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Managing Diversity in U.S. Federal Agencies: Effects of Diversity and Diversity Management on Employee Perceptions of Organizational Performance

Current Trends in Public Personnel Administration

Diversity in the workplace is a central issue for contemporary organizational management. Concomitantly, managing increased diversity deserves greater concern in public, private, and nonprofit organizations. The authors address the effects of diversity and diversity management on employee perceptions of organizational performance in U.S. federal agencies by developing measures of three variables: diversity, diversity management, and perceived organizational performance. Drawing from the Central Personnel Data File and the 2004 Federal Human Capital Survey, their findings suggest that racial diversity relates negatively to organizational performance. When moderated by diversity management policies and practices and team processes, however, racial diversity correlates positively with organizational performance. Gender and age diversity and their interactions with contextual variables produce mixed results, suggesting that gender and age diversity reflect more complicated relationships. This article provides evidence for several benefits derived from effectively managing diversity.

The American workforce has been increasingly diversified by greater access to jobs for women and minorities. Diversity and representation "politically integrate a diverse nation with a measure of legitimacy" (Brewer 2002, 1), but also enhance social justice (Kellough 1990; Krislov and Rosenbloom 1981). Understanding the impacts of diversity on organizational outcomes, such as organizational performance, employee satisfaction, and turnover, has become essential (Milliken and Martins 1996). Cox (1993) contends that managing diversity should be significant as a moral imperative, as a legal requirement, and as a factor in organizational performance. In recent years, diversity scholars have reached consensus that the perspective on diversity management has broadened from

pursuing affirmative action programs to taking advantage of differences to improve organizational effectiveness (Wise and Tschirhart 2000). Recent research has investigated diversity in relation to organizational effectiveness.

Public organizations, through equal employment opportunity (EEO) and affirmative action programs, have been more committed to workforce diversity than have private organizations, resulting in a higher level of diversity in public organizations (Cornwell and Kellough 1994; Foldy 2004; Riccucci 2002). Public organizations thus face the challenge of managing a diversified workforce, a challenge that calls for more research on the impacts of diversity on organizational effectiveness (Wise and Tschirhart 2000). In spite of the greater diversity in government organizations, more research in the field of business management has examined the effects of diversity on organizational outcomes. Inconsistent empirical evidence regarding the effects of diversity on organizational outcomes suggests a more complex relationship between diversity and organizational effectiveness than is often realized (Jackson, Joshi, and Erhardt 2003; Milliken and Martins 1996; Williams and O'Reilly 1998; Wise and Tschirhart 2000). Recent research indicates that mediating or moderating effects of contextual factors, such as organizational culture, and demographic characteristics of group members and supervisors, explain the inconsistent research results.

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The present study shows how managerial efforts and other contextual variables moderate the relationship between diversity and organizational outcomes. First, this article reviews the literature on diversity in work groups and its impacts on organizational outcomes. Then, it discusses theoretical arguments about the

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impacts of diversity and diversity management. Next, it examines the effects of diversity in race, gender, and age, and of moderators such as diversity management, organizational culture, and team processes on individual- and organizational-level outcomes using a hierarchical regression analysis. The last section discusses findings and implications.

Literature on Diversity

Early studies of diversity focused on its effects on individual and organizational outcomes, indicating that it provides a great opportunity for organizations as well as a challenge (Milliken and Martins 1996; Tsui, Egan, and Xin 1995). Some studies concluded that more heterogeneous work groups consider more perspectives and produce higher-quality solutions than homogeneous groups (Cox, Lobel, and McLeod 1991; McLeod and Lobel 1992; Milliken and Martins 1996; Watson, Kumar, and Michaelsen 1993). Others contended that heterogeneous groups show lower levels of integration and have higher levels of dissatisfaction and turnover than homogeneous groups (Jackson, Joshi, and Erhardt 1993; O'Reilly, Caldwell, and Barnett 1989).

