

# Work Group Diversity

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## Key Words

group composition, group performance, teams, team effectiveness, organizational behavior

## Abstract

Work group diversity, the degree to which there are differences between group members, may affect group process and performance positively as well as negatively. Much is still unclear about the effects of diversity, however. We review the 1997–2005 literature on work group diversity to assess the state of the art and to identify key issues for future research. This review points to the need for more complex conceptualizations of diversity, as well as to the need for more empirical attention to the processes that are assumed to underlie the effects of diversity on group process and performance and to the contingency factors of these processes.

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## WORK GROUP DIVERSITY

Groups in organizations have become increasingly diverse over the years and will continue to become more diverse in years to come (Jackson et al. 2003, Triandis et al. 1994, Williams & O'Reilly 1998). Organizations have become more diverse in terms of demographic differences between people (e.g., in terms of gender, age, and ethnicity). Moreover, organizations are increasingly adopting work group compositions that incorporate differences in functional or educational background, such as in cross-functional project teams; mergers, acquisitions, and joint

ventures also introduce diversity into work groups. Because work group diversity may have positive as well as negative effects on group performance (for reviews, see Jackson et al. 2003, Milliken & Martins 1996, Williams & O'Reilly 1998; also see recent *Annual Review of Psychology* chapters by Guzzo & Dickson 1996, Ilgen et al. 2005, Kerr & Tindale 2004), the questions of which processes underlie these effects of diversity and how to manage these processes pose major challenges to research in organizational behavior. In the present article, we aim to assess the state of the art in this field. In doing so, we strive to answer the question of what we may conclude from the extant research as well as to provide a research agenda for diversity research in years to come.

Although the field is known as "organizational diversity," theory and research focus almost exclusively on the work group level, studying how group composition affects group performance, cohesion, and social interaction, and group members' commitment, satisfaction, and other indicators of subjective well-being. This review, therefore, focuses on work group diversity and how it affects groups and their members. Diversity is a group characteristic, but there is a stream of research on what is called relational demography (Chattopadhyay et al. 2004a, Tsui & O'Reilly 1989) that studies the effects of individuals' similarity to their work group (e.g., Chatman & Flynn 2001, Chatman & O'Reilly 2004, Chattopadhyay 1999, Chattopadhyay & George 2001) or to their leader (Epitropaki & Martin 1999, Tsui et al. 2002) as predictors of individual outcomes. Because greater dissimilarity from the group does not necessarily imply greater work group diversity (e.g., a sole female in an otherwise all-male group is very dissimilar to the group in terms of gender, while at the same time the group is quite gender-homogeneous), results from studies on relational demography cannot be taken to directly reflect diversity effects. Space limitations force us to restrict the current review to studies of diversity as a group

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**Diversity:** a characteristic of social grouping that reflects the degree to which objective or subjective differences exist between group members

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characteristic, although we do refer to relational demography studies when they seem relevant to the issue under consideration.

The starting point for our article is a seminal review by Williams & O'Reilly (1998), who examined 40 years of diversity research covering more than 80 studies. The Williams & O'Reilly review is an important milestone not only because it provides a comprehensive review of the diversity literature at the time, but also because it is somewhat of a watershed in diversity research. The state of the field that emerged from the Williams & O'Reilly review is one that has yielded largely inconsistent results, probably in part as a result of a somewhat too simplified approach to diversity. In the years following the review, however, the field moved to more sophisticated conceptualizations of diversity and its effects, and we hope to capture this development in the present review. We take the excellent work done by Williams & O'Reilly as a stepping-stone and review diversity research in the period from 1997 to 2005.

To access the relevant literature, we conducted a PsycInfo search of titles and abstracts covering this period and a manual search of the 2000–2005 volumes of major journals in applied psychology and organizational behavior. We also sent out a mailing to solicit papers in press. We should note, however, that our aim is not an exhaustive coverage of the literature, but rather a more selective review that highlights the developments we judge to be most relevant and important.

In the following sections, we first introduce the research field. Second, we address the issue of the conceptualization and operationalization of diversity, arguing in favor of more complex conceptualizations of diversity than typically have been used in diversity research. Next, we focus on what we may learn about the processes underlying the effects of work group diversity by reviewing studies of the mediators and moderators of the effects of diversity, and we briefly touch on possible curvilinear effects of diversity. We conclude by summarizing what we see as the most im-

portant questions for future research. These questions center around the need to develop conceptualizations of diversity that go beyond mere dispersion as well as the need to pay greater attention to the processes mediating the effects of diversity and to the contingencies of these processes.

## WORK GROUP DIVERSITY: AN INTRODUCTION IN BROAD STROKES

Diversity is typically conceptualized as referring to differences between individuals on any attribute that may lead to the perception that another person is different from self (Jackson 1992, Triandis et al. 1994, Williams & O'Reilly 1998). In principle, diversity research may concern any possible dimension of differentiation, but in practice diversity research has primarily focused on differences in gender, age, ethnicity, tenure, educational background, and functional background (Milliken & Martins 1996, Williams & O'Reilly 1998). The key question in diversity research is how differences between work group members affect group process and performance, as well as group member attitudes and subjective well-being. To address this question, diversity research has largely been guided by two research traditions: the social categorization perspective and the information/decision-making perspective (Williams & O'Reilly 1998). This is not to say, however, that these are well-articulated theoretical perspectives in diversity research. Often they represent a more loosely defined emphasis on either the preference to work with similar others or the value of diverse information, knowledge, and perspectives.

The starting point for the social categorization perspective is the notion that similarities and differences between work group members form the basis for categorizing self and others into groups, distinguishing between similar ingroup members and dissimilar outgroup members. In diverse groups, this may mean that people distinguish subgroups

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### Social categorization perspective:

differences between work group members may engender the classification of others as either ingroup/similar or outgroup/dissimilar, categorizations that may disrupt group process

### Information/decision-making perspective:

diversity may introduce differences in knowledge, expertise, and perspectives that may help work groups reach higher quality and more creative and innovative outcomes

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within the work group. People tend to favor ingroup members over outgroup members, to trust ingroup members more, and to be more willing to cooperate with them (Brewer 1979, Brewer & Brown 1998, Tajfel & Turner 1986). The result of such categorization processes may be that work groups function more smoothly when they are homogeneous than when they are more diverse, and that group members are more satisfied with and attracted to the group when it is homogeneous and they are similar to the other group members. This analysis is corroborated by findings of, for instance, higher group cohesion (e.g., O'Reilly et al. 1989), lower turnover (e.g., Wagner et al. 1984), and higher performance (e.g., Murnighan & Conlon 1991) in more homogeneous groups.

