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BEYOND RELATIONAL DEMOGRAPHY: TIME AND THE EFFECTS OF SURFACE- AND DEEP-LEVEL DIVERSITY ON WORK GROUP COHESION

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We examined the impact of surface-level (demographic) and deep-level (attitudinal) diversity on group social integration. As hypothesized, the length of time group members worked together weakened the effects of surface-level diversity and strengthened the effects of deep-level diversity as group members had the opportunity to engage in meaningful interactions.

Projected demographic characteristics of the U.S. workforce suggest that by the year 2000, approximately 80 percent of its new entrants will be women and members of ethnic minorities (Johnston & Packer, 1987). The increasing diversity of the workforce necessitates a better understanding of how such individual differences affect the functioning of work groups, as well as which types of differences are most consequential. Research examining the outcomes of diversity has frequently studied demographic differences among work group members. Consistent with Pfeffer's (1983) work on demography in organizations, the most commonly studied forms of diversity have been heterogeneity in age, sex, race, and to a lesser extent, organizational tenure. The emphasis on those variables is perhaps due to the ease with which researchers can measure them and group members can observe them, and also to the widespread belief that they are reasonable proxies for underlying psychological characteristics (Bantel & Jackson, 1989; Jackson, Stone, & Alvarez, 1993; Pfeffer, 1983; Tsui, Egan, & O'Reilly, 1992). Attention to those variables might also be driven by legislation prohibiting employment discrimination and mandating equal treatment without regard to race, sex, and age.

Effects of heterogeneity in these commonly studied characteristics have, however, been inconsistent across studies. Some of this inconsistency may have arisen because the connection between overt demographic differences among employees and the less obvious, but important, attitudinal differences among them is weaker than has been assumed. By integrating theory and research from management, psychology, and sociology, we further distinguish between these levels of heterogeneity. We argue that as work group members continue to interact with one another, dissimilarity in the typically studied surface-level dimensions such as sex and age becomes less important than deep-level attitudinal dissimilarity in, for instance, job satisfaction or organizational commitment. That is, time moderates the relative impact of overt versus underlying diversity among work group members.

DIMENSIONS OF DIVERSITY

Underlying Premises and Assumptions

The premise that differences among group members have a negative impact on group functioning is the primary thesis in the relational demography research stream, and it is the backbone of a variety of theories in social psychology (Byrne, 1971; McGrath, 1984; Newcomb, 1961) and organizational behavior (Jackson, May, & Whitney, 1995; Milliken & Martins, 1996; Schneider, 1987). The main element of group functioning that we address is what O'Reilly, Caldwell, and Barnett (1989) termed *social integration*: the degree to which group members are psychologically linked or attracted toward interacting with one another in pursuit of a common objective. In the present study, we concentrated on the primary affective dimension of social integration, group cohesiveness.

As we review past work in this section, we emphasize differences or heterogeneity at both the dyad level (i.e., supervisor-subordinate relationships) and the work team or group level. Although there may be important differences between superior-subordinate interactions and those between team members, we have included both dyadic and team-level diversity in this review for three reasons. First, inclusion of both types of diversity maintains consistency with the reviews and research published by other diversity researchers

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(i.e., Jackson et al., 1995; Milliken & Martins, 1996; Tsui & O'Reilly, 1989; Tsui, Egan, & Porter, 1994). Secondly, certain basic processes, including face-to-face communication, potential for collaboration and conflict, and influence attempts, characterize both dyads and larger groups, although the status differences characteristic of supervisor-subordinate interactions may modify those processes. For example, Tsui and colleagues (1994) noted that interpersonal liking in dyads could be considered similar to forms of social integration in larger groups. Thirdly, the proposed effects of diversity rest on assumptions in the similarity-attraction and self-categorization paradigms (Jackson et al., 1993; Tsui et al., 1992). There is little reason to expect that these paradigms would be substantively different for dyads and larger groups.

The terminology we use, *surface-* and *deep-level* diversity, is similar to that found in recent theoretical work by Jackson and colleagues (1995) and Milliken and Martins (1996). Both articles describe diversity in readily detectable attributes (e.g., race/ethnicity, sex, age) and underlying, deeper-level attributes (e.g., attitudes, values). These theorists have agreed on the level (surface or deep) of several diversity variables. Our review of the elements of diversity is confined to variables for which there is such agreement and for which there were available data.