Two perspectives have shaped research on the impacts of diversity (Williams and O'Reilly 1998). One perspective, based on information and decision-making theories, argues that diversity can benefit organizations by providing a broad range of ideas, skills, and insights that can improve organizational capabilities to solve problems and make better decisions (Cox 1993; Cox and Blake 1991; Ely 2004). The other perspective, based on social categorization and social identity theories (Turner 1987) and the similarity-attraction paradigm (Byrne 1971), contends that diversity may burden organizations with high costs of coordination and conflict resolution, thus compromising organizational effectiveness, given that people tend to distinguish between in-group and out-group members, which may cause conflicts and miscommunication (Ely 2004). Although both of these perspectives are supported by research in laboratory settings (Ely 2004; Williams and O'Reilly 1998), the external validity of these findings is questionable, suggesting that researchers should take the effects of contextual factors into consideration, and seek more sources of evidence outside of the laboratory.

> We measure the levels of diversity of 67 federal agencies and analyze how diversity management affects the relationship between levels of diversity and perceptions of organizational performance.

Inconsistent empirical evidence on the impacts of diversity on organizations suggests complex relationships between diversity and its consequences. Recently, diversity researchers have developed models to examine the potential impacts of contextual factors that may moderate the relationship between diversity and its outcomes, such as human resources practices, team processes, and organizational culture (Jackson, Joshi, and Erhardt 2003; Kochan et al. 2003; Milliken and Martins 1996; Pitts 2005; Williams and O'Reilly 1998). Williams and O'Reilly (1998), in a review of 40 years of diversity research, proposed that contextual variables should be more carefully examined. Milliken and Martins (1996), in their evaluation of six years (1989–94) of research, identified four types of mediating variables, which are the short-term consequences of diversity that influence the long-term outcomes of diversity. More recently, Jackson, Joshi, and Erhardt (2003) reviewed 63 studies published between 1997 and 2002 and found

that contextual factors, such as task characteristics, organizational culture, team processes, and strategic context, significantly affected the relationship between diversity and organizational performance or behavior.

Nevertheless, the effects of other variables, such as diversity management practices and leadership, need much more attention from researchers. Previous research has used a limited range of samples, such as private firms in some fields of business or laboratory studies, thereby raising questions about external validity. Although some recent studies examined diversity's impacts on the organizational effectiveness of public organizations, they also used samples drawn from limited areas of government. The present study addresses these limitations of previous research, focusing on effective management of increased diversity in organizations rather than on the direct effects of diversity.

The study also draws on a very large sample of actual federal employees. The results show that the management of diversity significantly moderates diversity's impacts on important outcomes at individual and organizational levels. Some diversity scholars, including Cox (1993), Ely (2004), and Foldy (2004), have argued for the importance of effective diversity management. Pitts (2009) examined the effects of diversity management on federal employees' perceptions of organizational performance. However, his study relied entirely on survey evidence, and reported no evidence about the levels of diversity in the federal agencies in which the federal employees were located. Therefore, he could provide no evidence about the relationship between levels of diversity and diversity management. He did not show, as does our present analysis, that diversity management can actually reduce the potential negative impacts of increased levels of diversity and enhance positive impacts of diversity, which is the goal of diversity management policies and practices. Pitts's study found that federal employees, especially minority employees, perceived their agencies to be more effective when they perceived effective diversity management. The study we report here provides a more advanced analysis of the effects of diversity management. We measure the levels of diversity of 67 federal agencies and analyze how diversity management affects the relationship between levels of diversity and perceptions of organizational performance. We need more evidence about how diversity management affects diversity's impacts on organizational effectiveness. This study provides such evidence.

