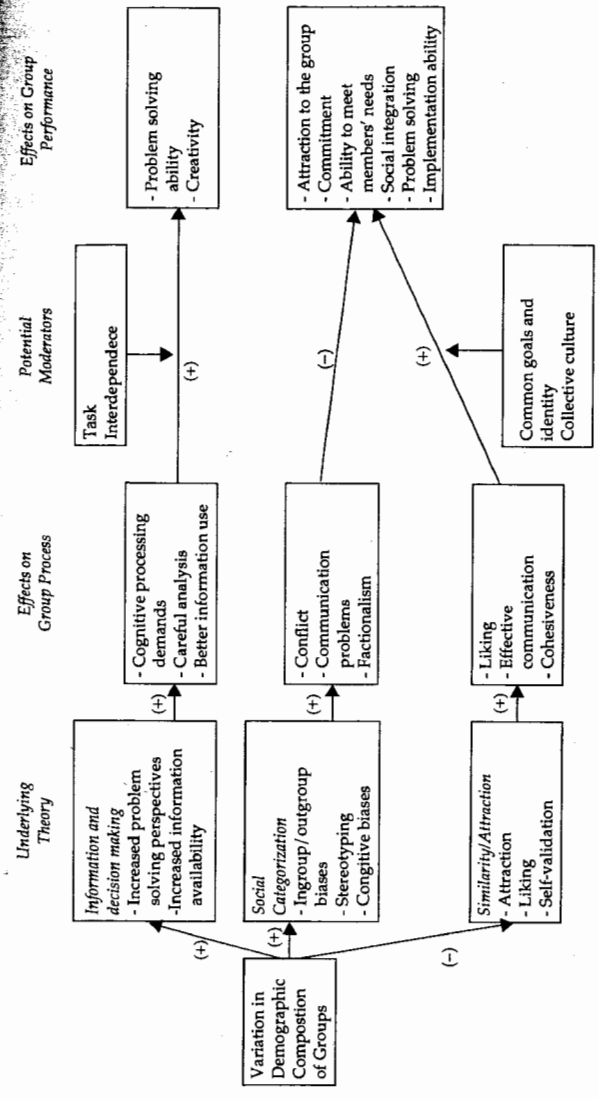

Figure 1. An Integrated Model of Demographic Impacts on Group Process and Performance

egorization, similarity/attraction, and information and decision making. As seen, these theories can lead to contradictory predictions. Taken separately, there is good empirical confirmation from careful laboratory studies for the causality proposed in each of these theories. However, it is the external validity of these findings in organizational settings that needs to be examined. Both social categorization and similarity/attraction argue for the positive benefits of homogeneity on group process. If, as many group researchers have argued, effective group process is a precursor to effective group performance, then theory would predict that, unless mitigated by some other process, diversity should have negative impacts on both group process and performance (e.g., Hackman, 1987; McGrath & Gruenfeld, 1993). Informational and decision theories, on the other hand, make the opposite prediction and argue for the positive effects of diversity offered through increased skills and information sets. These theories also predict that similarity may diminish group performance through the failure to obtain and use all available information. Taken together, the overall effect of increasing diversity is likely to have a u-shaped form with some increments of diversity having large positive increases in group problem-solving capability with comparatively small negative effects on group functioning. Large amounts of diversity in groups may offer little in the way of added value from unique information and make group cohesion and functioning difficult. Further, as discussed later, these curvilinear effects may be moderated by contextual influences such as informational influence or organizational culture that exacerbate or attenuate the fundamental processes of social categorization and decision making. The following section reviews the empirical evidence for the effects of diversity on group process and performance.

THE EFFECTS OF DEMOGRAPHIC DIVERSITY ON GROUP PROCESS AND PERFORMANCE

Before attempting to review the empirical literature on organizational demography and diversity, a brief caveat is in order. As suggested by the definition of diversity proposed earlier, not every aspect of diversity is expected to have the same effects on group process and performance. The context itself is a primary determinant of what differences are likely to be salient and task-related (Triandis, 1995). In this sense, any interpretation of research findings should be sensitive to the context. For instance, research has shown that as the proportion of individuals who possess a particular characteristic (e.g., sex or ethnicity) grows smaller, that characteristic may become more important in defining social identity (Abrams, Thomas, & Hogg, 1990; Ethier & Deaux, 1994; Kanter, 1977). Further, combinations or interactions among a person's social context and social identity may result in complex effects (Chatman et al., 1997). For example, being an African-American female physician in a hospital with a diverse workforce may result in different effects on group process than being the only American female engineer in a group

of male Japanese engineers. Indeed, research has shown how social categorization may change across situations and over time even within the same individual (Phinney, 1996). Further, the effects of demographic variables may also have distinct effects based on how task-relevant each is to the group. For instance, tenure with the organization may easily be a proxy for human capital and have positive effects on group performance, or, in the context of a long-term employee trying to assimilate into a group of newer employees, may have negative effects on group process. For these reasons, it is important when interpreting the research to recognize these limitations.

Based on the preponderance of empirical studies conducted, we have organized our review by focusing first on the research evidence for the impact of each of five demographic variables: (1) organizational and group tenure, (2) background differences, including functional specialty and education, (3) age, (4) sex, and (5) race/ethnicity. For each variable we examine the evidence for its demonstrated impact on two dimensions; group process and group performance. When we use the term group process, we are referring to the procedures or methods through which a group produces its outcomes. Based on the extant research, group process is most frequently investigated in terms of three primary dimensions; social integration, communication, and conflict. These three constructs are the most widely mentioned processes that are proposed to intervene between diversity and performance. Within the performance section we will discuss the effects of diversity on cognitive or intellective outcomes (such as creativity and decision making), as well as the effects of diversity on the continued well-being of the group and its members. Throughout both sections we note whether a study was conducted in the laboratory or in the field. Other dimensions of diversity, such as affective composition and status differences will be reviewed in the final part of this section.

Figures 1A and 2A in the Appendix summarize the studies reviewed, including a brief description of the demographic variables, the dependent variables, the nature of the sample, and the basic findings. As is evident, many studies include tests of more than one type of diversity and may be discussed in multiple sections of the paper. Table 1 provides an overall summary of the number of studies which have investigated each of the five major demographic variables. Table 2 classifies these studies by laboratory/field and process/performance dimensions. As is apparent from Table 1, the bulk of the research on demography and diversity has

Table 1. Summary of Number of Studies by Type of Demographic Variable (Studies contained in Figures 1A and 2A)

	Demographic Variable				
Type of Study	*Tenure*	*Background*	*Age*	*Sex*	*Race/Ethnicity*
Laboratory	0	8	0	8	9
Field	34	25	20	20	13

Table 2. Summary of Studies by Process and Outcomes (Studies contained in Figures 1A and 2A)

Dependent Variables	*Laboratory Studies*	*Field Studies*
Process Variables	13	25
Outcome Variables	17	42

been conducted in field studies, with the majority of attention paid to diversity in tenure and background variables. Understandably, laboratory studies have not investigated the effects of either tenure or age on group process or performance. Although not shown in the table, the average publication date for the laboratory studies reviewed was 1979 and 1993 for field studies, reflecting the shift from laboratory to field driven by studies of organizational demography. The evidence from Table 2 shows a roughly even number of studies have examined group process and performance outcomes. A more fine-grained look shows that 80 percent of the laboratory studies reviewed used intellective tasks with creativity or quality of decision making as an outcome variable. In contrast, more than 40 percent of the field studies have used organizational-level performance measures such as strategic choice or financial returns. Another 40 percent of field studies have examined individual-level outcomes such as turnover or performance evaluations. Only 13 laboratory studies have examined group process, usually measured as cooperation or conflict. Field researchers, however, have conducted over 20 studies examining a rich set of group process variables and sometimes linking these effects to performance outcomes (e.g., Ibarra, 1997; Jehn, Northcraft, & Neale, 1997; O'Reilly, Caldwell, & Barnett, 1989; O'Reilly, Synder, & Boothe 1993; O'Reilly, Williams, & Barsade, 1997; Pelled, 1997; Pelled, Eisenhardt, & Xin, 1997). These studies offer a picture of the dynamics of group process and performance.

Although not broken out separately, Figures 1A and 2A also offer some insight into how demography has been conceptualized and measured. Laboratory studies most often operationalize diversity in terms of the number or proportion of "different" members in the group (e.g., Espinoza & Garza, 1985; Kirchmeyer, 1993). Field studies typically rely on four related measures of diversity: (1) the proportions of those considered different (e.g., Keck & Tushman, 1993; Konrad, Winter, & Gutek, 1992); (2) the coefficient of variation at the group level of analysis for continuous demographic variables such as age or tenure (e.g., Smith et al., 1994); (3) an entropy measure that calculates the proportion of a given category for categorical variables such as sex or race (e.g., Pfeffer & O'Reilly, 1987); and (4) a Euclidean-distance measure that assesses the degree to which an individual is isolated from other members of the group (e.g., Wagner, Pfeffer, & O'Reilly, 1984). This last measure is used to assess "relational demography" or "the comparative demographic characteristics of members of dyads or groups who are in a position to engage in regular interactions" (Tsui & O'Reilly, 1989, p. 403).

While roughly comparable, there are two notable differences among these variables. First, the Euclidean-distance measure operationalizes diversity at the individual level and is suitable for investigating individual outcomes such as attitudes and behavior. It does not provide an overall measure of group diversity. Second, both the coefficient of variation and entropy measures provide accurate assessments of group-level diversity but do not offer a fine-grained understanding of where the variance is occurring. Since the coefficient of variation is the mean divided by the standard deviation, variations may occur from either term. This requires additional analyses to uncover the source of variation. Neither of these measures adequately captures proportional differences in group diversity that may be important (e.g., Abrams, Thomas, & Hogg, 1990). O'Reilly, Williams, and Barsade (1997), for example, found positive effects of ethnic diversity on innovation using an entropy measure. Subsequent analyses of the proportion of ethnic minorities in the groups revealed that this effect resulted from the proportion of Asians.

Tenure Diversity

Interest in variation in group and organizational tenure was stimulated by Pfeffer's (1983) seminal paper on organizational demography. Drawing on earlier demography research (e.g., Ryder, 1965), Pfeffer suggested that the demographic composition of groups could be an important determinant of process and performance. He argued that similarity in time of entry leads to increased communication which can promote integration and cohesion, as well as increasing similarity (Pfeffer, 1985). Since then, most organizational demography researchers have examined this variable, with more than 30 studies investigating the effects of group or organizational tenure. Arguments for the positive effects of tenure homogeneity are consistent with social categorization and similarity/attraction theories. The assumption is that individuals identify with others who enter the organization or group at the same time (Moreland, 1985; Tsui, Egan, & O'Reilly, 1992). The identification with others of similar tenure can positively affect group process and, in turn, improve performance.

As shown in Table 1, all research on tenure diversity has been conducted using field studies of actual work groups and management teams. Overall, there is strong evidence showing that tenure heterogeneity is associated with less effective group process as indexed by outcomes such as integration, communication, and conflict. The results for effects on group performance are more complicated, with some evidence for both positive and negative effects of heterogeneity (e.g., Hambrick, Cho, & Chen, 1996; Smith et al., 1994). Positive effects of tenure diversity may result from the diversity of perspectives and information that different cohorts bring to the group (Amason, 1996; Bantel & Jackson, 1989; Eisenhardt, Kahwajy, & Bourgeois, 1997). On the other hand, homogeneity is expected to benefit the

group by increasing communication frequency (Chatman et al., 1997; Kirchmeyer & Cohen, 1992; Zenger & Lawrence, 1989) and social integration (Good & Nelson, 1971; O'Reilly, Caldwell, & Barnett, 1989), and decreasing detrimental conflict (Pelled, 1997; Pelled, Eisenhardt, & Xin, 1997). Upon closer scrutiny, these differences in findings are partially accounted for by variations in the types of groups sampled, outcomes measured, and the presence or absence of control variables.