Surface-Level Diversity

Heterogeneity at a surface level can be defined as differences among group members in overt, biological characteristics that are typically reflected in physical features. Such characteristics include age, sex, and race/ethnicity. Following Jackson and colleagues (1993), we view these characteristics as generally immutable, almost immediately observable, and measurable in simple and valid ways (cf. Jackson et al., 1995; Milliken & Martins, 1996). Social consensus can usually be assumed for each of these demographic attributes (Jackson et al., 1993). That is, one's age (within some range), sex, and race/ethnicity are generally apparent to and agreed upon by observers.

Age. Several studies have focused on the consequences of group heterogeneity in age. Bantel and Jackson (1989) found that heterogeneity in age was not associated with innovations of top management banking teams. Judge and Ferris (1993) found that differences in superior-subordinate age significantly, negatively influenced supervisors' liking and subsequent ratings of subordinates' performance. Tsui and O'Reilly (1989) found that age differences were not associated with superiors' perceptions of their subordinates' performance or with superiors' liking of subordinates. Zalesny and Kirsch (1989) found that heterogeneity in age was unrelated to superiors' ratings of subordinates' performance but negatively related to peers' ratings of co-workers' performance. Heterogeneity in age was positively associated with team turnover in the Jackson et al. (1991), Wagner, Pfeffer, and O'Reilly (1984), and Wiersema and Bird (1993) studies. In the Tsui et al. (1992) study, group heterogeneity in age was negatively associated with organizational attachment for some demographic subgroups (white males) but was not for others (women and minorities). O'Reilly and colleagues (1989) found that group heterogeneity with respect to age was associated with lower levels of social integration, which in turn was associated with turnover. The more distant group members were from other members in terms of age, the more likely they were to leave.

Sex. Research on the consequences of sex dissimilarity has also yielded conflicting results. Tsui and O'Reilly (1989) reported that subordinates whose sex differed from their supervisors' received lower performance ratings. Mobley (1982) hypothesized but did not find that supervisor-subordinate similarity in sex led to higher subordinate performance ratings. Pulakos, Oppler, White, and Borman's (1989) analysis of military personnel found that rater-ratee similarity in sex was not an important influence on performance ratings. Konrad, Winter, and Gutek (1992) found that dissimilarity in sex resulted in isolation and dissatisfaction for women in some situations. Finally, Tsui and co-authors (1992) found that the organizational attachment of white men decreased as diversity on sex increased, but that of women (of any racial/ethnic group) did not.

Race/ethnicity. Kraiger and Ford's (1985) meta-analysis of research from 1966 to 1981 indicated that rater-ratee ethnic similarity was associated with higher performance ratings. Pulakos and co-authors' (1989) meta-analysis indicated very small and inconsistent effects of ratee-rater racial similarity across performance dimensions. Tsui and O'Reilly (1989) reported that ethnic heterogeneity was not associated with superiors' ratings of subordinates' effectiveness but was marginally related to supervisors' liking of subordinates.

Summary. Of the research that has investigated the effects of surface-level heterogeneity, findings are inconsistent within and across studies for variables such as age, sex, and race. Studies have differed on whether or not relationships were detected and, in some instances, on their direction. Other researchers have also noted this inconsistency, es-

pecially for the effects of race and sex dissimilarity (Pulakos et al., 1989).

Deep-Level Diversity

Heterogeneity at a deep level includes differences among members' attitudes, beliefs, and values. Information about these factors is communicated through verbal and nonverbal behavior patterns and is only learned through extended, individualized interaction and information gathering. Jackson and colleagues conceptualized a similar form of diversity, termed diversity in underlying attributes, which included attitudes, values, knowledge, and skills. They noted that these aspects of individuals are more "subject to construal and more mutable" (Jackson et al., 1995; 217) than other aspects. Milliken and Martins (1996) made a similar statement.

The few studies that have examined the consequences of similarity in attitudes and values in work groups have found that supervisor-subordinate attitudinal and value similarity was associated with higher subordinate performance ratings (Miles, 1964; Senger, 1971; Turban & Jones, 1988; Zalesny & Kirsch, 1989) and more accurate peer ratings (Fox, Ben-Nahum, & Yinon, 1989). One study found that attitudinal similarity was associated with higher group cohesiveness (Terborg, Castore, & DeNinno, 1976). Turban and Jones (1988) reported that perceptions of attitudinal similarity were uniquely and positively related to subordinates' satisfaction, performance ratings, and pay ratings. Miles (1964) found that attitudinal similarity between supervisors and subordinates was related to higher subordinate ratings; however, neither superior-subordinate similarity in age nor similarity in education had a relationship with subordinates' ratings.