Theoretical Background and Hypotheses

Direct Effects of Diversity

Some proponents of diversity have maintained that workforce diversity enhances organizational effectiveness and productivity (e.g., Ely 2004; Hambrick and Mason 1982; McLeod and Lobel 1992; Richard 2000; Wiersema and Bantel 1992). Ely's (2004) information and decision-making theories suggest that diversity improves performance by contributing to higher-quality decisions and by taking advantage of a broader range of alternatives and new ideas (Cox 1994; Foldy 2004; Ospina 2001; Richard 2000). Some studies

have found that work teams composed of people with different backgrounds tended to share more information, leading to better performance than homogeneous teams (Bunderson and Sutcliffe 2002). Greater heterogeneity may lead to low consensus in decision making. Some researchers contend, however, that this can improve problem solving (Dutton and Duncan 1987; Katz 1982).

On the other hand, some research has reported a negative or insignificant relationship between diversity and organizational performance (e.g., Chatman and Flynn 2001; Chatman et al. 1998; Foldy 2004; Gladstein 1984; Jehn 1995; Jehn, Northcraft, and Neale 1999). Heterogeneous groups may experience problems in integration, coordination, motivation, and conflict management (Gladstein 1984; Jehn 1995; Jehn, Northcraft, and Neale 1999). Consequently, diverse work groups typically take more energy to accomplish tasks than homogeneous work groups (Greenhaus, Parasuraman, and Wormley 1990; Kanter 1979; Schneider and Northcraft 1999). Research has indicated that individuals from diverse groups can experience exclusion from the group's internal information networks and from important decision-making processes (Cox 1994; Ibarra 1993; Pettigrew and Martin 1989).

Similarity-attraction theory (Byrne 1971) and social categorization and social identity theories (Turner 1987) support negative perspectives on diversity in work groups because people prefer similarity in their interactions (Schneider 1987; Tsui, Egan, and O'Reilly 1992). Individuals feel comfortable in a group they perceive as similar to themselves. Individuals in diverse groups feel less safe and trust each other less. Lower trust increases conflict within groups. Theories of selection and socialization view similarity in values and demographic characteristics as conducive to effective work environments (Jehn, Northcraft, and Neale 1999).

Social categorization and social identity theories propose that people classify themselves and others into social categories based on social status and membership of social groups (Ashforth and Mael 2001; Tajfel and Turner 1985; Turner 1987). People in a group sharing the same social identity distinguish members of their own social category from others (Ely 2004; Kramer 1991). Such distinctions decrease interaction within or between groups from different social categories and leads to discrimination and self-segregation. Thus, some research finds that diversity is associated with less social integration, more conflict, and less cohesion in groups (Milliken and Martins 1996; Williams and O'Reilly 1998). Diversity in organizations is therefore likely to decrease organizational effectiveness.

> **H₁**: Higher levels of workforce diversity will decrease organizational performance.

Effects of Diversity Management
Effective diversity management enhances the effects of diversity on organizational performance. Research has shown mixed findings about the impacts of diversity in tenure, race, and sex on organizational performance. When properly managed, however, diversity can enhance performance (Cox, Lobel, and McLeod 1991; O'Reilly, Williams, and Barsade 1997). Human resource management policies that promote diversity can enhance the diversity–performance relationship (Jehn and Bezrukova 2004; Richard 2000; Richard and Johnson 2001). An organizational culture and managerial attitudes

supporting diversity can also improve performance (e.g., Jehn and Bezrukova 2004; O'Reilly, Williams, and Barsade 1997).

The integration and learning perspective proposes that organizations should incorporate employees' diverse perspectives into organizational tasks and provide opportunities to learn from differences (Thomas and Ely 1996). Diversity provides a source of growth, learning, and intuition, but only when it is properly managed. Foldy (2004) contended that the integration and learning perspective (Thomas and Ely 1996, 2001) should link to high learning frames and behaviors (Argyris and Schön 1996). High learning frames and behaviors make three important contributions: (1) they support the perspective that diversity is a source of learning, (2) they call for cultural diversity to be discussed openly, and (3) they ask every member in a group to embrace diversity (Foldy 2004).