The social categorization perspective is complemented by the similarity/attraction perspective (Williams & O'Reilly 1998), which does not concern social groups but rather focuses on interpersonal similarity (primarily in attitudes and values) as determinants of interpersonal attraction (Berscheid & Reis 1998, Byrne 1971). The similarity/attraction perspective arrives at the same basic prediction as the social categorization perspective in diversity research, that people prefer to work with similar others (Jackson 1992).

In contrast to the social categorization (and similarity/attraction) perspective, the information/decision-making perspective emphasizes the positive effects of work group diversity. The starting point for this perspective is the notion that diverse groups are likely to possess a broader range of task-relevant knowledge, skills, and abilities, and members with different opinions and perspectives. This gives diverse groups a larger pool of resources that may be helpful in dealing with nonroutine problems. It may also set the stage for more creative and innovative group performance because the need to integrate diverse information and reconcile diverse perspectives may stimulate thinking that is more creative and prevent groups from moving to premature consensus on issues that need careful

consideration (van Knippenberg et al. 2004). Corroborating this analysis, some studies find an association of diversity with higher performance and innovation (e.g., Bantel & Jackson 1989).

In their simplest form (a main effect of diversity), neither analysis is supported. Evidence for the positive effects as well as for the negative effects of diversity is highly inconsistent (Bowers et al. 2000, Webber & Donahue 2001, Williams & O'Reilly 1998) and raises the question of whether, and how, the perspectives on the positive and the negative effects of diversity can be reconciled and integrated. Because the information/decision-making perspective focuses on task performance, whereas the social categorization perspective seems to put the relational aspect more center stage, some scholars have concluded that diversity may be good for group performance while at the same time it is bad for interpersonal relations and attitudes toward the work group (e.g., Triandis et al. 1994). Given the relationship between group interaction and cohesiveness on the one hand and group performance on the other hand (De Dreu & Weingart 2003, Mullen & Copper 1994), however, it is difficult to see how the outcomes described by the social categorization and the information/decision-making perspectives could occur simultaneously. Indeed, there hardly seems to be evidence for both occurring at the same time (but see Keller 2001).

One thing that stands out in this respect is that the field has been dominated by studies focusing on "main effects," testing relationships between dimensions of diversity and outcomes without taking potentially moderating variables into account (Jackson & Joshi 2004, Pelled et al. 1999). Narrative reviews and meta-analyses alike seem to corroborate the conclusions that this main effects approach is unable to account for the effects of diversity adequately (Bowers et al. 2000, Webber & Donahue 2001, Williams & O'Reilly 1998). It seems time to declare the bankruptcy of the main effects approach and

to argue for models that are more complex and that consider moderating variables in explaining the effects of diversity. Accordingly, the present review largely disregards studies of potential main effects in favor of studies identifying moderators of the effects of diversity.

This focus on moderators is important not only to identify when diversity may be expected to have positive or negative effects, but also because it is informative about the processes underlying the influence of work group diversity (i.e., moderator effects observed may corroborate conclusions about the processes in operation). Attention to these processes is important, because another major impediment to the advancement of the field is a tendency to assume rather than assess mediating processes. When a social categorization perspective is argued to predict negative effects of diversity and these are observed, the implicit conclusion is that social categorization processes occurred even when no empirical evidence for such processes is provided. In similar vein, often the occurrence of information/decision-making processes is concluded from the observation of positive effects of diversity on group performance without evidence regarding the processes taking place during group interaction. The predicted outcome is not necessarily evidence of the predicted process, however, and relying on outcomes to determine process runs the risk of resulting in misleading conclusions. The field may thus benefit from more attention to the processes translating work group diversity into outcomes, and the current review emphasizes studies that shed light on these mediating processes. First, however, we address another issue that emerged more recently—the possibility that conceptualizations of diversity that are more complex may yield more insight into the effects of diversity.

## CONCEPTUALIZING DIVERSITY

Diversity may be seen as a characteristic of a social grouping (i.e., group, organization, so-

ciety) that reflects the degree to which there are objective or subjective differences between people within the group (without presuming that group members are necessarily aware of objective differences or that subjective differences are strongly related to more objective differences). Such a definition and similar definitions coined by others (see above) leave unanswered a couple of important questions about how to deal with diversity conceptually, however, and some of these are quite salient in current research in diversity. Our review of the field suggests that four issues in this respect especially warrant attention: first, the possibility to better understand the effects of diversity by distinguishing between different types of diversity; second, the potential added value of moving beyond the study of demographic and functional diversity; third, the potential added value of conceptualizations of diversity that move beyond simple dispersion; and fourth, the notion that diversity's effects may be better understood if the influence of different dimensions of diversity is studied in interactions rather than as additive effects.

## Typologies of Diversity

To introduce some higher-order structure in diversity research, a number of researchers have proposed typologies that may be used to classify different dimensions of diversity. These typologies include the distinction between readily observable demographic attributes (e.g., gender, race/ethnicity, age) that may be less job related and less easily discernable, and more job-related attributes such as differences in educational or functional background (Jackson 1992, Jehn et al. 1999, Milliken & Martins 1996, Pelled et al. 1999, Schneider & Northcraft 1999, Tsui et al. 1992; cf. Harrison et al. 1998). In addition, a number of researchers have argued that it is also important to take into account differences that may not be readily visible but are not always job-related either, such as differences in personality, attitudes, and values (Bowers et al. 2000, Harrison et al. 1998, Jehn et al. 1999).

The question from the current perspective is, Do these typologies help in making sense of the effects of diversity?

Some researchers have proposed that demographic diversity, as well as diversity in personality, values, and attitudes, has negative effects on group performance and affective-evaluative responses to the group, whereas diversity on more information-related dimensions, such as education and functional background, is more likely to have positive effects on group performance (Jehn et al. 1999, Pelled et al. 1999). Although this reasoning makes intuitive sense, it does not seem to be supported by the data. In support of the moderating role of diversity type, Jehn et al. (1999) found that informational diversity was positively related to group performance and commitment, whereas perceived value diversity (which does not necessarily reflect actual value diversity; cf. Harrison et al. 2002) was negatively related to group performance and group member satisfaction, intent to remain, and commitment. Contrary to predictions, however, demographic diversity was unrelated to group performance and was positively related to member satisfaction, intent to remain, and commitment, as well as to perceived work group performance. Pelled et al.'s (1999) hypotheses implied that functional diversity would be positively related to group performance, whereas demographic diversity would be negatively related to group performance, but neither type of diversity was related to group performance.