Unlike the few studies on deep-level diversity in work settings, a number of social psychological studies have reported that attitude similarity was one of the most important predictors of attraction and friendship (e.g., Antill, 1984; Byrne, 1971; McGrath, 1984; Newcomb, 1961). Similarity in attitudes can ease interpersonal interaction and increase rewards when relationships are viewed within an exchange theory framework (Thibaut & Kelley, 1959). Further, attitudinal similarity may facilitate communication; it may also reduce role conflict, because people have similar conceptualizations of their organizations and jobs, and it may reduce role ambiguity, because communication on the job increases (Tsui & O'Reilly, 1989). It can thus be inferred that as people uncover differences in attitudes, it becomes less pleasant and more difficult for them to work together.

Surface-Level Diversity, Deep-Level Diversity, and the Moderating Influence of Time

Theoretical perspectives from organizational behavior (Schneider, 1987), sociology (Allport, 1954; Amir, 1969; Berger, Rosenholtz, & Zelditch, 1980), and social psychology (Byrne, 1971; Newcomb, 1961) support the idea that group members base an *initial* superficial categorization of other group members on stereotypes and subsequently modify or replace those stereotypes with deeper-level knowledge of the psychological features of the other individuals. Further, knowledge of attitudinal, belief, and value similarity between individuals forms the basis for continued attraction and affiliation. Research generally supports the idea that initial categorizations are accompanied by perceptions of similarity or dissimilarity that are based on surface-level demographic data; these perceptions change when deep-level information is obtained (Stangor, Lynch, Duan, & Glass, 1992; Turner, 1987). For example, Byrne and Wong (1962) found that subjects initially perceived greater attitudinal dissimilarity between themselves and a stranger of another race. When more details were provided about the stranger's attitudes, perceptions of attitudinal dissimilarity decreased and interpersonal attraction to the stranger increased. Tsui, Egan, and Porter's (1994) summary of the vertical dyad linkage literature noted that supervisors categorized subordinates as either in- or out-group members early in relationships, when there had been little informational exchange between the two. The authors suggested that "physical, observable, and immutable personal and background characteristics . . . play a critical role in the *initial* categorization process" of group members; (Tsui et al., 1994: 8; emphasis added). Likewise, Tsui and colleagues (1992) noted this: "The conceptual foundation for almost all the research on organizational demography has been the similarity-attraction paradigm (Byrne, 1971). The similarity-attraction hypothesis maintains that similarity in attitudes is a major source of attraction between individuals. A variety of physical, social, and status traits can be used as the basis for *inferring* similarity in attitudes, beliefs, or personality" (1992: 551; emphasis added).

Other researchers have noted that over time, as people acquire more information, their perceptions are based more on observed behavior and less on stereotypes prompted by overt characteristics (Jackson et al., 1993; Newcomb, 1961). Further, in re-

search on collegial choices, people have placed greater emphasis on similarity in attitudes (beliefs) than on ethnic similarity (Triandis, 1961), particularly when information about attitudinal differences was available or salient (Brown & Turner, 1981). Terborg and colleagues (1976) also noted that the effect of attitude or value compatibility was not immediate, but took time to unfold.

Evidence from the sociological literature also supports the differential contributions of surface- and deep-level diversity over time. Allport (1954) and Amir (1969) are associated with the "contact hypothesis," which states that under certain conditions, interracial or interethnic contact will result in positive group outcomes. A key supposition of this hypothesis is that *as people interact to get to know one another, stereotypes are replaced by more accurate knowledge of each other as individuals*, which can result in reduced prejudice and conflict and greater group cohesiveness (Amir, 1976). Recent sociological research has supported the general thrust of the contact hypothesis (Ellison & Powers, 1994; Sigelman & Welch, 1993) and, according to Amir, "Work situations provide the best opportunities for intergroup contact" (1969: 323). Finally, Milliken and Martins suggested that "negative affective outcomes of diversity in observable attributes [surface-level diversity] appear to decrease with the amount of time that the group stays together" (1996: 415–416), an idea that is central to our argument.

Hypothesis

The preceding discussion, involving evidence from sociology, social psychology, and organizational behavior, suggests a fundamental developmental process for diversity in work groups. The time that members spend working together should moderate the impact of diversity levels in a particular pattern (Howell, Dorfman, & Kerr, 1986). We hypothesize the following:

Hypothesis 1. Time will neutralize, or make less important, the effects of surface-level diversity on group cohesiveness, and it will enhance, or make more important, the effects of deep-level diversity.