Numerous scholars have emphasized the important role of managers in diversity management. Thomas and Ely (1996) suggested that effective leadership connects diversity to work effectiveness. Effective leadership encourages a diverse workforce to appreciate different perspectives and to value diverse opinions and ideas (Thomas and Ely 1996).

> **H₂ₐ**: Effective diversity management will increase organizational performance.

> **H₂ᵦ**: Diversity management will moderate the impact of diversity on organizational performance. In agencies that have more effective diversity management, higher levels of diversity will increase perceived organizational performance. In agencies that have less effective diversity management, higher levels of diversity will decrease perceived organizational performance.

Organizational Tenure
Pfeffer (1983, 323) asserted that organizations will be most productive when employees have organizational tenure "long enough to overcome some initial naiveté and learn the ropes and local practices." As diverse teams work together longer, teamwork and collaboration increase. Enhanced intragroup contact will reduce the negative effects of social categorization (Chatman and Flynn 2000; Ely 2004; Harrison et al. 2002). The negative effects of surface-level diversity, such as demographic differences, become less important, reducing prejudices and stereotyping. Katz (1982) argued that longer organizational tenure stabilizes the organization, reducing goal conflict. Decreased negative effects of diversity imply that organizations can invest more in the improvement of organizational performance, while saving resources that would have been expended for coordination, conflict management, and control.

> **H₃ₐ**: Longer organizational tenure will increase organizational performance.

> **H₃ᵦ**: Organizational tenure will moderate the impact of diversity on organizational performance such that, for agencies that have longer average tenure of employees, higher levels of diversity will increase organizational performance. For agencies that have shorter average tenure, higher levels of diversity will decrease organizational performance.

Effect of Team Processes

Individual differences may lead to excessive conflict, so it is necessary to develop ways to counteract these effects. Relational conflicts, when not properly treated, decrease team members' satisfaction (De Dreu and Weingart 2003). Team processes can moderate the relationship between diversity and conflict, so that cooperation and communication among team members mitigate the negative effect of diversity (e.g., Ely 2004; Mohammed and Angell 2004). Mohammed and Angell (2004, 1021) argued that team processes enhance interactions between team members (Marks, Mathieu, and Zaccaro 2001) and the synergistic combination of individual efforts (Kozlowski and Bell 2003). Team processes should moderate the negative effects of diversity on organizational performance by reducing conflict.

H_{4a}: Effective team processes will increase organizational performance.

H_{4b}: Effective team processes will moderate the impact of diversity on organizational performance, such that for agencies that have more effective team processes, diversity will increase organizational performance. For agencies that have less effective team processes, diversity will decrease organizational performance.

Effect of Organizational Culture

Organizational culture is defined as "a common set of shared meanings or understandings about an organization (e.g., strongly held values, and norms about patterns of group members' behaviors)" (Chatman and Jehn 1994; Jehn and Bezrukova 2004, 705–6; Reichers and Schneider 1990; Triandis and Suh 2002). Organizational culture may affect the relationship between diversity and performance by imbuing group members with the organization's perspectives on diversity (Jehn and Bezrukova 2004).

A results-oriented organizational culture emphasizes individual accomplishment, usually leading to high competition among members in the organization. High competition may prevent individuals from working efficiently, leading to inefficiency (Jehn and Mannix 2001; Tsui, Egan, and O'Reilly 1992). Furthermore, the organization may lose opportunities to benefit from cooperation because of the competitive culture. Diversity in results-oriented organizational culture may decrease organizational performance.

H_{5a}: Results-oriented organizational culture will increase organizational performance.

H_{5b}: Results-oriented organizational culture will moderate the impact of diversity on organizational performance, such that for agencies that emphasize results-oriented culture, diversity will decrease organizational performance.