Group Process

The clear preponderance of evidence shows that heterogeneity in tenure has negative effects on group process. Much early evidence from small group experiments documented the relationship of similarity of group members to social integration and cohesiveness (e.g., Good & Nelson, 1971; Lott & Lott, 1965); that is, diverse groups often had lower levels of cohesiveness and satisfaction among their members. O'Reilly, Caldwell, and Barnett (1989), in a study of 20 work groups, found that heterogeneity in group tenure was associated with lower levels of social integration, which they defined as "the degree to which an individual is psychologically linked to others in a group." Smith and his co-authors (1994), in a study of 53 top management teams, found that heterogeneity of experience in the industry and with the company was negatively related to the amount of informal communication in the group. While they found no direct impact of heterogeneity in experience on social integration, they did find an indirect effect. Heterogeneity of experience affected social integration negatively through its negative impact on informal communication.

Homophily research has shown that people tend to communicate with individuals who are similar to themselves (Burt & Reagans, 1997; Ibarra, 1992; Lincoln & Miller, 1979; Rogers & Bhowmik, 1971). However, research on tenure diversity suggests a more complex picture. Zenger and Lawrence (1989) examined the effects of tenure and age diversity on technical communication for 19 project groups in a research division of an electronics firm. Homogeneity in tenure diversity was positively associated with technical communication. Homogeneity in age diversity was positively associated with communication outside the project group. This finding suggests that individuals seek out and talk to others who are similar in age even if they are not in the same work group. O'Reilly, Snyder, and Boothe (1993), in a two-year study of 24 top management teams, found that teams with less tenure diversity had more open communication than did teams with more tenure diversity, supporting the idea that homogeneous groups may have more open communication and less distortion of messages. Since top management teams show little diversity on other demographic variables, tenure diversity may be of increased salience and lead to more social categorization effects (Stangor, Lynch, Duan, & Glass, 1992).

In contrast, Ancona and Caldwell (1992) found that more diverse groups had better group functioning than homogeneous groups. They explained these unanticipated findings by suggesting that when complex goals need to be defined and priorities assessed, a group may do better if they have multiple experiences and perspectives (i.e., direct benefits from diversity in perspective). Eisenhardt, Kahwajy, & Bourgeois (1997), in an observational study of 12 top management teams, argued that heterogeneity in age and background promoted healthy conflict and disagreement. They noted that homogeneous teams had less conflict and made poorer decisions.

Several studies have reported significant associations between tenure diversity and conflict (e.g., O'Reilly, Williams, & Barsade, 1997; Pelled, 1993). For example, O'Reilly, Snyder, and Boothe (1993) found that teams with more tenure heterogeneity had higher levels of conflict and political activity than did groups with homogeneous tenure distributions. Thus, a consistent finding from field research is the positive association of tenure diversity and conflict in groups. Although arguments have long been made that conflict can have beneficial effects for the groups performance (e.g., Schweiger, Sandberg, & Ragan, 1986), the empirical picture has, until very recently, been unclear. As reviewed in the next section, four recent studies have helped understand the complexity of the associations between tenure diversity, group process, and performance.

Group Performance

Consistent with Hackman's (1997) definition, three outcomes are relevant for assessing group performance: the group's ability to solve problems; its ability to implement those solutions; and, its ability to meet group members' needs. The argument for the positive effects of diversity on group performance rests on two ideas. First, heterogeneous groups are seen as being more likely to produce a diversity of ideas and perspectives useful for problem solving than are homogeneous groups. Second, insofar as heterogeneous groups produce tension and conflict, this conflict will contribute to a more complete analysis of the issues at hand, and, consequently, better decisions and performance (e.g., Amason, 1996; Pelled, 1996; Watson, Kumar, & Michaelsen, 1993). Although there is comparatively little empirical research directly testing this idea (e.g., Fiol, 1994), there are studies showing that systematic procedures for considering opposing viewpoints can improve group decision making (e.g., Priem, Harrison, & Muir, 1995; Peterson & Nemeth, 1996; Schweiger, Sandberg, & Ragan, 1986).

Many of the early studies of tenure composition assumed that the positive associations between tenure diversity and turnover were mediated by group conflict. For instance, McCain, O'Reilly and Pfeffer (1983) studied gaps in time of entry of new members into 32 university departments. They found that discontinuities or gaps in the departments' tenure distribution (tenure diversity) were associated with the voluntary and involuntary turnover of the faculty. They argued that these

gaps were likely to increase conflict, reduce communication, and increase the likelihood that less central members would exit. Wagner, Pfeffer and O'Reilly (1984), in a study of 31 Fortune 500 top management teams, and Jackson and colleagues (1991) in a study of 93 banks' top management teams also found heterogeneity in tenure was positively related to turnover. Similar results can also be found in a large number of other studies (e.g., Alexander, Nuchols, Bloom, & Lee, 1995; Cummings, Zhou, & Oldham, 1993; O'Reilly, Caldwell, & Barnett, 1989; O'Reilly, Snyder, & Boothe, 1993; Pfeffer & O'Reilly, 1987; Wiersema & Bird, 1993). The evidence from these studies is convincing: increased tenure diversity in a group leads to higher turnover, especially among those who are most different. What is less clear, is what accounts for this outcome.

To clarify the causality of these findings, O'Reilly, Caldwell, and Barnett (1989) examined both the direct and indirect effects of heterogeneity in tenure on social integration and turnover. They found that tenure diversity had an indirect effect on turnover through its effect on social integration. Increased diversity led to lower social integration which resulted in higher turnover among those who were not socially integrated. Those individuals who were most different and least integrated were most likely to exit the group. No studies have found that increased tenure heterogeneity reduces turnover and only one reported no association between tenure diversity and turnover (Wiersema & Bantel, 1993).

An early expectation was that diverse groups would produce more creative outputs. However, as Ancona and Caldwell (1992) note, the situation is more complicated than this simple logic would suggest, "diverse groups bring creative potential to problem solving, but fall down on implementation because they have less flexibility and capability for teamwork than homogeneous groups" (p. 338). The question is, can a team capture the benefits and avoid the detrimental effects of diversity at the same time? Research on the effects of tenure diversity has offered mixed support for this hypothesis. A number of studies have shown that homogeneous groups may be more innovative and perform better than heterogeneous ones (Michel & Hambrick, 1992; O'Reilly, Snyder, & Boothe, 1993). O'Reilly and Flatt (1989), for example, found a positive relationship between top management team tenure homogeneity and ratings of organizational innovation. Goodman and his colleagues (Goodman & Garber, 1988; Goodman & Leyden, 1991; Goodman, Ravlin, & Schminke, 1987), in a study of underground mining crews, found that familiarity, which included an assessment of how long the crew had worked together, was positively related to higher levels of productivity and lower accident rates. Other studies have found that heterogeneity may have negative effects on performance (O'Reilly, Williams, & Barsade, 1997; Pelled, 1997; Smith et al., 1994). Overall, there is reasonable evidence that groups with homogeneous tenure may perform better.

In contrast, other researchers have reported positive performance effects for increased tenure heterogeneity (e.g., Eisenhardt, Kahwajy, & Bourgeois, 1997; Eisenhardt & Schoonhoven, 1990; Keck & Tushman, 1993; Kosnik, 1990; Murray, 1989; Virany, Tushman, & Romanelli, 1992). In a study of 223 units in a consumer products firm, Kizilos, Pelled, and Cummings (1996) found that tenure diversity was positively associated with more customer-oriented prosocial behavior among sales staff. Murmann and Tushman (1997), in a longitudinal study of 104 cement firms, found that increased heterogeneity in tenure within the top management team was associated with shorter response times to environmental jolts. In a study of the top management teams of 32 airlines, Hambrick, Cho, and Chen (1996) reported increased tenure heterogeneity to be associated with the firm's tendency to undertake competitive initiatives. Nevertheless, consistent with other studies, they also found that more heterogeneous teams were slower in their implementation than more homogeneous teams. In this regard, they also found that homogeneous top management teams were more likely to respond to their adversaries' initiatives. The authors concluded that "Its [*the homogeneous team's*] internal similarity, shared vocabulary, and relatively fluid exchange properties enhance its ability to interpret the competitor's move and decide to make a countermove" (p. 679, italics added). Ancona and Caldwell (1992) also found a direct negative effect of tenure diversity on adherence to the group budget and schedule, but overall the effect of diversity was positive.

Flatt (1996) has attempted to reconcile these contradictions by showing that at the organizational level the top management team is really two separate groups; the executive team comprised of the CEO and direct reports, and the senior management team consisting of vice presidents below this level. In her study of 47 firms across 11 manufacturing industries, she found that firms with top management teams characterized by comparative homogeneity in tenure and vice presidential or senior management teams that were comparatively more heterogeneous with regard to tenure composition were more innovative (measured as the number of patents awarded to a firm annually). She argued that it is the homogeneity of the executive team that aids the firm with implementation, while heterogeneity of the vice presidential team led to increased creativity; that is, creative alternatives are provided to the senior team who chooses among the alternatives.

Four recent studies have explicated these effects. Jehn, Northcraft, and Neale (1997), in a field study of 108 work groups, showed that demographic and value diversity increased relational conflict (conflict characterized by interpersonal disagreements) and decreased group functioning. However, informational diversity was associated with task conflict (conflict about the work itself), which was related to ratings of group performance. In a similar study of 45 teams, Pelled, Eisenhardt, and Xin (1997) also found both tenure and race heterogeneity to be positively associated with relational or emotional conflict. Functional diversity, a good proxy for variations in information and perspectives, was positively linked to task conflict and to performance. In both of these studies, relationship conflict was not associated with performance. O'Reilly, Snyder, and Boothe (1993) demonstrated that increased heterogeneity in tenure led to less effective group functioning and a diminished capacity of the group to adapt to change. O'Reilly,

Williams, and Barsade (1997) suggest how this effect might occur. In a study of 32 project teams they found tenure heterogeneity to diminish the ability of the group to implement decisions. Together these studies, using over 200 actual work groups, suggest that tenure diversity has negative effects on group process. If, however, this diversity also provides relevant information, and if the group can avoid the negative effects of emotional conflict, the resulting task conflict may improve group performance. Overall, only a few studies have found no relationship between tenure diversity and performance (Bantel & Jackson, 1989; Johnson, Hoskisson, & Hitt,1993; Wiersema & Bantel, 1992).

Summary

In general, there is strong evidence that diversity in tenure is associated with lower levels of social integration, poorer communication, and higher turnover in groups. Although under some circumstances turnover may have positive effects (Staw, 1980), the effects of tenure diversity found in the research reviewed here are considered negative; that is, those who are most different in terms of tenure are most likely to exit. This is consistent with social categorization theory research that has shown that newcomers to a group may be affected by in-group/out-group biases (Moreland, 1985). This pattern suggests that those who are least like the majority of the group, and who may offer a different perspective, are also those most likely to be isolated and excluded. Thus, either comparative newcomers who bring different perspectives or old-timers who may have valuable firm-specific knowledge, are likely to leave the group or organization. Although research using information and decision theory has not investigated this phenomenon, it seems likely that a lack of social integration stemming from tenure diversity should be associated with less effective information availability and decision making.

The effects of tenure diversity on performance are generally explained as indirect effects, operating through group process variables such as communication, conflict, or social integration. However, several researchers have also reported direct effects of tenure diversity on performance after controlling for group process (e.g., Ancona & Caldwell, 1992; Smith et al., 1995; O'Reilly, Williams, & Barsade, 1997). These findings suggest that intervening process variables are not capturing all of the effects of diversity. In contrast to the consistent effects of tenure diversity on affective outcomes, the effects of diversity in tenure on group cognitive performance are mixed at best. Flatt (1996) has suggested that both the positive and negative effects of tenure diversity are valid. She suggests that the problem resides in how the groups of interest are defined.