Other studies incorporating both demographic and informational dimensions of diversity report very similar relationships for, on the one hand, demographic diversity and presumably more job-related dimensions of diversity and, on the other hand, outcomes such as group performance, information use, and learning as well as team member satisfaction and commitment (Dahlin et al. 2005, Schippers et al. 2003, van der Vegt & Bunderson 2005). Bunderson & Sutcliffe (2002) report positive and negative relationships with team process and performance for

different forms of informational diversity. In addition, there are also other reports of positive effects of demographic diversity (e.g., Bantel & Jackson 1989) and negative effects of informational diversity (e.g., Simons et al. 1999) that run against the proposed moderating role of diversity type. Together these findings suggest that the distinction between diversity types is not associated with differential relationships with outcome variables. Most importantly, perhaps, meta-analyses do not support the notion of type of diversity as moderator of the positive versus the negative effects of diversity either—although it should be noted that these meta-analyses only covered a subset of the studies that could potentially have been included. In a meta-analysis of 13 studies, Bowers et al. (2000) distinguished gender, personality, attitude, and ability diversity and found no reliable relationship between any form of diversity and group performance. In a meta-analysis of 24 studies, Webber & Donahue (2001) distinguished between highly job-related and less job-related diversity and found no reliable relationships for either form of diversity, neither with group performance nor with group cohesiveness.

An important conclusion to emerge from the current state of the art is that, contrary to what seems popular belief, the positive versus the negative effects of diversity are not associated with job-related informational diversity versus less job-related demographic diversity, neither for group performance nor for more affective/evaluative responses to the group. Interestingly, this means not only that organizations should be a bit more cautious in their enthusiasm for functional diversity, but also that they can be more optimistic about the possibilities to benefit from demographic diversity.

The inability to reliably link the positive and negative effects of diversity to types of diversity has led van Knippenberg et al. (2004) to propose that diversity research abandon attempts to explain the effects of diversity through typologies of diversity. In contrast, they propose that all dimensions of diversity

may in principle elicit social categorization processes as well as information/decision-making processes, because all dimensions of diversity in principle both provide a basis for differentiation and may be associated with differences in task-relevant information and perspectives. Following this conclusion, and in deviation from earlier reviews (e.g., Milliken & Martins 1996, Williams & O'Reilly 1998), we do not structure the current review by diversity dimension, but rather we aim to highlight the processes that may be engendered by diversity and the contingencies of these processes.

### **Beyond Demographic and Functional Diversity**

Perhaps understandably, diversity research has mainly focused on demographic and functional/educational diversity. Other dimensions of diversity that may be less easily captured by the existing typologies have received less attention, although they may be equally relevant to our understanding of group functioning. For instance, a growing number of studies link diversity in group member personality (mostly conceptualized in terms of the five-factor model of personality; Costa & Macrae 1992) to group performance and more processes-related measures, such as team social integration (Barrick et al. 1998; Barry & Stewart 1997; Harrison et al. 2002; Mohammed & Angell 2003, 2004; Neuman et al. 1999; Neuman & Wright 1999; Schneider et al. 1998; Van Vianen & De Dreu 2001). So far, the picture emerging from these studies is quite inconsistent for the relationship between personality diversity and group process and performance, and further research addressing the contingencies of these relationships seems in order.

Others have also pointed to diversity in attitudes and values as an influence on group functioning (Hoffman & Maier 1961). Here, too, findings are highly inconsistent. Some studies suggest that diversity in attitudes and values may be associated with negative out-

comes (Harrison et al. 1998, 2002; Jehn & Mannix 2001; also see Jehn et al. 1997, 1999). Some of these studies also show, however, that diversity in attitudes and values may be associated with positive outcomes (e.g., social integration) or may be unrelated to these outcomes (Harrison et al. 1998, 2002). The conclusion seems justified that diversity in attitudes and values, too, is worthy of research attention, but that we need more complex models to capture the potential influence of this diversity (cf. Harrison et al. 1998).

Socially shared cognition and affect typically is not considered in diversity research, but it arguably concerns dimensions of diversity. Research in socially shared cognition shows how individuals' understanding of their team and their task (conceptualized as task representations, Tindale et al. 1996; mental models, Cannon-Bowers et al. 1993; team schemas, Rentsch & Hall 1994; or beliefs, Cannon & Edmondson 2001) may be shared among group members to a greater or lesser extent [i.e., group members may be more or less similar in their understanding of the team and the task (Mohammed & Ringseis 2001; also see Colquitt et al. 2002, Klein et al. 2001, Schneider et al. 2002)]. Because the level of sharedness may affect group performance (Mathieu et al. 2005), diversity in such team- and task-relevant cognitions deserves a place on the agenda of diversity research. In a similar vein, affective states (i.e., moods, emotions) may be shared to a greater or lesser extent (George 1990, Totterdell 2000, Totterdell et al. 1998), and the extent to which affect is shared has been shown to be related to group cooperation and conflict (Barsade et al. 2000). Affective diversity thus also warrants further research.

In sum, then, without denying the importance of the study of demographic diversity and diversity in functional and educational background, many other dimensions of diversity may influence group process and performance and therefore deserve research attention. This would seem to hold all the more because an understanding of the effects of

demographic diversity seems at least partially to require an understanding of the more psychological dimensions that demographic differences are often presumed to be associated with, such as differences in attitudes, values, and perspectives (Beyer et al. 1997, Chattopadhyay et al. 1999, Cox et al. 1991). That is, analyses of demographic diversity to a certain extent treat demographic differences as proxies for deeper underlying differences (Priem et al. 1999), and investigating this proposed link as well as the processes governing the influence of these underlying differences may increase our understanding of the influence of demographic diversity.

### Beyond Dispersion

Diversity research has typically operationalized diversity as the dispersion of group members' positions on a given dimension of diversity. Differences between group members are reflected in indices of the extent to which group members differ from each other, such as the standard deviation, Euclidian distance (Tsui et al. 1992), Blau (1977), and Teachman (1980) indices, and the coefficient of variation (for a detailed discussion of these measures, see Harrison & Klein 2005, Harrison & Sin 2005), or simply by distinguishing groups with high versus low dispersion. Harrison & Klein (2005) note that dimensions of diversity may differ in the extent to which they represent different positions on a continuum (e.g., attitudes), different nominal categories (e.g., gender), or different positions that are associated with greater or lesser power or status (e.g., educational level). Differences between group members on different dimensions may therefore mean different things, and Harrison & Klein urge researchers to be more explicit about their conceptualization of diversity (e.g., whether it associated with status or power differentials), and to choose operationalizations that are commensurate with their conceptualization (also see Sørensen 2002, Williams & Meân 2004).

Moreover, a couple of considerations suggest that there are potential benefits in complementing simple dispersion models with more complex conceptualizations and operationalizations of diversity (cf. Chan 1998, Kozłowski & Bell 2003; also see the discussion of faultlines below). Research on relational demography (i.e., focusing on individual dissimilarity to the work group rather than on diversity) shows that being dissimilar to the work group more negatively affects people who are typically in majority positions in Western organizations (i.e., men, Caucasians) than it does people who are more often in the minority position (i.e., women, members of ethnic minorities; Chatman & O'Reilly 2004, Tsui et al. 1992). To the extent that these outcomes for dissimilar group members affect group functioning and performance (e.g., through lower satisfaction, lower cohesion, and higher turnover), we might expect groups with, for instance, a female minority to function better than groups with a male minority. Whether or not this is the case needs to be tested, but the point is that simple dispersion models do not capture these more subtle effects because they treat a group with a male minority and a group with a comparable female minority (e.g., eight men and two women versus two men and eight women) as equally diverse (cf. Harrison & Klein 2005).