METHODS

Selection of Diversity Variables

There have been disagreements about the classification of some surface-level variables. Specifically, Jackson and colleagues (1995) included education as a surface-level attribute, but Milliken and Martins (1996) considered it an underlying attribute. Since both agreed that age, race/ethnicity, and sex were readily detectable or overt features (Jackson et al., 1995; Milliken & Martins, 1996), however, we used those three as surface-level variables in this study. There is less guidance in the literature on selecting variables that reflect deep-level diversity, which is broadly defined as including a variety of psychological characteristics (Jackson et al., 1995; Milliken & Martins, 1996). We specifically chose dimensions of job satisfaction and organizational commitment as elements of deep-level diversity in this study, for a number of reasons. First, we were limited by the organizations involved as to what we could measure; we were restricted from measuring specific work values (e.g., Protestant work ethic) because they had little face validity in a survey ostensibly asking employees their opinions about working conditions. Second, both satisfaction and commitment are regarded as fundamental work attitudes; they have been used in literally thousands of individual-level studies, particularly as they relate to role withdrawal and organizational separation (e.g., Locke, 1976; Tett & Meyer, 1993). Third, such deep-level variables are directly relevant to the pursuit and attainment of a group's goals (McGrath, 1991). Members' attitudes toward (1) their tasks, (2) the supervisors who define and assign tasks, monitor and assist in task completion, and reward task attainment, (3) their embedding organizations, and (4) their overall jobs are meaningful and important in a work group. Finally, despite some classification ambiguities, our deep-level variables of satisfaction and organizational commitment are consistent with the Jackson et al. (1995) conceptualization of underlying dimensions of diversity.

Samples

We collected data from two samples. Sample 1 involved 39 units (groups) of employees in a medium-sized private hospital in a large southwestern city. The total sample contained 443 people, and groups had from 4 to 25 people. These employees included whites (88%), Hispanics (5%), African Americans (4%), Asians (2%), and Native Americans (1%). Most employees were women (83%). The mean age was 37 years (s.d. = 11) and the mean organizational tenure was 5 years (s.d. = 4). Four percent of the employees had not completed high school, 17 percent were high school graduates, 49 percent had completed some college work, 24 percent were college graduates, and 6 percent had completed some graduate work or had graduate degrees. Their jobs varied from professional ones,

such as administrator, nurse (RN or LPN), pharmacist, and lab technician or radiologist, to nonprofessional ones, such as orderly or maintenance worker. Work units reflected department, shift, and physical location. For example, one group was "third floor medical/surgical unit on the day shift." Other groups were defined by function, such as the "human resources department," because these employees had only one location and worked for only one shift. In all cases, work groups comprised people who worked together daily on tasks in ongoing, face-to-face interactions. There were also institutionally supported group goals and unit rewards to promote cooperative contact among employees. In total, these factors suggested that group members would, over time, have had the opportunity to acquire deep-level information about one another.

Sample 2 consisted of employees in the deli-bakery sections of 32 grocery stores in a regional grocery chain. An average of 13 people worked in each deli-bakery, with group size ranging from 2 to 22 employees. The mean age was 34 (s.d. = 13), and the mean organizational tenure was 4 years (s.d. = 3). The racial/ethnic backgrounds of employees included white (68%), African-American (17%), Hispanic (12%), and other (3%). Seventy-four percent of the deli-bakery employees were women. Seventeen percent had not completed high school, 42 percent were high school graduates, 34 percent had completed some college or the equivalent, and 7 percent were college graduates. Each deli-bakery had one manager; six larger deli-bakeries also had assistant managers. The remainder of the employees were clerks, so there were few status differences among them. Members of each bakery-deli worked with each other face-to-face but were relatively isolated from employees in other parts of the store. There was no task substitution between deli-bakery and other store workers, and there was limited interaction outside the work group. For the deli-bakery employees, their group was the most salient feature of their work environment. Again, the cooperative and interdependent nature of their tasks, the equality of status, and the average tenure of the work groups allowed sufficient opportunity for members to learn deeper-level information about one another over time.

Data Collection and Measures

For sample 1, questionnaires administered over the course of three weeks were completed during departmental meetings at which we were present to give instructions and answer questions. Response rates did not differ significantly across work groups ($\chi^2_{38} = 12.86$, $p > .10$).

For sample 2, questionnaires were administered over the course of six weeks. Surveys were completed "on the clock" in a break room by 94 percent of the deli-bakery employees. Again, response rates did not differ significantly across groups ($\chi^2_{31} = 2.67$, $p > .10$). In addition, we obtained demographic data (sex, age, ethnicity, and tenure) for each employee from company records using a special code the employees voluntarily provided at the end of their questionnaires.