Data and Methods

Data Sources and Sample

The present study uses data from two major sources: the Central Personnel Data File (CPDF) and the 2004 Federal Human Capital Survey (FHCS), both published by the U.S. Office of Personnel Management.[1] The diversity measures for federal agencies were created using information from the CPDF in 2004. Index variables were developed using the questionnaire of the 2004 FHCS. A total of 67 subagencies under executive branch agencies and independent agencies participated in the 2004 FHCS, and approximately 150,000 federal government employees responded to the survey.

Diversity Measure

Three kinds of diversity measures, including the coefficient of variation, the Blau index of heterogeneity, and the entropy index of diversity, are the most frequently used measures. Diversity researchers use different measures depending on the characteristics of variables. The Blau index of heterogeneity and the entropy index are appropriate for categorical variables such as gender, race/ethnicity, and functional and educational background, while the coefficient of variation is used for continuous variables such as age and tenure. The present study employs the entropy index of diversity to measure race, gender, and age diversity, which are categorical variables in this study. The entropy index of diversity, or the Shannon index (uncertainty index), is considered the appropriate measure of diversity (Miller and Quigley 1990; Pielou 1977; Reardon 1998). The entropy index is computed with the following formula:

$$E = \sum Qr \log n\, (1/Qr)\ (r = 1, \ldots, n),$$

where Qr denotes the proportion of the population of group r. The entropy index of diversity ranges from a minimum value of 0, which means that the population contains a single group, to a maximum value of 1, which means that all n groups are evenly represented in the population.

The indices of each agency's attributes of diversity—race, gender, and age—are calculated using the entropy index of diversity.[2] Our analysis classifies federal employees into five racial/ethnic groups— American Indian or Alaska Native, Asian or Pacific Islander, blacks, Hispanics, and whites—based on the CPDF's categorization. Gender of federal employees is composed of two groups: male and female. The age variable is categorized into five groups: under 29, 30–39, 40–49, 50–59, and over 60.

Dependent Variables

The appendix presents the questionnaire items for the scales constructed for this study. The measure of perceived organizational performance was developed by using principal components factor analysis with varimax rotation. It includes survey questions about the quality of work, organizational performance, managerial capability, and job-relevant resources and skills. Respondents rated these four questions on a Likert scale from 1 (strongly disagree or very poor) to 5 (strongly agree or very good). Factor analysis of these items shows that factor loadings range between 0.715 and 0.794. The scale's eigenvalue is 2.280 and Cronbach's alpha is 0.738.

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Main Independent Variable

We measure diversity management in two ways. One method measures the diversity management of agencies according to employees' perceptions. This study develops an index variable through factor analysis, using three survey questions from the 2004 FHCS, that ask about commitment to diversity and policies and practices to promote diversity (see the appendix). Principal components factor analysis and varimax rotation produce a single factor on which these three items loaded. The initial eigenvalue of the scale is 2.308 and the Cronbach's alpha is 0.850. Factor loadings range between 0.868 and 0.886.

The other way of measuring the effectiveness of diversity management uses the number of EEO complaints in an agency as a proxy measure of effective diversity management. The Notification and Federal Employee Antidiscrimination and Retaliation (No FEAR) Act of 2002 requires every federal agency to report complaints about violations of antidiscrimination and whistle-blower protection laws on a quarterly basis.[4] Under section 301 of the No FEAR Act, each federal agency must post summary statistical data pertaining to complaints of employment discrimination filed against it by employees, former employees, and applicants for employment under 29 C.F.R. Part 1614 (EEOC 2005). We assume that the effectiveness of an agency's diversity management relates negatively to complaints reported, and that a lower number of EEO complaints represents more effective diversity management. The data come from the 2004 annual report posted on each agency's public Web site. The measure divides the number of EEO complaints by organizational size.