Another consideration is that once a given background or perspective is represented by one or two members (e.g., members with a particular functional background within a cross-functional team), adding additional representatives of this background or perspective to the group might add relatively less to the group's potential to perform well—i.e., sometimes diversity may be more a dichotomy (present versus absent) than a matter of degree. The effects of diversity may also be contingent on the mean level of the diversity dimension, as illustrated in Barsade et al.'s (2000) finding that the relationship of top management team diversity in positive affect with group conflict and cooperation was

contingent on the mean level of positive affect in the team.

Such complex conceptualizations of diversity are acknowledged more in theoretical analyses than in empirical research, but they do seem to have the potential to enrich our understanding of the effects of diversity, and research following up on some of these notions should be highly worthwhile. In this respect, it is important to note that organizational surveys typically do not tap into the whole range of potential group compositions (e.g., work groups dominated by ethnic minorities tend to be rare in most samples), and more sophisticated conceptualizations of diversity might suggest that this poses a threat to the conclusions that may be reached on the basis of studies relying on more traditional dispersion models (Harrison & Klein 2005).

### **Faultlines: Interacting Dimensions of Diversity**

Traditionally, diversity research has focused on the effects of different dimensions of diversity in isolation or in additive models, not taking into account the possibility that the effects of a dimension of diversity may be contingent on diversity on other dimensions. Research on the salience of social categorizations (Oakes et al. 1994, Turner et al. 1987) and cross-categorization (Brewer 1995, Crisp et al. 2002) suggests that the correlation between different dimensions of differentiation influences the likelihood that diversity elicits subcategorization processes. It might therefore be better to think of work group diversity as an interaction of differences on different dimensions than to look only at the additive effects of dimensions of diversity.

Lau & Murnighan (1998) coined the term “faultlines” to refer to combinations of correlated dimensions of diversity that yield a clear basis for differentiation between subgroups (i.e., implying both between-group differences and within-group similarity; Turner et al. 1987). A group composition in which all the men are relatively old and all the women

are relatively young, for example, is more likely to elicit subcategorization than is a composition in which gender and age are unrelated. The stronger the diversity faultline, the more likely subcategorizations should be to arise, and the greater the chance of disruptions of group functioning.

In support of this proposition, Li & Hambrick (2005) found that a faultline index was negatively related to self-rated group performance and that this relationship was mediated by relational conflict and behavioral integration (cf. social integration). Sawyer et al. (2005) compared informationally diverse decision-making groups that were ethnically homogeneous (all Caucasian) with groups that had an ethnic minority member present who was either also in the informational minority (i.e., a faultline) or in the informational majority (i.e., crosscutting informational and ethnic diversity), and reported that groups with crosscutting dimensions of diversity outperformed homogeneous and faultline groups. In a similar vein, Homan & van Knippenberg (2003) showed that cross-categorization leads to a more favorable group process than does a faultline dividing the group equally (also see Phillips et al. 2004). More-indirect evidence of the disruptive influence of faultlines was provided by Lau & Murnighan (2005), who found that faultlines are associated with less positive relationships of communication between subgroups with learning, psychological safety, group satisfaction, and expected group performance.

The evidence is less consistent, however, than one would like it to be. Lau & Murnighan (2005) also observed that faultlines were associated with lower relational conflict, and higher satisfaction and psychological safety. Sawyer et al. (2005) did not observe differences between faultline and homogeneous groups, and Phillips et al. (2004) found that a faultline involving a single dissimilar member resulted in better decision-making performance than did a situation in which single-member dissimilarity and informational differences crosscut each other.

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**Faultlines:** when positions on different dimensions of diversity are correlated, the combination of diversity on these dimensions may suggest a clear distinction between subgroups

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The possibility that faultlines have a curvilinear relationship with outcomes does not explain the above inconsistencies, but it hints at the possibility that the effects of faultlines are less straightforward than initially conceived. Both Gibson & Vermeulen (2003) and Thatcher et al. (2003) found curvilinear relationships in which moderate faultlines were associated with outcomes that were more positive (team learning, morale, performance, and reduced conflict). However, both studies used faultline measures where moderate faultlines might also be labeled moderate cross-categorization, and it is unclear to what extent these findings point to the benefits of moderate faultlines (i.e., eliciting subgroup categorization) or of crosscutting dimensions of diversity (i.e., diversity without associated subgroup salience).

Earley & Mosakowski (2000) showed that the faultline notion could also be applied to a single dimension of diversity when the dimension has multiple nominal categories. They found that teams with members from two different countries showed greater evidence of subcategorization and performed more poorly than did both nationality-homogeneous teams and teams that consisted of members from several different countries (i.e., the two-nationality composition arguably represents a stronger faultline).

The faultline and cross-categorization concepts have added value in terms of explaining diversity effects, but the relationship between faultlines and outcomes is not clear-cut. In part, this may reflect problems with the operationalization of faultlines. It might be worthwhile, for instance, to consider the possibility that there are asymmetries in the effects of faultlines that are not captured by current faultline measures. For example, along similar lines as discussed in the previous section, a faultline between a male Caucasian minority and a female Asian majority might affect group functioning differently than a faultline between a male Caucasian majority and a female Asian minority. In part, the observed inconsistency in find-

ings may also reflect a need to focus on the contingencies of the effects of faultlines (cf. Gibson & Vermeulen 2003) because, for instance, salient categorizations only under certain circumstances translate into disruptive intergroup biases (van Knippenberg et al. 2004). And clearly, research actually assessing the categorization processes implied by faultline theory (cf. Earley & Mosakowski 2000) is needed to explicitly test predictions about the assumed processes.

### **PROCESSES UNDERLYING THE INFLUENCE OF DIVERSITY AND THEIR CONTINGENCIES**

An important issue is that not much clear evidence exists for the processes implied by the social categorization (and similarity/attraction) and information/decision-making perspectives identified by Williams & O'Reilly (1998). This is due in part to the fact that many studies did not include process measures. A complicating factor in this respect is that neither the social categorization perspective on work group diversity nor the information/decision-making perspective represents a clearly articulated theoretical framework; rather, the perspectives are more like loosely defined applications of social categorization theories and notions about group information processing and decision making.

In the following sections, we address the empirical evidence for the processes underlying the effects of work group diversity and the factors that moderate these processes. Most of the evidence in diversity research is not easily and unambiguously interpreted in terms of social categorization and information/decision-making processes, however, and a substantial part of our discussion concerns studies that may be consistent (to a greater or lesser extent) with the social categorization and information/decision-making perspectives without providing direct evidence to that effect. In that respect, we identify three (sets of) factors that are

receiving increased research attention as moderators of the effects of diversity: interdependence, time, and diversity mind-sets.