Several critiques of these findings have been made. Lawrence (1997) has questioned the causality of the findings, arguing that demographic effects stem from a "black box" logic; that is, the social psychological mechanisms have not been well explicated. However, given the large number of studies, this criticism seems forced. The combination of laboratory studies demonstrating the causality

between diversity and group process coupled with the external validity offered by the large number of field studies suggests that demographic diversity has negative effects on group functioning and performance. A second critique of the research on tenure diversity raises the possibility that the findings are a statistical artifact of the measure of tenure diversity used in these studies, the coefficient of variation. For instance, a completely homogeneous group is one composed of group members who all entered the group at the same time. To maintain their homogeneity, the group cannot experience any turnover. Once turnover does occur (for any reason), the heterogeneity of the group will, by definition, be increased. This implies that causality may be reversed with turnover leading to increased heterogeneity. While the example is valid in the limit, there is evidence mitigating against this possibility in studies showing that those individuals who are most dissimilar to the rest of the group members are the ones who are likely to leave (e.g., O'Reilly, Caldwell, & Barnett, 1989; Wagner, Pfeffer, & O'Reilly, 1984; McCain, O'Reilly, & Pfeffer, 1983). This means that both short- and long-tenured members of the group are just as apt to leave when they are distant from other members of the group.

Background Diversity

An assumption underlying the effectiveness of cross-functional teams is that decisions made by groups with diverse information will be of higher quality than by groups of employees holding the same knowledge (Jackson, 1992). Diverse groups are expected to contain more relevant expertise than homogeneous groups. This diversity of information and perspective may be indexed by differences in education or functional specialty. From this vantage point, variations in functional diversity provide a clear theoretical prediction: Increased functional diversity should be positively associated with group performance. Variations in education are expected to yield generally similar predictions but may not show as strong an effect since this may also index more or less education as well as different educational backgrounds. In contrast, people with different functional backgrounds have been trained to have different perspectives, knowledge, and skill sets.

But the informational advantages conferred by functional diversity may not be unambiguously positive. While associated with better decisions, functional diversity may also make group functioning more difficult. Thus, it may be that the potential benefits of increased information may be lost if group process is disrupted. For example, laboratory studies of information use in groups suggest that individuals are often reluctant to share unique information when it is distributed among group members (Wittenbaum & Stasser, 1996). In this way, functionally diverse groups may undermine their own performance by ignoring or undervaluing the unique information group members possess.

Ironically, laboratory studies have shown that groups may be more able to use unique information when group members are familiar with one another, instead of

being strangers (Gruenfeld, Mannix, Williams, & Neale, 1996). If this is the case, functional diversity may have positive effects on information use when the group is more similar (e.g., homogeneous with respect to tenure) or has developed an explicit structure designed to overcome any process loss from diversity. Consistent with these arguments, Stasser, Stewart, and Wittenbaum (1995) found that the assignment of expert roles (which can be proxies for differences in functional background) improved the sharing of unique information and enhanced performance, and Pelled, Eisenhardt, and Xin (1997) reported that emotional conflict was lower in groups that had been together longer. Although not reviewed here, research on group decision making and information use may provide insights suggesting how and when the benefits of informational diversity can be obtained and the obstacles to group process attenuated.

Group Process

Smith and his colleagues (1994) examined the effects of the functional diversity of top management teams and found no effects on social integration or communication. In a longitudinal study of 141 young managers, Kirchmeyer (1995) found those who were most dissimilar to their work groups in terms of age, education, and lifestyle reported the least job challenge and poorest integration nine months after job entry. Several other studies have examined communication as an outcome variable. Ancona and Caldwell (1992) found that functional diversity increased the frequency of communication with those outside the project group, leading to higher managerial ratings of performance. Glick, Miller, and Huber (1993) found that functional diversity had a *positive* effect on the frequency of communication within the top management teams of 79 strategic business units.

With regard to conflict, Pelled (1993) found an association between functional diversity and substantive or task conflict. Recently, Jehn, Northcraft, and Neale (1997) have shown that functional diversity is related to task conflict and, subsequently, to improved performance on cognitive tasks. Consistent with social categorization and similarity/attraction theories, they also found functional diversity to be related to increased relationship conflict, but this was unrelated to subsequent performance. Other studies of background diversity have shown effects consistent with social similarity (e.g., Westphal, 1996). Research in this area may be important in clarifying how and when cross-functional teams are likely to work and when functional differences may have negative effects on group process and performance.

Group Performance

In general, research shows that functional diversity has positive effects on group performance. Several laboratory studies (Triandis, Hall, & Ewen, 1965; Thornburg, 1991; Zeleny, 1955) demonstrated that variations in students' functional

backgrounds (e.g., academic majors) were positively associated with group performance. More convincing evidence of this effect comes from field studies (Pelled, Eisenhardt, & Xin, 1997). Bantel and Jackson (1989) examined the top management teams of banks and found that diversity in functional background was positively related to the number of administrative innovations made by the bank. Ancona and Caldwell (1992) found that functional diversity had a direct negative effect on management-rated innovation and team-rated performance, but that it did increase the frequency of communication with those outside the project group which was positively related to innovation.

Kizilos, Pelled, and Cummings (1996) found that functional diversity was positively associated with prosocial organizational behavior (POB), arguing that increased levels of substantive conflict in these groups led to more customer-oriented POBs. Korn, Milliken, and Lant (1992) measured performance as increases in returns on assets in a study of top management teams in the furniture and software industries. They found that increasing functional diversity was associated with positive performance in the furniture industry, but not in the software industry. Smith and colleagues (1994) examined the effects of top management team functional diversity on firm performance but found no effects on organizational performance. Consistent with the need to mitigate against potential group process losses, Simons and Pelled (1996) found that heterogeneity with respect to function was only advantageous when the groups were able to engage in open debate.

Finally, several studies of top management teams (e.g., Eisenhardt & Schoonhoven, 1990; Hambrick, Cho, & Chen, 1996; Wiersema & Bantel, 1992) reported that increased functional and educational heterogeneity were associated with increased firm growth and strategic initiatives. Tushman and his colleagues (Keck & Tushman, 1993; Murmann & Tushman, 1997), for example, provide evidence that functional heterogeneity in top management teams is an important determinant of the senior team's ability to respond to environmental shifts. In the Hambrick, Cho, and Chen (1996) study, heterogeneous teams were slower in their implementation than homogeneous teams, but overall, teams with more functional diversity outperformed more homogeneous teams. These authors concluded, "despite the low response propensity and slowness of the heterogeneous top management team, its other benefits appear to more than compensate, and in general the airlines with diverse top management teams advanced in their competitive arena" (p. 678).

Summary

Functional background may serve as a proxy for the information, knowledge, skills, and expertise that individuals bring to a group. The research suggests that the diversity of information functionally dissimilar individuals bring to the group improves performance in terms of creativity, but not necessarily implementation. For example, functionally diverse groups are slower (Hambrick, Cho, & Chen,

1996) and have lower cohesion than homogeneous groups (Ancona & Caldwell, 1992, p. 338). However, the overall evidence strongly suggests that functional diversity is likely to stimulate task conflict and improve performance (Jehn, Northcraft, & Neale, 1997; Pelled, Eisenhardt, & Xin, 1997). Given that functional background may be salient in groups and organizations and form the basis for social categorization, there is a need to carefully consider the conditions under which functional diversity can lead to improved performance or be responsible for diminished group functioning. Without this attention, the benefits of increased background diversity may be undermined.

Age Diversity

Pfeffer (1983) argued that studying tenure distributions in organizations was significantly different from studying age. He noted that age and tenure distributions are not perfectly correlated and that, "There is enough variance not in common among the concepts to argue that they are conceptually distinct and should be kept so in both theoretical and empirical analysis." Age is a visible demographic characteristic that, from the social categorization perspective, may easily affect group process. For example, individuals born at similar times may develop similar outlooks on life and shared experiences. From both a social categorization and similarity/attraction perspective, these similarities should increase the likelihood of interpersonal attraction and shared values. In this regard, homogeneity in age should improve group process. On the other hand, groups characterized by heterogeneity in age may find communication more difficult, conflict more likely, and social integration more difficult to attain. However, age diversity may also have a positive impact on creativity and performance within the group. Insofar as age diversity provides greater access to a wider set of information and perspectives, it may enhance group decision making.

Group Process

Along with tenure diversity, O'Reilly, Caldwell, and Barnett (1989) examined age diversity and found no significant relationship between age diversity and social integration. Zenger and Lawrence (1989) examined the effects of age diversity on technical communication in a U.S. electronics firm and found that a project group's age diversity was negatively related to the frequency of technical communication within the group. In addition, they found that employees who were similar to each other in terms of age communicated more frequently with outside project groups about technical issues than employees who were relatively dissimilar in age.

Pelled (1993) hypothesized that age diversity would have a stronger relationship to affective conflict than to substantive conflict, and that its effect on affective conflict would be greater than that of tenure diversity. Contrary to expectations,

she found that age diversity was negatively related to affective conflict, suggesting that age diversity led to less, instead of more, conflict. She argued that this finding was caused by the negative correlation in her sample between age and tenure diversity; that is, large gaps in tenure were accompanied by small gaps in age and vice versa. In other words, groups composed of individuals who were very different in age happened to have entered the organization closer to the same time and thus were able to identify with a common tenure and overlook their differences in age. O'Reilly, Williams, and Barsade (1997) found no effects of age diversity on affective or substantive conflict. Overall, these studies suggest that age diversity, while sometimes having a negative effect on group process, appears to be less important than tenure diversity. However, as discussed below, age diversity has been found to have a significant impact on turnover and absenteeism, suggesting that it may have undiscovered impacts on group process.

Group Performance

The evidence for the effects of age diversity on performance (usually defined as innovation) is not strong. O'Reilly and Flatt (1989) found no relationship between age diversity and innovation; nor did Bantel and Jackson (1989) or Wiersema and Bantel (1992). O'Reilly, Snyder, and Boothe (1993) in a study of top management teams also concluded that age diversity is not an important determinant of organizational innovation. The results of the O'Reilly, Williams, and Barsade (1997) study also confirmed this view. Only the study by Zajac, Golden, and Shortell (1991) found age diversity to be negatively related to innovation.

Although no major effects of age diversity on organizational performance have been found, age diversity has been shown to be a reliable predictor of turnover and absenteeism. In three samples of top management teams and one of intact working groups, researchers found that diversity in terms of age was related to higher turnover levels (Jackson et al., 1991; O'Reilly, Caldwell, & Barnett, 1989; Wagner, Pfeffer, & O'Reilly, 1984; Wiersema & Bird, 1993). In addition, as with tenure diversity, O'Reilly, Caldwell, and Barnett (1989) found that those most different from their work group in terms of age were most likely to leave. The results from Wagner, Pfeffer, and O'Reilly (1984) and Cummings, Zhou, and Oldham (1993) are consistent with this finding. Further, Cummings and her colleagues also examined absenteeism and found those most different from their group in terms of age were absent more frequently and they tended to receive lower performance ratings from their supervisors.

Judge and Ferris (1993) did find that age differences between a supervisor and subordinate can be related to lower levels of supervisor's positive affect toward the subordinate and indirectly to lower performance evaluations. In a similar vein, Tsui and O'Reilly (1989) found that subordinates who were different from their supervisors in age experienced more role ambiguity, but found no relationship between similarity in age and perceived effectiveness, experienced role conflict,

or the supervisor's affect toward the subordinate. Finally, Tsui, Egan, and O'Reilly (1992) found no effect of age diversity on the level of commitment or absenteeism of the 151 units they studied, but it was associated with a lower intent to remain in the organization.

Summary

Overall, the research on age diversity suggests that groups with higher variations in their age composition may have slightly lower levels of effective group process than more homogeneous groups. The expectation, drawn from an information and decision-making theory, that age differences within a group may index differences in perspective and values that are useful for cognitive performance is not supported by the literature. Instead, the literature suggests that age diversity is associated with increased turnover and withdrawal, especially of those individuals who are most different.

Sex Diversity

Organizational demography researchers' concern with the effects of sex or gender diversity has a long history. Several early laboratory studies examined the effects of gender composition on small group performance (e.g., Fenelon & Megaree, 1971; Hoffman & Maier, 1961; Kent & McGrath, 1969; Clement & Schiereck, 1973; Holahan, 1979). These early investigations generally were predicated on similarity/attraction notions. However, following Kanter's (1977) lead, organizational researchers have focused more attention on the effects of gender diversity on organizational outcomes. These more recent approaches have adopted either social categorization theory or information and decision-making theoretical frameworks (e.g., McLeod & Lobel, 1992; Tsui, Egan, & O'Reilly, 1992). In most studies of organizational demography, sex has been included as one of a set of demographic variables; however, several researchers have focused explicitly on gender in their studies on diversity (e.g., Ely, 1994; Konrad, Winter, & Gutek, 1992; Sackett, DuBois, & Noe, 1991; Wharton & Baron, 1991). These studies offer a more fine-grained examination of the effects of sex diversity on group process and performance.