Surface-level diversity. Self-report information regarding each respondent's age, ethnicity, and sex were collected and then used to calculate a measure of group heterogeneity for each variable in both samples. Age was measured in years. Racial/ethnic background included the following categories: African American, Native American, Asian, Hispanic, and white. For the deli-bakery (sample 2) employees, self-reports were related to archival records for age, sex, and ethnic background. Correlations of .99 and .98 for age and sex, respectively, as well as 98 percent agreement for the ethnicity categories, provided convergent validity for the self-reports. We used the coefficient of variation to index group heterogeneity in age. Blau's (1977) index was used to indicate within-group heterogeneity in ethnicity and sex. Various diversity researchers have discussed the advantages of both indexes (e.g., Bantel & Jackson, 1989; Jackson, Brett, Cessa, Cooper, Julin, & Peyronnin, 1991).

Deep-level diversity. We chose three aspects of satisfaction and organizational commitment as measures of deep-level diversity (recognizing that other beliefs and values might also be relevant, as discussed above and in "Discussion"). Satisfaction with supervision was measured using a subscale of the Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969). Values of coefficient alpha were .78 and .83 in samples 1 and 2, respectively. Satisfaction with work tasks was measured using another JDI subscale ($\alpha = .76$ in sample 1 and .79 in sample 2). Overall satisfaction was measured using the Faces scale (Kunin, 1955) in sample 1 and the Faces scale combined with two items adapted from the Job Diagnostic Survey (JDS; Hackman & Oldham, 1975) in sample 2 ($\alpha = .77$). We transformed the data in the latter sample to have the same possible range as scores in sample 1. Organizational commitment was measured using the Organizational Commitment Questionnaire (OCQ; Porter & Steers, 1979). Coefficient alpha was .83 in sample 1 and .89 in sample 2. In both samples, we indexed deep-level diversity by the within-group coefficient of variation.

Group cohesiveness. The chief affective component of group functioning, group cohesiveness, was

the dependent variable in our investigation. As in O'Reilly et al. (1989), it was treated here as a dimension of social integration within a group. The group cohesiveness measure was taken from Seashore (1954). Reliability estimates at the individual level (α) were .68 and .70 for samples 1 and 2, respectively.

We aggregated individual ratings of group cohesiveness to the group level by calculating the mean rating of cohesiveness within each group. Although some researchers have expressed concern about such aggregation (e.g., Klein, Dansereau, & Hall, 1994), we made the calculation for several reasons. First, cohesiveness is conceptually defined at the group level. Its meaning derives from how much the members of a group "stick together" (Mudrack, 1989). Group-level means of cohesiveness have been used as an index of social integration in many studies (cf. Gully, Devine, & Whitney, 1995). Second, group cohesion is one of the most often studied outcomes in the small groups literature, and it has been assumed to be negatively associated with dissimilarity (Jackson and Associates, 1992). Third, in concluding their meta-analysis of cohesion (and performance) research, Gully and colleagues (1995) recommended that researchers conceptualize cohesion as a group-level construct, attending to aggregation issues as necessary. One such issue is the requirement for within-group agreement, which we calculated for each of the 71 teams in the study using the James, Demaree, and Wolf (1982) index. Both the mean and the median agreement indexes for cohesiveness were .75. Seventy-five percent of the groups had agreement indexes of at least r_{wg} equals .70. Fourth, the group-level component of variance in cohesiveness was significant ($F_{69, 654} = 1.37$, $p < .05$). Fifth, the internal consistency of the group-level measure was .75. Given these justifications, aggregation of individual cohesiveness scores to the group seemed reasonable.

Time spent in the group was measured in a straightforward way. We asked group members "How long have you been in your present job?" (years and months). Because of skewness in the individual (within-group) distribution of this variable, we used the median as an index of the typical amount of time that group members had spent working in their units.

RESULTS

Preliminary Analyses

A potential weakness of results might be inflation of relationships by percept-percept bias, especially because measures of both deep-level diversity and cohesiveness were self-reports. To examine this issue and an additional question regarding the meaningfulness of our measures of diversity, we conducted preliminary analyses involving other data. A small set of additional questionnaire items asked respondents their *perceptions* of ethnic and age differences in their work group. Group members were asked questions about surface-level diversity, such as "How different are the members of your work group in their ethnic backgrounds?" and "How different are the members of your work group in their age/experiences?" Responses were made on a five-point scale ranging from 0, "not at all different," to 4, "completely different." We aggregated these perceptual measures to the group level and correlated them with measures of diversity calculated from demographic data. Perceptual and derived (Blau, 1977) indexes of ethnic diversity were significantly correlated ($r = .68$, $p < .01$), as were perceptual and derived (coefficient of variation) indexes for age ($r = .33$, $p < .05$). Thus, there was evidence that the ethnic and age differences captured by the demographic questions were "readily apparent" to employees. However, as with the derived indexes for these surface-level dimensions, the correlations of perceived ethnic and age differences with cohesiveness were nonsignificant (r's = $-.14$ and .14, respectively).