### Social Categorization Processes

Diversity research has typically applied insights from research in social categorization and intergroup relations in a straightforward way, predicting that differences between people may elicit social categorization processes (stereotypic perceptions of dissimilar others, subgroup formation, intergroup biases) that disrupt group functioning and lower affective/evaluative responses to the group. In support of this analysis, there is evidence that diversity may elicit subcategorization. Earley & Mosakowski (2000) assessed subgroup categorization and common group identity (although the latter measure arguably reflects cohesiveness more than social categorization) and found that groups with stronger faultlines had a stronger sense of subgroups and a weaker common identity. Moreover, they found evidence that common identity mediated the relationship between faultlines and satisfaction (but not performance). These findings were not replicated in a second study, though.

Research on relational demography also yields evidence for social categorization processes, although this should be treated more carefully because, as noted above, individual dissimilarity does not necessarily reflect group diversity. Chattopadhyay et al. (2004b) found that dissimilarity to the work group lowered individuals' self-categorization as a member of the group. Randel (2002) found that group gender composition affected the salience of male group members' gender identity (cf. Mehra et al. 1998) and that identity salience moderated the relationship between gender composition and relational conflict (i.e., suggesting a translation of categorization into intergroup bias; also see Randel & Jaussi 2003). Evidence that diversity affects social categorization thus is quite modest, and it would seem important for future research to estab-

lish the validity of this basic tenet of the social categorization perspective on work group diversity.

A second question is whether there is evidence of an association of work group diversity with intergroup bias in perceptions, evaluations, and social interaction. Social categorization processes are presumed to engender more favorable attitudes toward ingroup than outgroup others, more trust, more willingness to cooperate, and generally smoother interaction with ingroup than with outgroup others. In line with this argument, Chatman & Flynn (2001) found that demographic diversity was associated with lower self-rated team cooperativeness. Consistent with the idea that computer-mediated interaction removes social categorization cues (Sproull & Kiesler 1986), Bhappu et al. (1997) found that computer-mediated communication in gender-diverse groups showed fewer signs of intergroup bias (operationalized as differential attention to same-gender versus other-gender communication) than did face-to-face communication. Chattopadhyay (1999) observed in a study of relational demography that trust in peers mediated the negative relationship between individual dissimilarity and organizational citizenship behavior (see also Chattopadhyay & George 2001). None of these studies presented direct evidence of social categorization processes, however, so caution is in order in concluding that these studies provide evidence of intergroup bias.

Research focusing on social/behavioral integration and relational conflict similarly yields evidence that is consistent with a social categorization interpretation. Randel's (2002) findings for the role of identity salience in relational conflict probably provide the most persuasive evidence of social categorization disrupting group process in diverse work groups. Other studies offer evidence that is more indirect because they included no direct measure of categorization (e.g., the association observed between diversity faultlines and behavioral integration by Li & Hambrick 2005). Evidence of negative relationships

between diversity and social integration (Harrison et al. 1998, 2002), and positive relationships between diversity and relational conflict (Pelled et al. 1999) that also mediated the relationship with outcomes (Bayazit & Mannix 2003, Jehn et al. 1999, Knight et al. 1999, Mohammed & Angell 2004), is consistent with the social categorization prediction. However, it does not prove that these relationships follow from social categorization processes rather than from other factors associated with diversity.

Complicating matters, evidence also links diversity to higher social integration and group identification (identification reflects self-categorization), and lower relational conflict (Polzer et al. 2002; cf. Swann et al. 2003). Building on research by Swann and colleagues on self-verification (being seen by others as one sees oneself; for an overview, see Swann et al. 2004), Polzer et al. (2002) tested interactions between congruence of group members' self-views and the views other group members have of them (arguably a proxy for self-verification) and demographic and functional diversity. They found that whereas higher diversity tended to be associated with more negative outcome when congruence was low, it actually tended to be associated with more positive outcome when congruence was high. For the social categorization perspective to account for the effects of diversity adequately, it would thus seem that it should also be able to incorporate positive relationships of diversity with group identification and group interaction (cf. van Knippenberg & Haslam 2003).

A number of studies thus yield results that are consistent with a social categorization analysis of the effects of work group diversity. Surprisingly few studies, however, directly assessed social categorization processes, and results are inconsistent enough to raise doubts about the extent to which social categorization processes are in operation. Moreover, without supporting process evidence, some of the negative relationships between diversity and group process may also be interpreted as reflecting the consequences of misunder-

standing and disagreement per se (i.e., a more dysfunctional side of information/decision-making processes) rather than social categorization. Empirical attention to the actual categorization processes therefore would be warranted to substantiate the social categorization analysis of work group diversity.

It might also be useful to extend social categorization (and similarity/attraction) analyses with insights from the study of social networks in organizations (Brass et al. 2004). Social network analysis has attempted to capture relationships between group members in terms of the strength and nature of their ties, and has proven useful in capturing the influence of diversity on the relationships formed by group members (Klein et al. 2004, Reagans & Zuckerman 2001). Network analysis may help to paint a more elaborate picture of the social relations within a work group that moves beyond the relatively simple notion of a split in subgroups and thus enable a more fine-grained analysis of social categorization processes. Moreover, it may also prove useful in capturing the external (i.e., outside of the work group) network of group members as it may be affected by diversity (Reagans et al. 2004).

Models that are more sophisticated and that focus on the contingencies of sub-categorization and intergroup bias (van Knippenberg et al. 2004) also seem in order. In this respect, research on the salience of social categorizations (Oakes et al. 1994, Turner et al. 1987) shows that there is more to social categorization than just differences between people. As reflected in the notion of diversity faultlines, some combinations of differences (i.e., those that result in high between-group differences and within-group similarities) are more likely to elicit subcategorizations than are others. In this sense, diversity is also context: In more-diverse organizations, work group diversity may be less salient (cf. Martins et al. 2003; also see Brief et al. 2005, Joshi et al. 2005).

In addition, for diversity to elicit a particular categorization, the categorization also has

to make sense within individuals' psychological frame of reference (an issue that diversity research so far has hardly touched upon): In order to become salient, a categorization should not only capture similarities and differences between people, but should also be meaningful to the individual (Turner et al. 1987). Moreover, as van Knippenberg et al. (2004) argue, it is intergroup bias (favoring one's own subgroup) that may disrupt group process and not categorization per se (i.e., the perception of subgroups), and categorization only translates into intergroup bias under certain circumstances. Thus, diversity research might benefit from a more fine-grained analysis of the factors that elicit social categorization as well as of the factors that translate social categorization into intergroup bias.