Group Process

Social categorization and similarity/attraction theory suggest that sex diversity can have detrimental effects on group process. The presence of others who are "different" may lead to increased social categorization into in-groups/out-groups and increased cognitive biasing (Kramer, 1991). From a similarity/attraction perspective, a diverse group provides less opportunity for interpersonal attraction based on similarity (Byrne, 1971). Substantial evidence is available consistent

with these predictions. For instance, Alagna, Reddy, and Collins (1982) studied groups of all-male versus mixed-sex medical student groups and found that mixed-sex groups reported higher levels of conflict, interpersonal tension, and lower levels of friendliness. Other studies have also reported process losses in gender diverse groups (e.g., Clement & Schiereck, 1973; Holahan, 1979; Pelled, 1997; Sackett, DuBois, & Noe, 1991)

However, the findings with regard to sex are often confounded by other effects (e.g., Lefkowitz, 1994a). For instance, as highlighted by Kanter (1977), the relationship between sex diversity and group process is likely to be dependent upon the proportions of men and women present in the unit, not simply the group's heterogeneity (e.g., Abrams, Thomas, & Hogg, 1990; Ely, 1994; Konrad, Winter, & Gutek, 1992). This expectation is based on research that has shown that as the proportion of individuals in a group who possess a particular characteristic (e.g., sex) grows smaller, those who possess this characteristic will become increasingly aware of their social identity (e.g., Ethier & Deaux, 1994; Mullen, 1983). Further, research shows that being different in gender can have different effects on males and females (e.g., Schreiber, 1979; Fairhurst & Snavely, 1983; South, Bonjean, Markham, & Corder, 1982; Spangler, Gordon, & Pipkin, 1978). This makes some of the results from organizational demography research difficult to interpret since the typical measures of sex diversity obscure proportionality effects.

For instance, Schreiber (1979) found that men in predominantly female jobs or organizations experienced almost no hostility from female co-workers, while O'Farrell and Harlan (1982) found women in predominantly male organizations had been treated with hostility by male co-workers. Furthermore, Fairhurst and Snavely (1983) found that men were socially integrated into the work group when in the minority, while women have been found to be less integrated into male-dominated groups (e.g., Kanter, 1977; Ibarra, 1992; Brass, 1985). Konrad, Winter, and Gutek (1992) found that sexist stereotyping was higher in male-dominated groups, while it was lowest in female-dominated groups. In fact, women in the majority showed the most egalitarian attitudes toward the other sex. Although these findings suggest that men in the minority are socially integrated and treated fairly by the other members of the group, some research suggests that men in the minority are actually less satisfied and have more negative psychological outcomes than women in the minority (e.g., Wharton & Baron, 1987; Tsui, Egan, & O'Reilly, 1992).

Pelled (1996) hypothesized that sex diversity would have a negative impact on groups through increased levels of affective conflict; however, she found no strong evidence of this (Pelled, 1993; Pelled, Eisenhardt, & Xin, 1997). O'Reilly, Williams, and Barsade (1997) also found no relationship between gender diversity and conflict. In her 1997 study, Pelled did find dissimilarity in terms of sex to be positively associated with increased levels of emotional conflict. These results are broadly consistent with the notion that the proportion of the sex represented in the sample can have a significant impact on the presence and strength of sex effects.

The absence of effects for sex composition may reflect the nature of the sample, with the salience of gender as a social category diminished in predominantly female samples (e.g., O'Reilly, Williams, & Barsade, 1997; Riordan & Shore, 1997). This finding is also consistent with the finding that female-dominated groups appear less likely to socially isolate males who are in the minority (Schreiber, 1979; Fairhurst & Snavely, 1983).

Thus, the research on the effects of sex diversity in organizations suggests that, contrary to the predictions of social categorization and similarity/attraction theories, there is only weak evidence of significant process loss in work groups. For example, in a study of 63 mid-level managers in four large service firms, Ibarra (1997) found women to have more heterophilous ties than men, although high-potential women did rely on homophilous ties for advice and psychological support. This finding, however, needs to be understood in light of the failure of many studies to adequately account for the proportions of males and females in the group. Other studies do find that, under some conditions, women may be excluded from male communication networks (Ibarra, 1992), although these findings are not always replicated (Brass, 1985; Mehra, Kilduff, & Brass 1996).

Group Performance

A number of studies have examined the effect of variations in the sex composition of groups on measures of perceived performance such as performance appraisals. Although subject to biases, these are important to understand because they can affect behavior (Snyder, Tanke, & Berscheid, 1977). For instance, Linville and Jones (1980) conducted a laboratory study with 80 undergraduate students assessing the effects of sex differences on the evaluation of applicants for law school. They found that out-group members, or people who were different from the evaluator, were evaluated more extremely in both positive and negative directions than in-group members. In an organizational setting, Tsui and O'Reilly (1989) found that subordinates who were different from their supervisors (i.e., out-group members from Linville and Jones' perspective) in terms of sex received less favorable evaluations and supervisors tended to have more positive affect for subordinates of the same gender.

Several studies have shown that women in male-dominated groups receive more negative evaluations than men in those groups, at least until they prove themselves to be competent (Nieva & Gutek, 1980; Ruble, Cohen, & Ruble, 1984; Swim, Borgida, Maruyama, & Myers, 1989). Female students in predominantly male academic environments have also been found to be excluded from areas of study open to male students, to be taken less seriously than males, and to have their commitment to the field of study questioned (Holahan, 1979). Sackett and his colleagues (1991) found that in groups where women were less than 20 percent of the group, they received lower performance ratings than men did, but when they

were greater than 50 percent they were rated even higher than men. However, these proportionality effects were not found for men.

In the laboratory the effects of gender diversity on group performance (cognitive or creative tasks) are mixed. Clement and Schiereck (1973) found that same-sex groups performed more efficiently on a signal detection task than did heterogeneous groups. This task involved very little creativity, so it is not surprising that diversity was not beneficial for the groups performance. Consistent with this finding, Kent and McGrath (1969) also found that homogeneous groups generated products that were rated as more original than did heterogeneous groups. Hoffman, Harburg, and Maier (1962, p. 210), in a study using 96 groups, also reported that "the mixed-sex groups produced the smallest proportion of new solutions" or integrative outcomes. This suggests that homogeneity and not heterogeneity may promote creativity. On the other hand, Hoffman and Maier (1961) found, in their study of 41 four-person groups, that sex diversity improved the quality of the groups' solutions on five cognitive tasks over the course of a semester.

In organizational settings, studies examining the effects of sex diversity on group performance outcomes have found negative effects when the sample was male-dominated and no effect when the sample was female-dominated. Pelled (1997) found an indirect negative effect of gender diversity on a group's perceived productivity in a study of 42 organizational work teams. Sex diversity led to increased levels of emotional conflict, resulting in decreased productivity. Kizilos, Pelled, and Cummings (1996), using a sample that was less than 10 percent female, examined the effect of gender diversity on prosocial behavior. Recall that prosocial organizational behavior (POB) includes behavior that is beyond the requirements of the job. The authors found a negative relationship between sex diversity and prosocial behavior toward customers. They suggest that this is because gender is highly visible, but low in job-relatedness, which leads to emotional conflict and decreased prosocial behavior. In a study using a sample over half of whom were female, O'Reilly, Williams, and Barsade (1997) found no significant direct or indirect relationship between gender diversity and group performance measures.

The effects of gender composition on individual satisfaction, commitment, and turnover has also received some attention from researchers. Wharton and Baron (1987) studied a sample of employed males from the 1973 Quality of Employment Survey. They found that men in mixed work settings (20-70% female) had significantly lower job-related satisfaction and self-esteem and more job-related depression than men in either male- or female-dominated work settings. In a 1991 study using the same data set, they found that women in balanced settings were more satisfied than women in female-dominated settings, though the most satisfied were women in male-dominated settings (Wharton & Baron, 1991). Consistent with these findings, Tsui and colleagues (1992) found that being a minority in work groups had more negative effects on men than it did on women. When in the minority, men expressed lower levels of psychological attachment, increased

absence, and lower intent to stay in the organization. For women, an increasing difference in sex diversity was associated with higher levels of organizational attachment. Several rationales for these asymmetrical effects have been offered. For example, the presence of women in male-dominated settings may represent status achievement, with high-status positions being obtained by a previously excluded group. If this is so, the negative effects of being in the minority may be compensated for by higher status and wages. However, these explanations remain speculative and no definitive research has yet explained these findings. More research on the effects of gender diversity on male and female individual outcomes is needed if we are to understand the simultaneous effects of sex diversity and proportions on group performance.

Finally, Ely (1994) examined the effects of gender distribution at senior levels of law firms on the social identity of lower-level women. She found that women associates in law firms that were more sex-integrated at the partner level viewed female partners more positively and were more supportive toward their peers. She argued that having more women at the top levels of the organization resulted in more optimism about the likelihood of advancement in the organization for women, as well as enhancing gender as a positive basis for identification with other women. Cohen, Broshak, and Haveman (1996) also found that the proportion of women holding senior positions increased the likelihood of promotion of women into senior management. These studies again call attention to the importance of proportions when trying to understand how gender diversity affects groups and individuals.

Summary

The results of research on gender diversity suggest that the proportion of men and women present in the sample may be an important predictor of the results. In general, gender diversity has negative effects on groups, especially on males. It is associated with higher turnover rates, especially among those who are most different. The studies also reveal that women and men respond differently, and may have different experiences as a minority. Men display lower levels of satisfaction and commitment when they are in the minority, while women appear less likely to have a negative psychological reaction. This is despite the fact that men in female-dominated groups are more likely to be accepted, less likely to be treated with hostility, and less likely to be stereotyped. Given the asymmetrical findings, future research on the effects of gender diversity needs to pay close attention to the proportions of men and women in the sample if results are to be interpretable (e.g., Ely, 1994)

Racial and Ethnic Diversity

Research on ethnic and race relations within the United States has received an abundance of attention from psychologists, sociologists, and educators (e.g., Blau,

1977; Hallinan & Smith, 1985; Phinney, 1996), but research on ethnic diversity within organizations has been comparatively lacking (for reviews see Alderfer & Thomas, 1988; Nkomo, 1992; Cox & Nkomo, 1990). Certainly organizational demography research has focused less on racial composition of groups than variables such as tenure and functional diversity. Only one field study reviewed here focused explicitly on race (Thomas, 1993) but examined cross-race mentor relationships rather than group process or performance. One possible reason for this lack of research on group-level race relations within organizations is that very little racial diversity exists in many of the teams studied, especially in top management teams. There are exceptions, of course, but comparatively little research focuses squarely on the impact of ethnic diversity on group process and performance (O'Reilly, Williams, & Barsade, 1997; Pelled, 1997; Pelled, Eisenhardt, & Xin, 1997; Riordan & Shore, 1997).

Nevertheless, there are lessons to be drawn from the research that has been conducted. As the racial composition of the workforce changes there will be more opportunities and needs for organizational researchers to understand how race relations have changed, and how group process and performance are affected by racial diversity. Much of the research from the field to date suggests that this racial diversity will have negative effects on group and individual outcomes, but laboratory studies hint that there may be substantial benefits to be captured from racial or ethnic diversity.

Group Process

In a nearly 40-year-old laboratory study, Katz, Goldston, and Benjamin (1958) focused on the relations between whites and blacks. They studied 18 four-person groups (two whites and two blacks) of male college students and found that black men were less likely to initiate communication than whites. When blacks did speak, they targeted their communication to whites more than to one another, while whites spoke more to one another than to blacks. The authors suggested that these patterns of communication reflected the status hierarchy of the time. Although informative, the findings of some of these earlier studies (e.g., Hoffman & Maier, 1961; Levy, 1964) may reflect the social norms of the time and may not be reflective of the current impact of ethnic diversity on groups and organizations Therefore, when considering the effects of ethnic diversity it is important to be sensitive to the societal context of the period in which the research was conducted, less we inappropriately generalize findings that may no longer reflect social mores.