Control Variables

Performance-oriented organizational culture. A results-oriented organizational culture emphasizes employees' performance and productivity by rewarding high performance and penalizing poor performance. Such a culture emphasizes merit-based promotions, rewards, or penalties based on performance evaluations. The appendix shows the eight items that are integrated into a single factor, with factor loadings between 0.685 and 0.888, through principal factor analysis and varimax rotation. The initial eigenvalue of the scale is 5.736 and the Cronbach's alpha is 0.942.

Team processes. This variable measures cooperation and communication in work units. Two questions ask about employees' cooperation to get the job done in work groups and about information and knowledge sharing among employees through communication. They were rated on a five-point Likert scale. These items are also integrated into one index variable through factor analysis. The initial eigenvalue is 1.462 and the Cronbach's alpha is 0.626.

Average tenure. Average tenure represents the average tenure of full-time employees hired in an agency. This variable is measured for each agency based on the 2004 CPDF. The mean average tenure of federal agencies is 15.1 years, ranging between 7.9 and 22.6 years.

Demographic variables. Demographic variables including gender, minority, and supervisory status are recorded as dummy variables in order to control their effects on dependent variables. Previous research has shown that differences in gender, minority status, and supervisory status affect perceptions of organizational performance. We control for the impacts of these demographic characteristics on dependent variables. The gender variable is coded 1 when a respondent is a female and 0 for a male. The minority variable is 0 when a respondent is a white male or a white female and is 1 when a respondent is neither a white male nor a white female. The CPDF defines American Indian or Alaska Native, Asian or Pacific Islander, black (not of Hispanic origin), and Hispanic as the minority race/national origin groups for federal statistics and program administrative reporting (OPM 2006). Supervisory status is classified into two types—supervisor or manager and executive—represented by two dummy variables. For a supervisor or a manager, the supervisor variable is recorded as 1, and when a respondent is an executive, the executive variable is recorded as 1. Otherwise, it is recorded as 0.

Methodology and Model Specification

We present hierarchical regressions to test a model of the effects of diversity. Moderated multiple regression involves hierarchical regression that first tests the relationship between the predictors (independent variables) of interest and the criterion variable (dependent variable), and then tests the relationship of a term that carries information about both predictors (the interaction term). The "hierarchical" form of regression indicates that predictors are not entered

Table 1 Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max	Unit
Size	11.23	1.83	6.22	13.39	Natural log of the number of employees
Organizational tenure	15.11	2.72	7.9	22.6	Year
Female	0.43	0.50	0	1	Female = 1, male = 0
Supervisor	0.28	0.45	0	1	Supervisor or manager = 1
Executive	0.03	0.18	0	1	Executive = 1
Minority	0.30	0.46	0	1	Minority = 1
Race diversity	0.56	0.08	0.21	0.77	Entropy index
Gender diversity	0.95	0.04	0.81	1	Entropy index
Age diversity	0.89	0.03	0.73	0.96	Entropy index
Diversity management	0	1	−3.07	1.44	Factor score
EEO complaints	0.60	0.28	0.15	1.81	Proportion of the number of EEO complaints
Team processes	0	1	−3.96	1.28	Factor score
Organizational culture	0	1	−2.20	1.87	Factor score

into the regression equation simultaneously, but in a logical order. Typically, the continuous predictor and the polychotomous predictor are entered in the first step, and the interaction term is entered in the second step (Aiken and West 1991). In addition, researchers decide how many predictors to enter and the order in which they are entered. Determining the order of entry is based on logical or theoretical considerations. F-tests are used to compute the significance of each added variable (or set of variables) to the explanation reflected in R^2 (Garson 1998).

We test the main and moderating effects of diversity and diversity management on organizational performance using this method. Some researchers (e.g., Allison 1977; Friedrich 1982; Smith and Sasaki 1979; Wright 1976) have expressed the concern that because a multiplicative term is often highly correlated with its constituent variables, the inclusion of the multiplicative term in a model with its constituent variables leads to multicollinearity, which yields unreliable and unstable coefficients. In fact, when we tested our model using the ordinary least squares method, we detected such a problem in the interaction terms of our model. For this reason, many studies in organizational behavior and social psychology (e.g., Aiken and West 1991; Cohen 1978, 861; Cohen and Cohen 1983; Simons and Peterson 2000) have used a hierarchical regression procedure to resolve the problem, in which the effect of a multiplicative term on a dependent variable should be assessed only after the effects of its constituent variables on the dependent variable have been partialed out (Friedrich 1982, 802).