### **Information/Decision-Making Processes**

At the core of the information/decision-making perspectives lies the notion that work group diversity may be associated with differences in information, knowledge, and perspectives, and that this diversity may benefit group performance. These informational differences are not limited to what are often seen as informational or job-relevant dimensions of diversity (Tsui & O'Reilly 1989, van Knippenberg et al. 2004). As van Knippenberg et al. (2004) outline, this implies that at the core of the positive effects of diversity emphasized in the information/decision-making perspective lies elaboration of task-relevant information—the group-level exchange, processing, and integration of diverse information and perspectives (cf. Hinsz et al. 1997). In line with this analysis, Earley & Mosakowski (2000) found that a measure of team communication that seems to be closely aligned with this notion of elaboration mediated the relationship of group diversity and performance (although this finding was not replicated in a second study), and Dahlin et al. (2005) found that (moderate) diversity was associated with greater information use.

Related to the proposed role of elaboration of task-relevant information is the notion that divergent viewpoints may stimulate team reflexivity. Team reflexivity refers to the team's careful consideration and discussion of its functioning and is proposed to result in team learning and improved team performance (Schippers et al. 2005; West 1996, 2002). Just as diversity may stimulate elaboration of task-relevant information, divergent perspectives on the task that may be associated with diversity may invite a team to reflect on its own functioning. In support of this proposition, Schippers et al. (2003) found that team reflexivity mediated the (moderated) relationship between diversity and team performance, commitment, and satisfaction. Providing further support for this perspective, Gibson & Vermeulen (2003) found that diversity may be positively related to team learning behavior (cf. reflexivity), and Van der Veegt & Bunderston (2005) found that team learning behavior partly mediated the relationship between expertise diversity and team performance.

A number of researchers working from a related perspective have pointed to the role of task conflict—disagreements about the task performed (Jehn et al. 1999, Lovelace et al. 2001, Pelled et al. 1999). Diversity is proposed to have the potential to stimulate task conflict through its associated differences in viewpoints, ideas, and opinions, and task conflict is argued to engender more careful consideration of the task at hand. Consistent with this notion, Jehn et al. (1999) found that task conflict mediated the positive relationship between informational diversity and group performance. Inconsistent with this reasoning, however, they also found that perceived value diversity positively correlated with task conflict (cf. Jehn & Mannix 2001), while perceived value diversity was negatively related to performance. Pelled et al. (1999) also found evidence that functional background diversity was positively related to task conflict (as do Lovelace et al. 2001), but found no relationship between diversity and group performance.

Raising further doubts about the proposed role of task conflict, the notion that task conflict mediates the positive influence of diversity on group performance is at odds with the meta-analytic finding that task conflict is negatively related to group performance (De Dreu & Weingart 2003). Indeed, as van Knippenberg et al. (2004) argue, although task conflict might engender elaboration of task-relevant information and thus foster group performance under certain conditions (cf. Lovelace et al. 2001), task conflict does not necessarily do so, nor is task conflict a prerequisite for elaboration of task-relevant information to occur. Accordingly, it may be the elaboration of task-relevant information per se and not task conflict that drives the positive effects of diversity, but studies assessing both task conflict and group-level information processing are required to address this issue.

If positive effects of diversity on performance flow from group information processing, then the positive effects of diversity should be more likely on tasks with stronger information-processing and/or decision-making requirements (van Knippenberg et al. 2004). In support of this proposition, Jehn et al. (1999) found that informational diversity was more positively related to group performance on less-routine tasks, and Bowers et al.'s (2000) meta-analysis showed that diversity was positively related to group performance on more complex tasks but was negatively related on simpler tasks. Although this is no evidence for the actual elaboration of information assumed to underlie this moderating effect, these findings are consistent with the information/decision-making perspective.

There thus is some evidence for the processes implied in the information/decision-making perspective, although studies assessing these processes are generally somewhat lacking. Moreover, there seems to be some controversy about the role of task conflict. It therefore seems that diversity research may benefit from more theoretical as well as empirical attention to the information process-

ing and decision-making processes that are presumed to drive the positive effects of diversity. In addition, in view of the lack of support for an overall positive effect of diversity, theoretical models of the contingencies of information/decision-making processes are required. Research on social information processing, for instance, suggests that processing motivation and ability are key determinants of in-depth processing of information (Chaiken & Trope 1999). Motivation and ability have received little attention in diversity research, yet they potentially also are important determinants of groups' use of their diversity of information and perspectives (van Knippenberg et al. 2004).

### **Social Categorization Processes As Moderator of Information/Decision-Making Processes**

The social categorization perspective and the information/decision-making perspective have largely developed along separate lines, and there are few studies considering the interaction between social categorization and information/decision-making processes. Yet, because intergroup bias may render individuals less open to communication from dissimilar others (van Knippenberg 1999), intergroup bias engendered by diversity may disrupt group information processing and thus stand in the way of realizing the potential benefits of diversity (van Knippenberg et al. 2004).

Consistent with this proposition, Jehn et al. (1999) found that higher perceived value diversity and demographic diversity were associated with less-positive relationships between informational diversity and indicators of group performance. In a similar vein, Phillips et al.'s (2004) finding that groups that were split equally along a faultline dealt less successfully with their informational diversity is consistent with this argument (also see Homan & van Knippenberg 2003). Neither study includes measures of social categorization processes, though, so some caution is

in order in attributing these findings to the disruptive influence of social categorization processes. Lau & Murnighan's (2005) observation that faultlines disrupted the positive relationship between intersubgroup communication (cf. Bhappu et al. 1997) and positive group outcomes is also in line with this argument. Their finding that faultlines were also associated with less relational conflict and greater psychological safety and satisfaction raises some doubts about a straightforward social categorization interpretation of these findings, however. Although the available evidence thus seems reasonably consistent with the proposition that diversity may disrupt group information processing, the evidence for the actual operation of social categorization and information/decision-making processes is largely missing.

A possibility that has received less attention is that social categorization processes may also stimulate group information processing. A line of research by Phillips and colleagues hints at this possibility, suggesting that informationally diverse groups that contain a member who is dissimilar to the other members of the group are more likely to make effective use of their informational diversity than are more-homogeneous groups, presumably because dissimilarity alerts the group to potential associated differences in information (Phillips 2003; Phillips et al. 2004, 2005; Phillips & Loyd 2005). However, because measures of categorization are missing from these studies, it is not clear whether these effects can be attributed to social categorization processes.

Either way, the work by Phillips and colleagues raises the following questions: Under which conditions is greater diversity beneficial to a group's use of distributed information, and under which conditions is diversity more likely to disrupt group information processing? As Phillips et al. (2004) show, whether social categorization processes point to a solo minority member or to equal-sized subgroups may be one factor (but see Sawyer et al. 2005), but a more comprehensive account of the

contingencies of these effects awaits future research.