For example, in a recent study of an insurance company, Riordan and Shore (1997) investigated the impact of racial diversity using a sample of 98 work groups with 1,584 subjects. Because of the large number of nonwhite respondents (over 35%), the authors were able to carefully examine the impact of the ethnic composition of groups including groups that were predominantly African Ameri-

can, Hispanic, and white. Several interesting conclusions emerged. For instance, all participants exhibited significantly lower levels of work group commitment when they were in work groups composed mostly of minorities. Similar effects were also reported for perceptions of opportunities for advancement. The authors conclude by noting the need to explore the causes underlying some of the nonsymmetrical effects of ethnic diversity on group process and performance so as to understand when ethnic diversity may have positive or negative effects.

Several studies have explored the idea derived from information and decision theory that diversity may have positive effects on group process. Cox, Lobel, and McLeod (1991), for example, examined the differences between Asian, Hispanic, black Americans, and Anglo-Americans in cooperative behavior using a Prisoner's Dilemma task. Subjects were 136 undergraduate and graduate students, 95 men and 41 women, who were assigned to either diverse or all-Anglo groups. An analysis of the number of cooperative responses showed that minority group members were more cooperative than Anglo-Americans, supporting the contention that these groups are more collectivistic (Earley, 1989). In addition, the diverse groups (composed of one person from each of the four racial groups) were significantly more cooperative than the homogeneous groups of all Anglos. The authors concluded that "an important general implication of this research is that both academics and practitioners should give more attention to identifying the potentially positive effects on organizational behavior and effectiveness associated with non-Anglo cultures" (p. 843).

The optimistic view, supported by Cox and his colleagues, is tempered by a similar laboratory study conducted by Espinoza and Garza (1985). They studied Anglo- and Hispanic-American students and found that "members of both were equally cooperative when their own group was in the numerical majority" (p. 380). When in the minority, Hispanics were significantly more competitive, while Anglos were less competitive when they found themselves in the minority. In a follow-up study, Garza and Santos (1991) found that the behavior of Hispanics in an interdependent payoff game was consistent with the social categorization perspective, while the behavior of Anglos could not be explained using this perspective. Hispanics acted in ways that would benefit their own group, while Anglos were mainly driven by a desire to earn the most points they could. Consistent with Riordan and Shore (1997) and others (Tsui, Egan, & O'Reilly, 1992; Wharton & Baron, 1987), this research suggests that proportions may matter for the effects of racial diversity just as they do for gender effects.

Similarity/attraction and social categorization theories predict that race/ethnic diversity will have negative effects on group process by decreasing interpersonal attraction and increasing cognitive biasing (Linville & Jones, 1980), leading to less open communication and more conflict. Using this logic, Pelled (1993) and Pelled, Eisenhardt, and Xin (1997) found support for this contention with racial diversity associated with higher levels of emotional conflict. However, in a subsequent study, Pelled (1997, p. 15) found no relationship between racial diversity

and conflict, arguing that the "work groups may have been so heterogeneous that 'being different' was a common condition among work group members" (p. 15). Consistent with this, O'Reilly, Williams, and Barsade (1997), using a sample with a high proportion of minorities, found no strong effects of racial diversity on conflict. Kirchmeyer (1995), however, reported that individuals who were minorities in their groups reported less fit after nine months on the job than did majorities. Burt and Reagans (1997) explicitly address the effect of proportions on homophilous attraction and find a positive effect that decreases as the proportion of minorities diminishes. In other words, consistent with the findings for sex diversity, proportions are important in priming salient categories.

With regard to the effects of ethnic diversity on communication, Hoffman (1985) found that increasing black representation in the supervisory cadre of 96 federal civilian installations was negatively associated with interpersonal communication frequency (face-to-face communications with immediate subordinates or superiors). That is, as the number of blacks in the installation increased (never reaching more than 47%), the less interpersonal communication was reported. On the other hand, increasing black representation was positively associated with the amount of formal organizational-level communication (e.g., meetings of supervisory personnel). These results suggest that there may be barriers in communication within racially diverse groups, but it may depend on the type of communication involved. For instance, Mehra, Kilduff, and Brass (1996) found in a network study of 159 MBA students that minorities were more likely to choose same-race friends. Consistent with the notion of homophily, Ibarra (1995) reported that minorities often have more extensive communication networks in order to tie into other minorities located outside the immediate work unit. In a Dutch study, Verkuyten, de Jong, and Masson (1993) found that the more time individuals spent with others of similar ethnicity, the more satisfied they were.

Group Performance

Two key studies from the laboratory have argued that racial diversity in groups can have positive effects on performance. First, McLeod and Lobel (1992) studied 137 graduate and undergraduate students performing a brainstorming task. They found that ethnically diverse groups did not necessarily produce more ideas or a greater number of unique ideas, but the ones they did produce were rated of higher quality than those produced by homogeneous groups. This was interpreted by them as support for the positive impact of diversity. Second, Watson, Kumar, and Michaelsen (1993) collected data from 36 student work groups enrolled in a management course. Each group was required to do four one-hour structured case evaluations during a 17-week term. Group process was assessed using a questionnaire completed by the participants. The authors' found that at the end of the term diverse groups scored higher on two of four aspects of performance (the range of perspectives considered and alternatives generated), but overall performance was

the same for both types of groups. Furthermore, in the first period, homogeneous groups actually scored higher than diverse groups on all performance measures. The authors also found that "for the first three task periods analyses showed the homogeneous groups reported significantly more effective process than the diverse groups, but the two types of groups reported equally effective processes by time 4" (p. 595). They concluded that diverse groups need time to overcome the negative process consequences of diversity, but once a requisite level of comfort is reached groups may be able to obtain the creativity related benefits of diversity.

These positive effects of racial diversity found in laboratory/classroom settings provide some optimism that the changing demography of the workforce may be beneficial for organizations. Some evidence from field studies also provides cause for optimism. For example, O'Reilly, Williams, and Barsade (1997), in a study of an organization with a strong reputation for being a leader in diversity issues, found a positive relationship between race-ethnic diversity and both creativity and implementation ability in groups. This result occurred after controlling for the moderating effects of conflict. Fine-grained analyses showed that groups composed of Asians and whites were more creative and better able to implement new ideas than all-white groups or those of other ethnic composition. In a review of group cohesion, Mullen and Copper (1994) conclude that "enhanced performance came not from increasing interpersonal attraction among group members but through providing increased identification with the task.... This seems equivalent with helping group members recategorize their involvement in a manner that enhances group focus on the common task and attenuates the tendency to create task-irrelevant ingroups" (p. 27). They also suggest that Gaertner and Dovidio's (1986) "aversive racism" argument may explain their results. Aversive racism refers to the compensatory actions taken when individuals, confronted with a situation which threatens to make negative or prejudiced attitudes salient, overreact and amplify those positive behaviors in ways that reaffirm their egalitarian convictions. In settings where diversity is strongly affirmed, individuals may pointedly override any biased attitudes or behaviors, lest they and others see them as biased. This can result in more effective group functioning and enhanced performance.

Other studies by Pelled and her colleagues (Kizilos, Pelled, & Cummings, 1996; Pelled, 1997; Pelled, Eisenhardt, & Xin, 1997) have found either no effect of racial diversity on performance or weak negative effects. For instance, Kizilos, Pelled, and Cummings (1996) found a marginally significant effect for racial diversity, suggesting that diverse groups displayed less prosocial organizational behavior (POB) than homogeneous groups. Tsui, Egan, and O'Reilly (1992) found the same pattern of effects for racial diversity as they did for gender diversity; individuals who were different from others in their work units in racial or ethnic background tended to be less psychologically committed to their organizations, less inclined to stay with the organization, and more likely to be absent. Again, nonsymmetrical

effects were found for whites and minorities. Whites experienced more negative effects than nonwhites when they were in the minority in their work unit.

Like the research on gender diversity, much of the research on ethnic diversity has focused more on individual-level outcomes and less on the group level. Many of these studies assess performance using evaluations by supervisors of individuals. These findings generally support the idea that blacks are rated lower than whites by supervisors (e.g., Lefkowitz, 1994b; Sackett, DuBois, & Noe, 1991). For instance, Greenhaus, Parasuraman, and Wormley (1990), in a study of 828 employees from three companies, found that blacks were rated lower than whites on task- and relationship-related dimensions of performance, as well as being perceived as having lower potential for promotion. They also found that blacks were less satisfied with their careers, felt less accepted by their organization, and felt that they had less discretion than whites in the same organization. Burt and Reagans (1997) extend this finding by showing that managers who are a minority give each other disproportionately positive evaluations, and that this bias diminishes as the minority becomes a plurality.

However, not all studies find negative effects (e.g., Tsui & O'Reilly, 1989). It may be that status incongruence and communication problems are confounded with diversity. Consistent with this, Linville and Jones (1980) found that outgroup members, or people who were different from the evaluator, were evaluated more extremely in both positive and negative directions than in-group members. However, a fully crossed design was not used in their study; that is, all evaluators (i.e., subjects) were white and applicants black such that there were no black evaluators of white applicants in this study.

Summary

Although the issue of race-ethnic diversity is important for society and organizations, research on its impact remains inconclusive. The optimists argue, based on information/decision theory, that ethnic diversity can promote creativity and improve decision making. Paradoxically, there is some evidence from field studies that supports this conclusion, but, contrary to information/decision theory predictions, these results occur independent of group-process variables; that is, diversity improves performance controlling for group process. The pessimists, using similarity/attraction and social categorization theories, note that ethnic diversity can, unless successfully managed, have negative effects on group process. Consistent findings show that individuals who are different from the majority race in an organization are more likely to leave, to be less satisfied and psychologically committed to the organization, and to receive lower performance evaluations. Interestingly, several studies find that these effects are more pronounced for whites than minorities (Riordan & Shore, 1997; Tsui, Egan, & O'Reilly, 1992). Overall, the evidence for ethnic diversity seems more consistent with predictions

of similarity/attraction and social categorization theories than with information and decision making.

A limitation to the existing research is that most studies have only examined blacks and whites, or whites and "others." Yet, as decades of research in cross-cultural psychology has shown, there are important differences within and across ethnic groups (e.g., Kim, Park, & Suzuki, 1990; Phinney, 1996) that may be relevant within organizations (e.g., O'Reilly, Williams, & Barsade, 1997; Riordan & Shore, 1997). It is unclear that Asian Americans, for instance, will have the same experience as African Americans in majority Anglo-American organizations. Further, the effects of proportions may also have important effects on race/ethnic diversity just as it does on sex composition (e.g., Espinoza & Garza, 1985; Garza & Santos, 1991; Tsui, Egan, & O'Reilly, 1992).

Other Important Diversity Variables

Variations in other individual differences have also been studied and found to have important effects on the process and performance of groups. Some of the earliest laboratory studies conceptualized diversity in terms of variations in personality, attitudes, and values and found positive effects for these (e.g., Torrance, 1957). In 1959 Hoffman examined 30 small groups in the laboratory and found that groups that were diverse in terms of their personality characteristics produced higher quality outputs and tended to produce more inventive solutions. Hoffman and Maier (1961) found further support for the positive effects of diversity in terms of personality. Triandis, Hall, and Ewen (1965) also found that heterogeneity in attitudes, but not abilities, was associated with increased creativity.

Bochner and Hesketh (1994), using an Australian sample, found that people who were different from others in their work groups on power distance and collectivism perceived that they were discriminated against more frequently, but valued their cultural differences more highly. This finding suggests that heterogeneity in cultural values may have important effects on individual outcomes. For example, Dutch researchers found that individuals who were not Dutch tended to be less satisfied with their jobs than their Dutch co-workers (Verkuyten, de Jong, & Masson, 1993). Although the evidence for cultural diversity is intriguing, organizational demographers have seldom focused on this type of diversity as it affects group process and performance.