Three additional questions measured perceptions of deep-level differences in personalities, values, and interests. Perceived differences in personality were related to the coefficient of variation in organizational commitment ($r = .41$, $p < .05$) and job satisfaction ($r = .22$, $p < .05$). Perceived differences in values were related to the coefficient of variation for supervisory satisfaction ($r = .27$ and .31, respectively; both $p < .05$), and perceived differences in interests were related to supervisor satisfaction ($r = .27$, $p < .05$) and work satisfaction ($r = .22$, $p < .05$). Group cohesiveness was significantly correlated with perceptions of differences in all three: personality ($r = -.27$, $p < .05$), values ($r = -.25$, $p < .05$), and interests ($r = -.27$, $p < .05$). If our findings had stemmed only from percept-percept inflation, then *both* the surface- and deep-level sets of relationships should have been significantly and negatively correlated with group cohesiveness.

Main Analysis

The overriding question guiding this research was whether surface-level diversity would become less important and deep-level diversity more important in predicting group outcomes as members of work teams spent more time together. To test this

hypothesis, we conducted a moderated hierarchical regression analysis at the group level with cohesiveness as the dependent variable. Control variables (group size, mean levels of overall satisfaction, supervisor satisfaction, work satisfaction, and organizational commitment) and independent variables (surface- and deep-level measures of diversity, and time) were entered first into the regression equation as main effects. In the next stage of the analyses, we created interaction terms by multiplying each of the surface- and deep-level measures of diversity by the median time group members had spent together. These interaction terms were then entered as sets into the regression equation. Results of this two-stage regression process are presented below. Because of the inherently low statistical power for detecting moderators in field data, we relaxed significance levels to $p < .10$ for the interaction terms (McLelland & Judd, 1993).

Descriptive Statistics

All analyses were conducted at the group level. To increase statistical power and confidence in our ability to draw conclusions, given the small number of groups in each sample, we first combined data from the groups into one data set. Table 1 presents means, standard deviations, and correlations among all independent, dependent, and control variables in the combined data set. We included group size in the correlation analyses and included it as a control variable in later analyses to remove potential confounding effects.

Results were consistent with both components of the moderating hypothesis, as shown in Table 2. First, declining effects for surface-level differences were indicated by a significant improvement in prediction for the set of the three surface-level interactions with time ($\Delta R^2 = .09$, $p < .10$). Most of this effect was captured in the sex-by-time interaction ($\Delta R^2 = .08$, $p < .10$), which had a sign indicating that the initial negative influence of gender diversity on cohesiveness was being neutralized or weakened as group members spent more time together (Darlington, 1990). Split-sample analyses revealed that the product-moment correlation between sex diversity and cohesiveness was −.27 for groups in the lower half of the time distribution but

TABLE 1
Correlation Matrix and Descriptive Statistics for All Variables[a]

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
Control															
1. Group size	11.26	4.52													
2. Overall job satisfaction[b]	5.62	0.63	−.08												
3. Supervisory satisfaction[b]	37.87	4.35	−.07	.31**											
4. Work satisfaction[b]	30.17	4.51	−.19	.72**	.44**										
5. Organizational commitment[b]	48.41	4.42	−.19	.63**	.18	.55									
Surface-level diversity															
6. Age[c]	0.33	0.09	−.05	.17	.01	.02	.13								
7. Sex[d]	0.27	0.17	.21	−.05	−.26*	.01	−.12	.21							
8. Race/ethnicity[d]	0.30	0.20	−.14	.24	.07	.28*	.25*	.26*	.16						
Deep-level diversity															
9. Overall job satisfaction[c]	0.22	0.12	−.01	−.80**	−.33**	−.56**	−.37**	−.02	−.06	−.06					
10. Supervisory satisfaction[c]	0.23	0.12	.01	−.22	−.86**	−.37**	−.15	.08	.29*	−.05	.36**				
11. Work satisfaction[c]	0.28	0.11	.14	−.45**	−.37**	−.63**	−.55**	−.04	.07	−.08	.41**	.31			
12. Organizational commitment[c]	0.29	0.13	−.02	−.55**	−.16	−.44**	−.60**	−.24*	−.11	−.25*	.41**	.07	.40*		
13. Median time in group[e]	34.81	22.51	.06	−.04	.04	.05	−.01	−.17	−.01	−.05	−.01	−.05	−.11	.23	
14. Group cohesiveness	16.59	1.33	−.12	.35**	.38**	.47**	.28	−.02	−.18	.12	−.29**	−.40	−.21	−.17	−.10