Further, larger correlations between predictors can also increase multicollinearity. When the predictors are highly correlated, a statistically significant interaction term may result from a nonlinear multiplicative effect, and not because of a linear multiplicative effect (Friedrich 1982). Nevertheless, correlations between predictors that compose interaction terms are not substantially high, suggesting that multicollinearity related to interaction terms may not be a critical problem in this model.

The model of diversity and organizational performance categorizes the independent variables into eight sets and enters them in the following order: demographic control variables (step 1), the main effects of diversity (step 2), the main effects of diversity management (step 3), the main effects of team processes and organizational culture (step 4), the moderating effects of diversity management (step 5), the moderating effects of tenure (step 6), the moderating effects of team processes (step 7), and the moderating effects of organizational culture (step 8). The model of organizational performance is specified as follows:

Step 1: $Pi = \beta_0 + \beta_1 Ci + ei$

Step 2: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + ei$

Step 3: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + \beta_3 Mi + \beta_4 Ei + ei$

Step 4: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + \beta_3 Mi + \beta_4 Ei + \beta_5 Ci + \beta_6 Ti + \beta_7 Ri + ei$

Step 5: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + \beta_3 Mi + \beta_4 Ei + \beta_5 Ci + \beta_6 Ti + \beta_7 Ri + \beta_8 Di * Mi + \beta_9 Di * Ei + ei$

Step 6: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + \beta_3 Mi + \beta_4 Ei + \beta_5 Ci + \beta_6 Ti + \beta_7 Ri + \beta_8 Di * Mi + \beta_9 Di * Ei +$

$\beta_{10} * Yi + ei$

Step 7: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + \beta_3 Mi + \beta_4 Ei + \beta_5 Ci + \beta_6 Ti + \beta_7 Ri + \beta_8 Di * Mi + \beta_9 Di * Ei +$

$\beta_{10} * Yi + \beta_{11} Di * Ti + ei$

Step 8: $Pi = \beta_0 + \beta_1 Ci + \beta_2 Di + \beta_3 Mi + \beta_4 Ei + \beta_5 Ci + \beta_6 Ti + \beta_7 Ri + \beta_8 Di * Mi + \beta_9 Di * Ei +$

$\beta_{10} * Yi + \beta_{11} Di * Ti + \beta_8 Di * Ri + ei$

where Pi is perceived organizational performance; Ci is the vector of organizational contextual variables (organizational size, average tenure of employees) and demographic characteristics of employees (female, minority status, and supervisory status); Di is the vector of attributes of diversity (race diversity, gender diversity, and age diversity); Yi is organizational tenure; Ti represents team processes; Ri denotes results-oriented organizational culture; Mi is perceived diversity management;
Ei is the percentage of reported EEO complaints; and e_i is an error term.

Results

The main effects of diversity, diversity management, and other contextual variables and moderating effects on organizational performance were examined through the eight steps of the hierarchical regression analysis. The model fit of each of the eight blocks is good and the complete model explains 57 percent of the variation in the dependent variable.

Diagnostic tests for normality, linearity, multicollinearity, homoscedasticity, and the existence of outliers did not indicate serious violations of the assumptions for the ordinary least squares regression, except for one minor problem. Residual analyses detected one outlier, but it does not appear to influence the relationship significantly. Table 3 describes the correlations of variables. The largest correlation is 0.66, and the average and median correlations are 0.03 and 0.01, respectively. The variance inflation factor (VIF) test for multicollinearity revealed that the largest VIF value and the average were 1.95 and 1.40 respectively, much lower than the typical cutoff point of 3.5.