Another stream of research of potential relevance for understanding the impact of diversity are studies of the effects of "minority influence" on decision making. Charlan Nemeth and her colleagues (e.g., Nemeth, 1986; Nemeth & Kwan, 1987) have shown that when people hold strong, consistent views different from the majority, they can often have an effect on decisions beyond what their proportion would suggest. Research suggests informational social influence may dampen some of the conformity pressures of normative social influence (Moscovici, 1985). Thus, insofar as demographic differences also index differences in information, a minority in a group may raise issues that can affect the group's decision making.

ORGANIZATIONAL DEMOGRAPHY AND DIVERSITY: WHAT DO WE KNOW?

As reviewed, the majority of research has been undertaken using one of three general theoretical frameworks: similarity/attraction, social categorization, or information/decision making. These approaches have been characterized by different assumptions about the role and effect of diversity and the modal way to conduct the research. Researchers in the three traditions either implicitly or explicitly accept a model that argues that group or organizational diversity can affect group processes such as social integration, communication, and conflict. Group functioning is then presumed to affect group outputs, including performance and the ability of the group to function effectively in the future. Thus, many of the original studies of demography and diversity began by investigating the linkages between measures of diversity and group or organizational outcomes (e.g., Hoffman & Maier, 1961; Wagner, Pfeffer, & O'Reilly, 1984). After demonstrating that diversity was associated with important outcomes, researchers have focused on opening up the "black box" of organizational demography and explicitly examining the processes by which diversity may affect group outputs (e.g., Ancona & Caldwell, 1992; Jehn, Northcraft, & Neale, 1997; O'Reilly, Williams, & Barsade, 1997; Pelled, Eisenhardt, & Xin, 1997). So what can we say with confidence about the impact of diversity on groups and organizations?

What Do We Know?

Based on the studies reviewed here, two major findings from the research on demography and diversity appear to be well supported. *First, there is substantial evidence from both laboratory and field studies conducted over the past four decades that variations in group composition can have important effects on group functioning.* These studies show that increased diversity, especially in terms of age, tenure, and ethnicity, typically has negative effects on social integration, communication, and conflict (e.g., Chatman et al., 1997; Ibarra, 1992; Jehn, Northcraft, & Neale, 1997; Lott & Lott, 1965; O'Reilly et al., 1989; Pelled, Eisenhardt, & Xin, 1997; Smith et al., 1994). Diverse groups are more likely to be less integrated, have less communication, and more conflict. Interestingly, the one exception to this pattern is with regard to functional diversity or educational background. For this variable, increased diversity has been shown under some circumstances to increase communication (e.g., Ancona & Caldwell, 1992; Glick, Miller, & Huber, 1993; Jehn, Northcraft, & Neale, 1997). In addition to the effects on social integration, communication, and conflict, research has also linked group

diversity to several other process variables such as increased in-group/out-group biases, stereotyping, and other cognitive biases that can negatively affect group functioning (e.g., Crocker & Major, 1989; Lorber & Farrell, 1991; Messick & Massie, 1989; Moreland, 1985).

It is also clear that not all of the group process variables investigated operate independently of one another. For example, Smith and colleagues (1994) found that social integration and informal communication were related. Chatman and colleagues (1997), using a business simulation with MBA students as subjects, found that organizational culture moderated the effects of diversity such that as dissimilarity increased conflict was seen as more beneficial for those groups with a collectivistic culture. Other studies have shown that under different conditions conflict may have positive or negative effects (e.g., Jehn, Northcraft, & Neale, 1997; O'Reilly, Williams, & Barsade, 1997; Pelled, Eisenhardt, & Xin, 1997; Stephan, 1985). Studies such as these underscore the importance of contextual variables as moderators of diversity effects. Thus, consistent with the model outlined in Figure 1, there is also evidence that demographic effects may be moderated by variables such as culture, technology, and task design.

A second supportable conclusion is that at the micro level, increased diversity typically has negative effects on the ability of the group to meet its members' needs and to function effectively over time. The literature shows clearly that individuals are affected by the demographic composition of their work groups. The preponderance of evidence shows that increased diversity within a group can be associated with lower levels of satisfaction and commitment (Riordan & Shore, 1997; Tsui, Egan, & O'Reilly, 1992), lower performance evaluations for those who are different (Greenhaus, Parasuraman, & Wormley, 1990; Holahan, 1979; Judge & Ferris, 1993; Sackett, DuBois, & Noe, 1991; Tsui & O'Reilly, 1989), and higher levels of absenteeism and turnover (Cummings, Zhou, & Oldham, 1993; Jackson et al., 1991; McCain, O'Reilly, & Pfeffer, 1983; O'Reilly, Caldwell, and Barnett, 1989; O'Reilly, Snyder, & Boothe, 1993; Pfeffer & O'Reilly, 1987; Tsui, Eisenhardt, & Xin, 1992; Wagner, Pfeffer, & O'Reilly, 1984; Wiersema & Bird, 1993). In general, more visible demographic characteristics such as sex and ethnicity have larger negative effects than variables that are less visible like age (Cummings, Zhou, & Oldham, 1993; Pelled, 1993).

What is less clear from this research is precisely how and when differences in minority status lead to negative outcomes (e.g., Espinoza & Garza, 1985; Garza & Santos, 1991; Riordan & Shore, 1997). Research on gender, for example, suggests that men in the minority may react more negatively than women (Riordan & Shore, 1997; Wharton & Baron, 1987). To resolve this ambiguity, future research might productively examine not just overall measures of variation in group composition as captured by the coefficient of variation, but also consider proportional measures within groups. Using proportional measures may allow us to discover differential effects for specific minority samples.

At a more macro level, the evidence for performance effects is less clear. There is some indication that at the organizational level top management heterogeneity can be positively related to organizational performance (e.g., Bantel & Jackson, 1989; Eisenhardt & Schoonhoven, 1990; Murray, 1989). However, other studies that look directly at process variables find similar effects for top team homogeneity (e.g., Michel & Hambrick, 1992; O'Reilly & Flatt, 1989; O'Reilly, Snyder, & Boothe, 1993; Zajac, Golden, & Shortell, 1991). Triandis, Hall, and Ewen (1965) suggested that dissimilarity in groups, while offering the potential for more creative solutions, also led to more difficulties in group functioning. They concluded that in order to capture the benefits of diversity, groups needed to be able to resolve their differences. Over 30 years later, this conclusion remains valid. A critical determinant of the outcome is whether the diversity is having constructive or destructive effects on the process (e.g., Flatt, 1996; Iaquinto & Frederickson, 1996). Part of the reason for these differences lies in the complexity of the diversity-process-performance chain and the competing effects of the added value of increased information versus the increased difficulties of communicating and solving problems in highly diverse groups. At this macro level, any causal linkages between the composition of the senior team and organizational outcomes has to be a function of a large number of other unmeasured variables (Jehn, Northcraft, & Neale, 1997).

What Do We Need to Know?

Given the convincing evidence that diversity can have both positive and negative effects on group functioning and performance, at least three major unanswered questions emerge. *First, we need to understand in more detail how different types of diversity affect group process and performance.* Although there is evidence that variations in more visible characteristics (e.g. tenure, race, and gender) appear to have larger effects than less visible attributes, we still do not understand in any detail why these effects occur. For example, is the underlying mechanism linking functional diversity to increased task conflict and performance different than that linking diversity in race to emotional conflict? A critical unexamined assumption underpinning the debate is whether increased diversity actually adds valuable problem-solving perspectives and information? On the face of it, this assumption seems reasonable. However, a more careful examination raises the question of whether there is particular value in adding a heterogeneous member to a group or whether a homogeneous addition might add similar value? Said differently, if the issue is problem-relevant information, why should it be that individuals who are diverse add more than demographically homogeneous individuals with relevant technical expertise?

To resolve these questions we need more explicit tests of the underlying theories which permit us to understand how and when demographic diversity will be associated with different outcomes. For instance, although similar in some respects,

similarity/attraction and social categorization theories make somewhat different assumptions about the effects of diversity on groups. Similarity/attraction theory predicts that increased similarities between an in-group and out-group should increase liking and decrease conflict. However, social identity theory suggests that if members of two groups perceive themselves to be more similar, they are likely to derogate each other even more in an effort to maintain their self-esteem through their in-group status. Since variations in the demographic composition of groups are complex, research must provide insight into the interactions among types of diversity, informational contributions, and situational moderators. Several studies have begun to offer this insight (e.g., Simons & Pelled, 1996). For example, Chatman and colleagues (1997) have begun to separate out the effects of demography from the priming effects of organizational culture. Others have shown how the nature of the task may interact with diversity and conflict to affect performance (e.g., Ancona & Caldwell, 1992; Jehn, Northcraft, & Neale, 1997; Pelled, Eisenhardt, & Xin, 1997). Studies like these will help us understand the circumstances in which diversity may have positive or negative effects on groups.

A second important question concerns the nature of the conflict generated by diversity. Whether conflict has positive or negative effects on group functioning and performance depends importantly on the type of conflict generated. The types of conflict, emotional and task, are the theoretical moderators presumed to convert differences in diversity into productive outcomes. But what is the real difference between task and emotional conflict? Although there is empirical evidence for the discriminant validity of a two-factor solution (Jehn, 1995; Pelled, 1993; Pinkley, 1990), not all researchers confirm this factor structure. Both Pelled (1997) and O'Reilly, Williams, and Barsade (1997) find a single-factor structure. Further, studies by Jehn, Northcraft, and Neale (1997) and Pelled, Eisenhardt, and Xin (1997) report substantial multicollinearity between task and relationship conflict ($r = .57$ and $r = .48$). Given the prominence of these constructs for differentiating between positive and negative effects of diversity, it is important to understand in detail the antecedents of these. A careful examination of the eight or nine items used to define these scales suggests an alternative interpretation. The emotional conflict items are characterized by words such as "angry," "personality clashes," "friction," and "tension." The task conflict items are described by words like "disagreements," "differences of opinion," and "conflict of ideas." Rather than differentiating task and emotional conflict, the items may be indexing the amount of conflict in the group. For instance, in comparatively low conflict settings, two factors may emerge while in high conflict settings, a single-factor structure may be present. At present, there is conflicting evidence for the effects of these variables that needs to be resolved if we are to be able to accurately understand when diversity may be productive or destructive to groups.

A third important gap in our understanding of diversity concerns how successful groups are able to leverage diversity. While it is clear that there are potentially negative consequences from social categorization processes operating in groups,

it remains unclear how successful groups overcome these obstacles. Some evidence suggests that the successful management of conflict is one such mechanism (e.g., Schweiger, Sandberg, & Ragan, 1986). Other evidence hints that increasing familiarity and collectivistic norms also help (Chatman et al., 1997; Jehn, Northcraft, & Neale, 1997). For instance, Murninghan and Conlon (1991), in a clever study of British string quartets, found that the most successful groups were those that were able to contain conflict so that it did not become disruptive. Quartets that confronted conflict were less successful. Wall and Nolan (1986) found that lower levels of conflict were associated with greater satisfaction and equity among group members. But what is the theoretical basis of these effects? If social categorization and similarity/attraction biases are the driving force behind the negative effects of diversity, what actions may be taken to address these directly? Evidence from Mullen and Copper (1994), O'Reilly, Williams, and Barsade (1997), and Gaertner and colleagues (1990) suggest that rather than emphasizing demographic differences and increasing task conflict, social categorization processes that emphasize common goals and identities and inhibit dysfunctional conflict may enhance group processes and performance.

For example, research has shown that increased cooperation can reduce categorization biases and in-group distinctions (Gaertner et al., 1990). Further, when attempts are made to deliberately promote identification with the larger group and minimize subgroup identification, intergroup bias can be reduced even more (Gaertner, Mann, Murrell & Dovidio, 1989). This may be done by identifying salient out-groups or through an emphasis on collectivistic cultures to help override the natural inclinations people have to make invidious social categorizations (O'Reilly & Chatman, 1996). These processes are consistent with the findings of Chatman and colleagues (1997) who find that collectivistic cultures mitigate the negative effects of diversity. Tushman and O'Reilly (1996) contend that for long-term success organizations and groups need to be "ambidextrous"; that is, able to tolerate diverse structures and cultures. They argue that this is done with strong, inclusive cultures that promote a common identity even in the face of differing perspectives. The use of this cognitive approach may also be seen in the Chatman and Barsade (1995) study showing how organizational cultures may be created that foster commitment and cooperation.