[a] $N = 71$ (groups).
[b] Group means.
[c] Coefficient of variation.
[d] Blau's index.
[e] In months.
*$p < .05$
**$p < .01$

TABLE 2
Results of Regression Analyses for Main and Interactive Effects of Surface- and Deep-Level Diversity on Work Group Cohesion[a]

Variable	Stage 1: Main Effects		Stage 2: Interactions with Time	
	β	Unique Variance	β	Unique Variance
Control		0.07		
Group size	−0.00			
Overall satisfaction[b]	−0.07			
Supervisor satisfaction[b]	−0.00			
Work satisfaction[b]	0.49*			
Organizational commitment[b]	0.12			
Surface-level diversity		0.04		
Age[c]	0.02			
Sex[d]	−0.11			
Race/ethnicity[d]	−0.01			
Deep-level diversity		0.08		
Overall satisfaction[c]	−0.04			
Supervisor satisfaction[c]	−0.24			
Work task satisfaction[c]	0.20			
Organizational commitment[c]	0.05			
Time		0.01		
Median time spent in group[e]	−0.12			
Interactions of time with surface-level variables				0.09†
Time × age[c]			1.19	
Time × sex[d]			0.78*	
Time × race/ethnicity[d]			−0.33	
Interactions of time with deep-level variables				0.10†
Time × overall satisfaction[c]			−0.90*	
Time × supervisor satisfaction[c]			−0.46	
Time × work satisfaction[c]			0.27	
Time × organizational commitment[c]			−0.45	
Full model F		2.10*		2.08*
Adjusted R^2		.17		.24
df		42		49

[a] $N = 71$ (groups).
[b] Group mean.
[c] Coefficient of variation.
[d] Blau's index.
[e] In months.
† $p < .10$
* $p < .05$
** $p < .01$

.04 for the upper half (groups whose members had spent more time together). Including the interactions of the deep-level diversity variables with time also had a unique effect ($\Delta R^2 = .10$, $p < .10$). Much of this effect was conveyed by the overall satisfaction-by-time interaction ($\Delta R^2 = .05$, $p < .05$), which had a sign indicating that as group members spent more time together, the impact of member differences in overall job satisfaction was strengthened (Darlington, 1990). The correlation between diversity in overall satisfaction and cohesiveness was .05 for groups in the lower half of the time distribution and −.50 for those in the upper half.

DISCUSSION

The existence of different levels of diversity has largely been overlooked in previous empirical studies of work groups. Examination of these different levels may help to explain the inconsistent, often conflicting results of diversity research to date. We proposed that diversity at a deep level has steadily stronger consequences for groups than demographic diversity as group members spend more time together. In a sample composed of groups from two different populations, we found that surface-level differences were less important and deep-

level differences were more important for groups that had interacted more often.

Although time is the variable we examined, the fundamental medium is *information*. Demographic factors are often a poor surrogate for the deeper-level information people need to make accurate judgments about similarity of attitudes among group members. Time merely allows more information to be conveyed. Indeed, it might be more appropriate to think of the *richness of interactions* as the conduit for information exchange (cf. Daft & Lengel, 1986). That is, time provides the opportunity to acquire interpersonal information; the amount of information acquired is a function of the length of shared experience for group members, the breadth of group activities, the depth of task interdependence, and other factors. These exchanges allow group members to learn deeper-level information about their psychological similarity to or dissimilarity from their co-workers, where before they would have used surface-level demographic data as information proxies. As previously mentioned, work in sociology also supports this contention, by demonstrating that beneficial consequences of contact among members of overtly dissimilar groups are most likely to occur under conditions of equal status and cooperative contact (Ellison & Powers, 1994; Sigelman & Welch, 1993). Interpersonal interactions under these conditions should allow for more accurate, less stereotypical exchanges as group members get to know one another over time.

Although our results and the proposed model might appear to contradict much of the previous research in this field, a careful examination of results of that research shows that they do not. For example, one might expect that for temporary, ad hoc groups, diversity in surface factors would play a more important role than deep-level heterogeneity in determining cohesiveness and other forms of social integration. Had previous research compared the relative contributions of surface- and deep-level variables, their findings may have been more consistent with those reported in this study, given similar opportunities for rich interactions among group members. Watson, Kumar, and Michaelsen's (1993) study of interaction processes and group performance within culturally diverse or homogenous (in race/ethnicity) teams provides some converging support for this idea. Initially, homogenous groups interacted and performed more effectively than heterogeneous groups. Over time, however, interaction processes and performance for both groups improved, with more rapid improvements occurring in the diverse groups. At the end of the study, the diverse groups had grown more effective in identifying problems and generating solutions than their homogenous counterparts.