## Cooperation and Interdependence

Group members may depend to a greater or lesser extent on each other for task performance (i.e., task interdependence; Wageman 1995) and for outcomes that may flow from task performance (i.e., outcome interdependence; Wageman 1995). Moreover, this interdependence may be more cooperative or competitive in nature (i.e., own and others' interests may align or conflict). A number of researchers have proposed that the degree and nature of interdependence between group members moderates the relationship between work group diversity and outcomes. Such a moderating role is consistent with both the social categorization and the information/decision-making perspective. From a social categorization perspective, higher, more cooperative interdependence between group members may focus group members on the common group identity and distract from subgroup categorizations (Gaertner & Dovidio 2000). In addition, interdependence may also facilitate intergroup contact and be conducive to more harmonious relations between different groups (Pettigrew 1998). At the same time, the need to collaborate may also set the stage for group information processing because it may invite information exchange and discussion. From both perspectives, cooperative interdependence would thus be expected to be associated with effects of diversity that are more positive.

In support of this notion, Chatman et al. (1998; also see Chatman & Spataro 2005) in a study of relational demography showed that in groups with collectivistic norms emphasizing cooperation (versus individualistic norms emphasizing competition and independence), dissimilarity is more positively associated with group process and performance. Mohammed & Angell (2004) found that gender diversity was associated with relational

conflict only when group members were less concerned with cooperative relations, and that time urgency (an individual difference variable) diversity was positively related to relational conflict when team process was low rather than high in terms of cooperation, communication, and task-oriented leadership. It should be noted, however, that they did not obtain similar relationships for ethnic diversity and extraversion diversity, and that they observed these relationships at time 1 but not at time 2. Schippers et al. (2003) reported that diversity was positively related to team reflexivity (i.e., arguably an indicator of information/decision processes), self-rated group performance, and satisfaction for high-outcome interdependence and negatively for low-outcome interdependence. Jehn et al. (1999) observed that demographic diversity was more positively related to satisfaction and commitment when task interdependence was higher. Van der Vegt & Janssen (2003) found that diversity was only positively related to innovative behavior when both task and outcome interdependence were high, which suggests that it may be worthwhile to consider task and outcome interdependence in combination.

Whereas these studies are generally consistent with the notion that greater cooperative interdependence is associated with more positive relationships between diversity and outcomes, two studies suggest that the issue may be more complex and that interdependence may be a double-edged sword. Ely (2004) found that tenure and age diversity interacted with a team process measure including cooperation, such that higher scores were associated with more negative relationships between diversity and performance. Jehn & Bezrukova (2004) observed that work group cultures that were more cooperative were associated with more positive relationships between diversity and performance for some dimensions of diversity but with more negative relationships for another dimension, while group culture did not affect this relationship for yet other dimensions of diversity.

These findings suggest that the role of cooperation and interdependence may be more complex than is currently conceived, although it is also possible that more mundane explanations in terms of differences in measurement and specific conceptualizations would account for some of these observations. Either way, it would be valuable if future research would focus more on the processes underlying the effects of cooperation and interdependence and develop more-comprehensive accounts of the role of cooperation and interdependence vis-à-vis social categorization and information/decision-making perspectives on the effects of work group diversity.

### **Time/Team Tenure**

Harrison and colleagues in particular have advanced the idea that the effects of diversity may change over time as groups gain extended experience working with each other (Harrison et al. 1998, 2002). Extended tenure may lead group members to find out that initial stereotype-based impressions about fellow group members were wrong (cf. Pettigrew 1998), thus attenuating the effects of social categorization processes. At the same time, extended tenure may also bring to the surface more hidden differences that may negatively affect group process. Extended team tenure may thus be associated with less negative as well as more negative effects of diversity. Harrison et al. (1998) link the first to surface-level demographic dimensions of diversity and the second to deep-level, more hidden dimensions of diversity.

Consistent with Harrison et al.'s (1998) proposition, a number of studies yield evidence that associations between demographic diversity and outcomes may become less negative over time (Chatman & Flynn 2001; Harrison et al. 1998, 2002; Pelled et al. 1999; Watson et al. 1993; cf. Earley & Mosakowski 2000, Sacco & Schmitt 2005), and that the associations between more hidden dimensions of diversity and outcomes may become more negative over time (Harrison et al. 1998,

2002). However, other studies yield evidence inconsistent with Harrison et al.'s (1998) proposition. Watson et al. (1998) found that demographic diversity was more negatively related to outcomes over time. Schippers et al. (2003) observed that more hidden dimensions of diversity were more strongly (and positively) related to group process and performance when team tenure was low rather than high. Mohammed & Angell (2004) found no difference between the correlates of surface-level and deep-level diversity between two measurement points.

Aside from the fact that these inconsistent findings corroborate our earlier claim that typologies of diversity do not explain the differential effects of diversity, these findings underscore that time/team tenure is a factor that may moderate the effects of diversity. Models that are more elaborate would help to predict the exact nature of this moderating effect, however. In this respect, future research may also take into account the possibility that groups need extended tenure to benefit from differences—that is, that the positive effects of diversity need some time to emerge (van Knippenberg et al. 2004).

### Diversity Mind-Sets

The notion that people prefer to work with similar others in homogeneous groups features prominently in accounts of the effects of diversity. Perhaps somewhat surprisingly then, only a limited number of studies have actually focused on what people think about diversity, and on the possibility that people's ideas about diversity may influence the effects of diversity. This seems to be changing. On the individual level of analysis, some researchers have examined attitudes toward diversity and beliefs about the value of diversity (Hostager & De Meuse 2002, Strauss et al. 2003, van Knippenberg & Haslam 2003). On the group and organizational levels of analysis, attempts have been made to assess shared cognition about diversity in the form of diversity climates, cultures, or perspec-

tives (Chen & Eastman 1997, Ely & Thomas 2001, Kossek & Zonia 1993, Mor Barak et al. 1998). Although some of these studies merely focus on evaluations of diversity, others also try to capture people's understanding of how to deal with diversity (cf. mental models; Ely & Thomas 2001, van Ginkel & van Knippenberg 2003). To capture these partly overlapping approaches to people's diversity cognitions, van Knippenberg et al. (2005) proposed the label "diversity mind-sets," which refers to people's understanding of how diversity may affect their work group or organization, their understanding of the appropriate way to deal with diversity, and their associated evaluations of diversity.

The general idea driving research on what may be summarized as diversity mind-sets is that the effects of diversity should be more positive in contexts where individuals, groups, and organizations have more favorable beliefs about and attitudes toward diversity, are more focused on harvesting the benefits of diversity, and have a better understanding of how to realize these benefits. Diversity mind-sets favoring diversity may thus be expected to prevent intergroup bias as well as to stimulate the integration of diverse information, viewpoints, and perspectives (Chen & Eastman 1997, Ely & Thomas 2001, van Knippenberg & Haslam 2003). That is, diversity mind-sets may moderate social categorization as well as information/decision-making processes. Rather than testing this moderating role, however, research has largely concentrated on developing measures of aspects of diversity mind-sets and studying their antecedents (Hostager & De Meuse 2002, Kossek & Zonia 1993, Mor Barak et al. 1998, Roberson et al. 2001, Strauss et al. 2003).