Another possible cause of reduced conflict and increased cooperation may stem from Gaertner and Dovidio's (1977) notion of "aversive racism"; that is, faced with strong normative pressures to override invidious social categorizations, group members may enhance their ability to perform by consciously overriding the propensity to differentiate in-groups and out-groups. This may improve teamwork because of the awareness of the social stigma attached to socially inappropriate social categorization. As O'Reilly, Williams, and Barsade (1997) have suggested, an important function of management may be to use the psychology of self-categorization to help employees to identify with a culture that is inclusive and not with in-groups based on characteristics unrelated to job performance like

sex and race. This may account for the Murninghan and Conlon (1991) findings. Until we have greater clarity about these theoretical underpinnings, it will be difficult to design processes to fully capture the value in diversity.

Finally, although not an explicit part of this review, *an important unanswered question concerns the mechanisms that drive variations in the demographic composition of groups.* Pfeffer has suggested a number of ways this might occur, including economic conditions that affect hiring patterns, homosocial reproduction, legal pressures, and technological regimes that affect the demand for particular skills (Pfeffer, 1983, 1985). Organizational research into the antecedents of diversity has been sparse, with only a few studies explicitly addressing this question. Haveman (1995), for example, developed and tested an ecological model of organizational demography and found that organizational founding, dissolution, and mergers have important effects on the tenure distributions of organizations. She found that organizational size and age buffered organizations from the turbulence caused by ecological processes. Drawing on the notion of punctuated equilibria, Tushman has found that technological discontinuities and the demand for new executive team skills also has direct effects on the demographic composition of top management teams (Keck & Tushman, 1993; Murmann & Tushman, 1997). However, with these notable exceptions and some earlier studies on homosocial reproduction (e.g., Kanter, 1977; Spangler, Gordon, & Pipkin, 1978), almost no attention has been paid to the antecedents of demographic diversity in organizations.

CONCLUSIONS

There is an impressive amount of high-quality laboratory and field research on diversity and demography in organizations. Overall, this research offers convincing support for the argument that variations in group demography can have both direct and indirect effects on group process and performance. Under ideal conditions increased diversity may have the positive effects predicted by information and decision theories. However, consistent with social categorization and similarity/attraction theories, the preponderance of empirical evidence suggests that diversity is most likely to impede group functioning. Unless steps are taken to actively counteract these effects, the evidence suggests that, by itself, diversity is more likely to have negative than positive effects on group performance. Simply having more diversity in a group is no guarantee that the group will make better decisions or function effectively. In our view, these conclusions suggest that diversity is a mixed blessing and requires careful and sustained attention to be a positive force in enhancing performance.

We believe that one reason the positive effects of diversity have been comparatively difficult to document has to do with the way research has proceeded. First, the lack of agreement across studies about the definition of "performance" stems

from a failure to distinguish between idea generation (or "creativity") and the implementation of the ideas. For groups to perform successfully, they must have both the ability to develop creative solutions and to implement or execute these ideas (O'Reilly, Williams, & Barsade, 1997). Importantly, variations in the types of diversity and conflict may affect creativity and implementation differently. When these distinctions are ignored or combined, misleading conclusions may be drawn. Thus, while some studies suggest that heterogeneous groups may have higher levels of task conflict and thereby make better decisions (Priem, Harrison, & Muir, 1995), the same heterogeneity that provides for different perspectives may also result in increased emotional conflict, making implementation of the task more difficult.

Diversity is a reality for managers and organizations. It is also an important social value in our society. Research and theory show that there is a pervasive cognitive tendency to react to perceived differences. The evidence from 40 years of research suggests that these reactions may have negative consequences for group process and performance. The challenge is to develop ways to accommodate these tendencies so that their negative effects are attenuated and the positive benefits of diversity can be realized. A number of research directions are available. First, the same cognitive categorization processes that highlight differences can also be used to help individuals define inclusive categories which accommodate diverse characteristics (Kramer, 1991). Organizational culture, manifest in the norms that define groups and organizations, may be a powerful way for managers to use informational and social influence processes to encourage solidarity rather than divisiveness (O'Reilly & Chatman, 1996). Second, the same cognitive processes that can highlight differences can also be directed in ways to emphasize inclusive categories rather than exclusive ones. Finally, simply making salient the potential negative effects of social categorization processes may encourage individuals to be aware of the possibility of discrimination and to override these tendencies (Gaertner et al., 1989). Ignoring the negative consequences of diversity is not the answer. Ironically, understanding these negative effects may provide a solution for its more pernicious effects. This is the good news from this review.

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Appendix to follow

APPENDIX

Figure 1A. Laboratory Studies ($N = 27$)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Alagna, Reddy, & Collins (1982)	Gender	Conflict, Interpersonal tension, Friendliness	Medical students. Mixed-sex groups reported higher levels of conflict and tension and less friendliness than all-male groups.
Altman & Haythorn (1967)	Personality	Individual and team performance	$N = 9$ dyads. Variations in personality composition positively affected group performance. Performance on a perceptual-motor task is slightly degraded in isolation, whereas performance on group tasks is enhanced.
Chatman, Polzer, Barsade, & Neale (1997)	Nationality, Race, Gender	Interaction with coworkers, Conflict, Idea quality and productivity	$N = 258$ 1st year MBA students. Simulation. Increased diversity related to decreased interaction and increased productivity. Conflict is beneficial and creativity enhanced more in collectivistic, heterogeneous organizations.
Clement & Shiereck (1973)	Gender	Signal detection task	$N = 12$ 4-person groups. Same-sex groups performed more efficiently. Gender heterogeneity impaired performance.
Cox, Lobel, & McLeod (1991)	Ethnicity	Cooperative behavior	$N = 136$ students in Prisoner's Dilemma. Ethnically diverse groups made more cooperative choices.
Espinoza & Garza (1985)	Ethnicity	Cooperation	Anglo and Hispanic students. Subjects equally cooperative when their own group was in the numerical majority. When in the minority, Hispanics significantly more competitive than Anglos.
Fenelon & Megargee (1971)	Ethnicity	Manifestation of dominance	$N = 60$ mixed-race female dyads. High-Do white women reluctant to assume leadership over black women who acted more assertively when paired with a white woman.
Garza & Santos (1991)	Ethnicity	Cooperation	$N = 240$ undergraduates. Prisoners Dilemma game. Hispanics acted in ways to benefit own group. Anglos driven to earn most points.
Good & Nelson (1971)	Attitudes	Group attractiveness, Perceptions of cohesion	$N = 168$ undergraduates. Evaluation of group attractiveness a positive function of evaluator-group attitude similarity. Evaluation of group cohesiveness was a positive function of intragroup similarity.

(continued)

Figure 1A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Gruenfeld, Mannix, Williams, & Neale (1996)	Information, familiarity (proxy for similarity in perspective)	Correct answer, Information sharing	$N = 213$ graduate students. Decision-making task. Familiar groups outperformed less familiar when they had unique information. Less familiar better when everyone had same information.
Hoffman (1959)	Personality	Quality of solution, Satisfaction	$N = 30$ 4-person groups. Heterogeneous groups had better quality. Tendency for the heterogeneous groups to produce more inventive solutions.
Hoffman, Harburg, & Maier (1962)	Gender	Creative problem solving, Satisfaction	$N = 96$ 4-person groups. Conflict of ideas causes groups to search for alternatives and improve quality of solutions. Effect occurs only with tolerance for others' points of view.
Hoffman & Maier (1961)	Personality, Gender	Quality of solutions for 5 tasks over the course of a semester	$N = 41$ 4-person groups. Heterogeneous groups had better quality or did not differ. Homogeneous groups never better. Gender diversity improved performance.
Holahan (1979)	Gender	Inclusion	Females in predominantly male academic environments excluded from areas of study, taken less seriously, and commitment questioned more than males.
Katz, Goldston, & Benjamin (1958)	Ethnicity	Communication, Performance	$N = 64$ undergraduates. 12.5-hour construction task. Blacks initiated fewer communications. Whites had more communication with similar others. No differences in group productivity.
Kent & McGrath (1969)	Gender	Creativity, Adequacy, Action orientation, Length, Originality	$N = 48$ 3-person groups with 15-minute intellective tasks. Female majority groups produced more action oriented products. Homogeneous groups more original than heterogeneous groups. All female groups more optimistic.
Kirchmeyer (1993)	Ethnicity	Contribution to decision making	$N = 41$ 4-person multicultural groups. Low communication competence, low masculinity and high femininity associated with minority status and with low contribution to decision making.
Kirchmeyer & Cohen (1992)	Ethnicity	Quality of recommendation and assumptions	$N = 45$ 4-person multicultural groups. Task conflict related to higher quality.

(continued)

Figure 1A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Levy (1964)	Heterogeneity of potential new members	Attractiveness of the group	$N = 64$ undergraduates. Students rated pictures of potential group members. Heterogeneous groups preferred.
Linville & Jones (1980)	Race, Gender	Evaluation of applications	$N = 80$ undergraduates with white evaluators and black ratees. Out-group members receive more extreme evaluations.
McLeod & Lobel (1992)	Ethnicity	Quality of ideas, Creativity	$N = 137$. Brainstorming task. Heterogeneous groups produce higher quality ideas, but not more ideas or more unique ideas.
Sackett, DuBois, & Noe (1991)	Gender, Ethnicity	Performance evaluations	$N_1 = 486$ job-firm combinations; $N_2 = 814$. In groups where women less than 20%, they received lower performance ratings than men. Women greater than 50%, they were rated higher than men.
Stasser, Stewart, & Wittenbaum (1995)	Expertise, Information (equivalent to functional background)	Correct answer, Information sharing	$N = 294$ undergraduates. Decision making task. Assignment of expert roles (i.e., clear differences in functional background) facilitates the sharing of unique information.
Thornburg (1991)	Student subcultures, Occupational interests, Academic major	Creative performance	$N = 239$ undergraduates. Heterogeneity did not enhance performance in face-to-face discussion groups or in one-to-one discussions but did enhance performance for nominal groups.
Triandis, Hall, & Ewen (1965)	Heterogeneity in attitudes and ability	Creativity	$N = 300$ male undergraduates. Heterogeneity in attitudes and homogeneity in abilities associated with increased creativity. Low interpersonal attraction associated with decreased creativity.
Watson, Kumar, & Michaelson (1993)	Ethnicity	Group process, Performance (alternatives generated, range of perspectives, problem identification, quality)	$N = 36$ student groups. Four case analyses. Homogeneous groups better on both process and performance for first three. At end, no differences in process and some evidence that heterogeneous groups generated more alternatives and had a wider range of perspective.
Word, Zanna & Cooper (1974)	Ethnicity	Interview behavior	$N_1 = 14$, $N_2 = 30$. Interviewers of African Americans conducted shorter interviews with more displays of negative nonverbal cues.

Figure 2A. Field Studies ($N = 62$)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Ancona & Caldwell (1992)	Functional background, Education, Tenure	Group process, Communication, Innovation, Team-rated performance, Achieving budget and schedule	$N = 47$ teams. Tenure diversity linked to performance through group process. Functional diversity positively impacts innovation through external communication and has a negative impact on innovation and performance. Tenure diversity has negative effect on budget and schedules.
Alexander, Nuchols, Bloom, & Lee (1995)	Education, Tenure, Employment status	Voluntary turnover	$N = 398$ hospitals. Diversity in tenure and educational preparation related to higher turnover. Diversity of employment status negatively related to turnover.
Bantel & Jackson (1989)	Age, Education, Function, Tenure	Innovation	$N =$ TMTs of 199 banks. Functional diversity leads to more innovations, especially administrative ones.
Burt & Reagans (1997)	Age, Background, Gender, Race, Rank	Performance evaluation	$N = 275$ managers. Homophily has a positive effect between minorities that decreases as the minority increases to a plurality. Minorities give one another disproportionately positive evaluations
Cohen, Broschak, & Haveman (1996)	Proportion of males and females in senior management	Proportion of women in senior management	$N = 1878$ managers in savings and loan firms. Having more women in senior positions increases the likelihood of promotion for women.
Cummings, Zhou, & Oldham (1993)	Tenure, Education, Age, Gender	Performance, Absenteeism, Turnover	$N = 43$ work units. Gender and age showed larger impact on absenteeism and performance than education and tenure. Explains about 30% of the variance.
Eisenhardt, Kahwajy, & Bourgeois (1997)	Tenure	Conflict	$N = 12$ TMTs. Observation suggests homogeneous teams had less conflict and performed less well.
Eisenhardt & Schoonhoven (1990)	Industry experience	Firm growth	$N = 92$ semiconductor firms. Heterogeneity of the TMT positively associated with growth.
Ely (1994)	Gender	Identification	N = 30 female attorneys from 8 law firms. Finds that the proportion of women in senior positions affects the degree to which women in the firm are competitive or cooperative and have a positive gender identity.