Although we have argued that deep-level variables are more important over time than surface-level variables in determining social integration, one could think of situations where this would not be the case. For example, Tsui and colleagues (1992) pointed out that demographic variables such as ethnicity and sex may assume more importance when associated with differences in status. High-status group members (whites and men) may be more likely to withdraw when work groups are first integrated by members of perceived lower status (nonwhites and women). Similarly, Konrad and colleagues (1992) found that status differences affected outcomes for minorities and women in group interactions. As equality of member status is assumed to be an important foundation for information exchange, it is possible that inequality of status may impede communication between high-status and low-status group members. Additional opportunities for shared experience, broad group activities, and task interdependence may be needed in such cases.

Limitations and Suggestions for Future Research

This study involved a limited set of deep-level diversity variables. In addition to our measures, variance in individual values regarding working per se, working hard (e.g., Protestant work ethic), or the proper balance between work and family might also be important for groups in this context. Including such variables would strengthen future studies, especially those of extremely potent work teams (such as small, family-owned businesses).

One of the problems inherent in the selection of which deep-level differences to study is that there are literally dozens of conceivably important work-related values (e.g., Meglino, Ravlin, & Adkins, 1989), cultural values (e.g., Triandis, 1989), terminal values (e.g., Rokeach, 1973), and work-related attitudes to pick from. The relevance of each one likely differs across situations, which is a major theme in the budding literature on selection for person-organization fit (e.g., Adkins, Russell, & Werbel, 1994; Barrett, 1995; Vancouver & Schmitt, 1991). Rather than the heterogeneity in job attitudes studied in the present research, level of agreement about, say, the proper role of the federal government might be a strong element of deep-level diversity for a chapter of local campus Democrats. Differences in attitudes toward enforcing the existing covenants and restrictions on property might be critical to the harmony of a neighborhood homeowners' association. In a jazz band or marketing

team, consensus on the value of creative freedom might be paramount. In a day care center, the critical values to share might deal with nurturance and patience. In a sports team, agreement about the importance of goal directedness, dedication, or achievement might be an overriding concern. In a university department, agreement about the relative values of teaching and research might be most significant. The crucial point is that the relevant deep-level variables in any situation are those that bear directly on the fundamental purposes of the group. An important theoretical and research question, then, is which attitudinal differences are most significant for which types of groups?

Another limitation was our use of a cross-sectional design. Ideally, any study of the relative influence of diversity variables on group functioning would follow both the dependent and independent variables over the history of the group. Present theories give little guidance on the proper span of time to employ, but recent organizational behavior and social psychological research shows that a fine-grained record of membership changes, interpersonal interactions, and performance over time can yield entirely new insights about work groups (Gersick, 1989; McGrath, Arrow, Gruenfeld, Hollingshead, & O'Connor, 1993).

Common method variance is also a potential limitation on this type of research. It is important to note that percept-percept inflation is a linear confound, showing up as an additive bias in a correlation or regression analysis (Podsakoff & Organ, 1986). That is, it can create spurious main effects. However, our hypothesis predicts and the data reveal important moderating effects. All of these help to strengthen the argument that the relations uncovered were a function of the constructs being studied, rather than a methodological artifact.

Finally, some other operational features would strengthen future studies. A broader and larger sampling of work groups (with the caveats given above) would strengthen statistical power. And, although we "triangulated" surface- and deep-level characteristics to some extent, it would have been helpful to have had other measures of social integration. Such measures might be taken from supervisory reports on the interpersonal harmony of work groups, from company archives, or from other records of membership changes. Consideration of other group-level dependent variables, such as communication processes (Gersick, 1989) and performance outcomes (Pelled, 1996), would make useful extensions to this model.

Conclusion

Given the composition of the workforce today and its projected future composition, understanding and predicting employee reactions to all levels of diversity is critical. Most organizational research on these reactions has been gloomy, suggesting that demographic diversity diminishes work group cohesion and organizational attachment and heightens risks of employee withdrawal and turnover. Practitioners also see heterogeneity as having negative outcomes (cf. Campion, Medsker, & Higgs, 1993). In view of their positive findings, Watson, Kumar, and Michaelsen (1993: 599) suggested the "dark cloud" of negative outcomes from increasing cultural diversity might have a "silver lining." We agree and suggest that research results indicating many negative effects of surface-level diversity may have also contained deeper-level similarities. Explicit recognition of these similarities may have resulted in different conclusions. Our findings are significant because they focus on the issue of which levels of differences are the most important in ongoing groups. We also hope that our findings are more optimistic than those of previous work because they focus on differences that are subject to change, rather than those that are immutable.

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