Even so, there is some evidence that diversity mind-sets favoring diversity and describing ways of realizing the benefits of diversity may be associated with effects of diversity that are more positive. R.J. Ely & D.A. Thomas (manuscript submitted; also see Ely & Thomas 2001) show that racial diversity is more positively related to performance

at bank branches that are focused on learning from diversity (cf. Richard et al. 2003). Homan et al. (2004) show that gender-diverse decision-making groups are more likely to use their informational diversity when they believe in the value of diversity. van Ginkel & van Knippenberg (2003) find that groups reach higher-quality decisions when they have a shared understanding of how to deal with their informational diversity, and van Knippenberg et al. (2003) report more positive relationships between diversity and identification for group members who believe more in the value of diversity. Thus, although research on diversity mind-sets is still at an embryonic stage, it does seem to have promise.

### **CURVILINEAR RELATIONSHIPS**

From notions about the role of group information processing follows the idea that the effects of diversity might be curvilinear. To benefit from the diversity of information, expertise, and perspectives that may be associated with dimensions of differentiation, group members should be able to understand and integrate the contributions of dissimilar others. As group members differ more in background, experience, and expertise, however, it becomes more likely that they do not share a common frame of reference (i.e., “speak the same language”) that allows in-depth understanding of diverse others’ input. Thus, the potentially positive effects of diversity on group performance may only obtain up to a certain level of diversity, beyond which the lack of a common frame of reference may get in the way of fully appreciating all group members’ contributions (van Knippenberg et al. 2004).

In support of this proposition, researchers have reported evidence of curvilinear relationships in which moderate diversity is associated with more positive outcomes than is lower as well as higher diversity (Brodbeck 2003; Dahlin et al. 2005; V. Gonzalez-Roma, M.A. West, & C. Borrill, manuscript submit-

ted; Richard et al. 2004). Contrary to this proposition, however, Richard et al. (2004) and Dahlin et al. (2005) also find evidence for the opposite curvilinear relationship, as do Gibson & Vermeulen (2003). Further complicating matters, Van der Vegt & Bunderson (2005) found, contingent on level of team commitment, both U-shaped (high commitment) and inverted U-shaped (low commitment) relationships for the association between expertise diversity and team learning and performance.

The evidence for curvilinear effects of diversity thus is far from straightforward. Yet, echoing similar conclusions in the previous section, enough indications exist to warrant a closer look at curvilinear relationships in addition to linear relationships (also see the curvilinear effects observed for diversity faultlines). This seems especially important because the notion of curvilinear relationships also hints at the possibility that some of the inconsistent findings in diversity research might be due to restriction of range effects. That is, contingent on which part of the range is sampled, a curvilinear relationship in the population might yield a positive, a null, or a negative relationship between diversity and outcomes.

### **CONCLUSIONS**

How much progress has research in organizational diversity made since Williams & O’Reilly (1998) assessed the state of the art? Clearly, with the increased attention to more complex conceptualizations of diversity, to the processes mediating the effects of work group diversity, and to the contingencies of these processes, our current understanding of the effects of work group diversity on group process and performance goes well beyond the 1998 state of the art. At the same time, however, much is still unclear about the effects of diversity. The increasing attention to the mediators and moderators of diversity’s effects is exactly what the field needed, but some important steps still need to be made.

An important issue is that there seems to be too much ad hoc theorizing and too little development of theoretical frameworks that are more widely applied in the study of diversity. Directly related to this is the lack of empirical attention to the processes that are presumed to underlie the effects of diversity. As the current review shows, very few studies actually capture the range of processes that are implied by the reasoning underlying hypotheses and that should ideally be assessed for a proper test of the implied theoretical model. In combination with the inconsistent evidence for most propositions, this seriously impairs the field's progress. Especially when results do not confirm predictions, it would seem important to know whether diversity did not elicit the presumed processes or whether these processes were not associated with the outcomes as predicted. Also, when different perspectives may predict the same outcome through different processes, information about process would seem essential to theory development. Clearer articulation of the theoretical models driving diversity research makes more apparent which processes should be assessed to test these models, and more consistent application of these models will make clearer to what extent they provide valid accounts of the effects of diversity. In similar vein, studies of the moderators of the effects of diversity should work from clear links with the processes predicted by these theoretical models and should assess whether the proposed moderators indeed affect these processes.

To establish the causality implied in theoretical models of diversity, it is also essential that survey research is complemented by controlled experiments. An additional advantage of controlled experiments is that they typically

allow for superior assessment of group processes (i.e., by behavioral observation rather than by relying on self-reports; Weingart 1997).

We have identified a number of avenues for future research that we deem to be particularly important. The development of more complex conceptualizations of diversity seems an important step in advancing our understanding of work group diversity. Further application of insights from social categorization research about the salience of social categories would also seem valuable. The emerging attention to diversity faultlines is a promising step in this direction, but this would also include research on the role of the extent to which the categorization makes sense within the individuals' psychological frame of reference and on the role of the wider organizational and societal context in which the group is embedded (e.g., the diversity of the organization as a whole). In similar vein, a focus on the factors that affect the translation of social categorization into intergroup bias would seem important. Diversity research may also benefit from greater application of insights from research on social information processing and group decision making to develop theoretical models of information/decision-making processes. Finally, exploring possible curvilinear effects of diversity in addition to linear effects may lead to important new insights and contribute to explaining some of the inconsistencies in diversity research. Given the value of an understanding of diversity at work for organizations and societies that are becoming ever more diverse, it would seem important to take on these research challenges and invest in the continued progress of this field.

## SUMMARY POINTS

1. Typologies of diversity (most commonly differentiating forms of demographic and functional diversity) do not explain the differential effects that work group diversity may have on group process and performance.

2. Diversity research needs to move beyond conceptualizations and operationalizations of diversity simply as dispersion on a single dimension of diversity. Rather, it should conceptualize diversity as a combination of different dimensions of differentiation, take asymmetries into account, and be open to nonlinear effects.
3. Diversity research should pay more theoretical and empirical attention to the social categorization and information/decision-making processes presumed to underlie the effects of diversity on work group performance.
4. Diversity research should pay more attention to the moderators of social categorization, intergroup bias, and information/decision-making processes.

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Provides an integrative model bridging and extending the social categorization perspective and the information/decision-making perspective, the two main traditions in diversity research.

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Reviews diversity research up to 1998. Complements the current article for a full overview of the field.

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