(*continued*)

Figure 2A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Flatt (1996)	Company tenure	Innovation	$N = 47$ firms in 11 industries. Measured patents and citations and found that homogeneous executive team and heterogeneous vice president team associated with more innovation.
Glick, Miller, & Huber (1993)	Function	Communication	$N = 79$ TMTs of strategic business units. Functional diversity leads to more frequent communication within the team.
Goodman & Garber (1988)	Familiarity	Absenteeism	$N = 5$ coal mines, 60 crews. Regular miners who were not absent (high familiarity) have lower accident rates than replacement miners who were absent (lowest familiarity). Those most familiar with the job had lower accident rates.
Goodman & Leyden (1991)	Familiarity	Productivity	$N = 2$ coal mines, 26 crews. Group familiarity affects group productivity. Overall, lower levels of familiarity associated with lower productivity.
Greenhaus, Parasuraman, & Wormley (1990)	Ethnicity	Task- and relationship related performance	$N = 828$ employees from 3 companies. Blacks rated lower than whites and perceived as having lower potential for promotion.
Hambrick, Cho, & Chen (1996)	Education, Tenure	Strategy implementation	$N =$ TMTs of 32 airlines. Heterogeneity in tenure and education associated with better execution. Increased educational heterogeneity associated with more scope.
Haveman (1995)	Organizational foundings and dissolutions	Tenure distributions, Turnover	$N = 6039$ managers in the savings and loan industry. Organizational birth and death drive mobility and tenure distributions in firms.
Hoffman (1985)	Ethnicity	Interpersonal communication	$N = 96$ federal installations. Increasing black representation negatively associated with interpersonal communication frequency and positively associated with amount of formal communication.
Iaquinto & Frederickson (1997)	Tenure	TMT agreement, ROA	$N = 65$ TMTs. Consensus positively related to performance. Tenure diversity not related to agreement or performance.

(*continued*)

Figure 2A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Ibarra (1992)	Gender	Communication networks	$N = 94$ employees in an advertising agency. Men more likely to form homophilous ties across multiple networks. Women obtain social support and friendship from women and instrumental access through network ties to men.
Ibarra (1995)	Gender, Race	Communication networks	$N = 63$ mid-level managers in four large service firms. Minorities had more heterogeneous networks.
Ibarra (1997)	Gender	Communication networks	$N = 63$ mid-level managers in four service firms. Women's networks were less homophilous than men's. High potential women relied more on men outside their units.
Jackson, Brett, Sessa, Cooper, Julin, & Peyronnin (1991)	Education, Age, Tenure, Industry	Turnover	$N = 93$ TMTs in banking. Diversity leads to greater turnover in nonelite management teams.
Jehn, Northcraft, & Neale (1997)	Values, Information, Education, Tenure, Rank	Conflict, Satisfaction, Commitment, Intent to remain, Performance	$N = 545$ respondents in 108 groups. Value and demographic diversity increase relational conflict. Information diversity increases task conflict. Relational conflict has negative effects on work attitudes. Task conflict positively linked to performance.
Johnson, Hoskisson, & Hitt (1993)	Group and organization tenure	Board involvement in restructuring	$N = 92$ TMTs and boards of directors. Outsider representation is positively related to board involvement in restructuring.
Judge & Ferris (1993)	Age	Affect towards subordinate, Performance evaluations	$N = 81$ RN-supervisor pairs. Age differences related to less positive affect for the subordinate and indirectly to lower performance evaluations.
Keck & Tushman (1993)	Tenure, Function	Team structure, Team change	$N = 104$ TMTs. Organizations that survive environmental shifts have heterogeneous teams.
Kirchmeyer (1996)	Overall similarity, Gender	Commitment, Job challenge, Fit, Support	$N = 141$ managers over a 9-month period. Dissimilarity to work group associated with poorer fit, lower job challenge and promotion chances.

(*continued*)

Figure 2A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Kizilos, Pelled, & Cummings (1996)	Functional background, Company tenure, Gender, Race	Organizational citizenship behavior (POBs)	N = 16,025 persons from 223 work units. Prosocial behavior positively associated with tenure and functional heterogeneity and negatively associated with gender diversity (marginal for race).
Konrad, Winter, & Gutek (1992)	Gender	Sexist stereotyping	N = 89 white-collar work groups. Found sexist stereotyping was higher in male-dominated groups and lowest in female-dominated groups. Women in majority had most egalitarian attitudes.
Korn, Milliken, & Lant (1992)	Functional background	Performance (i.e., return on assets)	N = 78 TMTs. Functional diversity associated with positive performance in furniture industry, but not in software industry.
Lefkowitz (1994a)	Ethnicity	Segregation	N = 369 clerical workers. Black subordinates assigned to black supervisors more frequently than to white supervisors. Segregation grows over time.
McCain, O'Reilly, & Pfeffer (1983)	Organization tenure	Turnover	N = 32 academic departments. Gaps in the time of entry of new members increase turnover.
Mehra, Kilduff, & Brass (1996)	Sex, Race	Friendship choices	N = 159 2nd year MBA students. Minorities were marginalized, but women were not. Minorities more likely to choose same-race friends.
Michel & Hambrick (1992)	TMT Tenure, Function	Strategic diversification, ROA	N = 134 firms. Increased TMT homogeneity linked to less diversification.
Murmann & Tushman (1997)	TMT Tenure, Function	Speed of organizational reorientations	N = 104 TMTs. Increased tenure and functional heterogeneity associated with faster change.
Murray (1989)	Age, Tenure	Performance	N = 84 TMTs. Diversity is positively related to long-term performance in the oil industry.
O'Reilly, Caldwell, & Barnett (1989)	Age, Tenure	Social integration Turnover	N = 20 work groups. Heterogeneity in tenure associated with less social integration and higher turnover. More distant group members leave. Group-level age demography directly affects turnover.

(continued)

Figure 2A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
O'Reilly & Flatt (1989)	Age, Tenure	Innovation	N = 40 TMTs. Heterogeneity in tenure negatively associated with innovation.
O'Reilly, Snyder, & Boothe (1993)	Tenure	Group process, Turnover, Organizational politics and change	N = 24 TMTs. Homogeneity fostered trust and cooperation. These led to less political actions and more positive learning and adaptive change.
O'Reilly, Williams, & Barsade (1997)	Age, Tenure, Sex, Race	Conflict, Creativity, Implementation ability	N = 32 teams in a large firm. Diversity in tenure positively related to conflict. Diversity in race positively related to creativity and implementation.
Pelled (1993)	Company tenure, Age, Function, Gender, Race	Substantive and affective conflict	N= 45 teams, 317 individuals. Visible characteristics (race, company tenure) more related to affective conflict than task-relevant (functional background) attributes which are more related to substantive conflict.
Pelled (1997)	Race, Gender, Company tenure	Conflict, Perceived productivity	N = 42 teams. Gender and tenure diversity associated with emotional conflict. Emotional conflict associated with decreased perceived productivity.
Pelled, Eisenhardt, & Xin (1997)	Age, Tenure, Function, Gender, Race	Conflict, Team performance	N = 45 teams. Functional diversity related to task conflict. Race and tenure positively associated with relational conflict and age and function negatively related. Task conflict positively associated with performance.
Pfeffer & O'Reilly (1987)	Tenure	Turnover	N = 492 hospitals. Tenure heterogeneity positively associated with turnover.
Riordan & Shore (1997)	Race, Gender, Tenure	Cohesiveness, Commitment, Productivity, Advancement	N = 1, 584 employees (80% female, 36% minority). N = 98 groups. Race, but not gender or tenure, related to outcomes. When in the minority, attitudes are less positive.
Simons (1995)	Education	Performance	N = 57 TMTs. Educational diversity only useful when teams are able to deal with conflict.
Simons & Pelled (1996)	Tenure, Age, Education, Function	Performance, Decision quality	N = 57 TMTs. Interaction of functional and educational heterogeneity with debate related to performance. Age and tenure interaction with quality.

(continued)

Figure 2A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Smith, Smith, Olian, Sims, O'Bannon, & Scully (1994)	Education, Tenure in industry and group, Function	Return on investment (ROI), Growth in sales, Social integration, Communication	$N = 230$ TMT members from 53 groups. Heterogeneity in industry experience associated with lower ROI, social integration, and informal communication. Heterogeneity in education positively related to performance.
South, Bonjean, Markham, & Corder (1982, 1983)	Gender	Support from opposite sex	Men and women in work groups dominated by the opposite sex felt like they received more support from opposite sex coworkers than those in groups dominated by their own gender.
Thomas (1993)	Race	Mentor relationships	$N = 22$ cross-race dyads. Positive mentor relationships result from complementarity in how the dyad dealt with race.
Tsui, Egan, & O'Reilly (1992)	Gender, Age, Education, Race Tenure	Commitment, Absences, Intent to stay	$N = 151$ units in 3 organizations. Teams diverse in race and age had lower levels of commitment. Nonsymmetrical effects for sex and race, with whites and men showing larger negative effects for heterogeneity.
Tsui & O'Reilly (1989)	Age, Gender, Race, Education, Organization and job tenure	Perceived effectiveness, Personal attraction, Role ambiguity	$N = 272$ superior-subordinate dyads. Increasing dissimilarity in superior-subordinate demographic characteristics is associated with lower effectiveness, less liking, and increased role ambiguity.
Virany, Tushman, & Romanelli (1992)	Percentage change in TMT	Financial performance (ROA)	$N = 59$ TMTs. Executive team change positively related to ROA.
Wagner, Pfeffer, & O'Reilly (1984)	Age, Tenure	Turnover	$N = 31$ TMTs. Heterogeneity in tenure positively related to turnover.
Westphal (1996)	Function, Age, Education, Insider status	Selection of board of directors, CEO compensation increases	$N = 413$ companies. CEO's appoint demographically similar new directors. This leads to increased pay and less at risk compensation.

(*continued*)

Figure 2A. (Continued)

Authors	*Demographic Variables*	*Dependent Variables*	*Results*
Wharton & Baron (1987)	Gender	Satisfaction, Self-esteem, Depression	$N = 822$ subjects. Men in mixed work settings have lower job-related satisfaction and self-esteem and more depression than men in male or female-dominated work settings.
Wharton & Baron (1991)	Gender	Satisfaction	Women in balanced settings were more satisfied than women in female-dominated settings, but most satisfied were those in male-dominated situations.
Wiersema & Bantel (1992)	Education	Diversification strategies	$N = 87$ TMTs. Heterogeneity in education positively related to diversification strategies.
Wiersema & Bantel (1993)	Education, Age, Tenure	Turnover	$N = 85$ TMTs. No effect of diversity on turnover.
Wiersema & Bird (1993)	Age, Prestige of university, Tenure	Turnover	$N = 40$ Japanese firms. Heterogeneity in prestige of university leads to more turnover, especially of those who were most dissimilar.
Zajac, Golden, & Shortell (1991)	Age	Innovation	$N =$ Members of 49 Internal Corporate Joint Ventures in hospital industry. Increased age diversity associated with less innovation.
Zenger & Lawrence (1989)	Age, Tenure	Communication frequency	$N = 88$ R&D personnel. Age and tenure homogeneity positively associated with frequency of technical communication in teams.

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