Direct Effects of Diversity (H_1)

Only the effect of racial diversity on perceived organizational performance (hereafter, organizational performance) was supported. Racial diversity ($-.42, p < .01$) is negatively related to organizational performance, in support of hypothesis 1, suggesting that in agencies that have higher levels of racial diversity, organizational performance

Table 2 Summary of Model Fitç

Block	F	R^2	Change in R^2
1	224.09***	.0171	
2	39.01***	.0186	.0015
3	18090.81***	.3319	.3132
4	21247.24***	.5691	.2373
5	8.67***	.5694	.0003
6	7.00***	.5695	.0001
7	3.85**	.5696	.0001
8	5.15***	.5697	.0001

** Significant at .05 level; *** significant at .01 level.

Table 3 Correlations of Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13
1.Organizational performance													
2. Race diversity	−.05												
3. Gender diversity	.01	.14											
4. Age diversity	−.01	.09	.27										
5. Size	.02	−.16	−.35	−.09									
6. Tenure	.02	−.13	.01	−.45	−.19								
7. Gender	−.00[a]	.09	.12	.01	−.14	.04							
8. Minority	−.02	.15	−.00[a]	−.02	−.06	.03	.19						
9. Supervisor	.08	−.01	−.07	.05	.18	−.14	−.14	−.07					
10. Executive	.08	−.01	.02	.01	−.01	.02	−.06	−.06	−.12				
11. Diversity management	.57	−.04	.00[a]	−.01	.03	.03	−.09	−.19	.15	.11			
12. EEO complaints	−.05	.32	−.03	−.09	−.31	.11	.10	.11	−.04	−.05	−.06		
13. Team processes	.63	−.04	−.00[a]	−.01	.02	.01	−.06	−.07	.11	.07	.49	−.04	
14. Organizational culture	.66	−.04	.02	−.00[a]	.04	.04	−.06	−.04	.21	.15	.64	−.07	.52

Note: all of the coefficients, except those marked by "a," are statistically significant at the .01 or .001 levels.

was perceived lower than that in other agencies. On the other hand, gender diversity (.31, $p < .01$), which indicates a better balance of the two sexes, is positively related to organizational performance. In agencies where the proportions of male and female employees are similar, organizational performance was perceived higher than it was in others. The effect of age diversity on organizational performance was not significant.

Effects of Diversity Management (H₂)

Effects of Diversity Management (H_2)

Findings supported our hypotheses of the effects of diversity management on organizational performance. We developed the two measures of diversity management—perceived diversity management and EEO complaints, which are negatively related to each other. Higher levels of perceived diversity management indicate that the agency manages workforce diversity more effectively, while higher levels of EEO complaints reported to the agency's EEO office mean that the agency manages diversity less effectively. Supporting hypothesis 3a, perceived diversity management (.58, $p < .01$) is positively related to organizational performance, while EEO complaints (−.031, $p < .01$) are negatively related to organizational performance. In other words, when agencies have more effective diversity management policies and practices, they also perform better than others that are less effective at managing diversity.

The results of the moderating effects of diversity management are complicated to interpret. Perceived diversity management (.13, $p < .01$) positively moderated the relationship between racial diversity and organizational performance, suggesting that in agencies that effectively manage diversity, racial diversity is associated with increased perceived organizational performance. This indicates that although higher levels of racial diversity will decrease organizational performance, effective management will turn negative effects on organizational performance into positive effects. However, the moderating effects of perceived diversity management on the other two types of diversity are found to be insignificant, in partial support of hypothesis 2b.

Hypothesis 2b also proposed that the effects of EEO complaints moderate the relationships between the attributes of diversity and organizational performance such that less effective diversity management will enhance the negative effects of diversity on organizational performance. Interestingly, in the agencies with higher levels of EEO complaints, which indicates poor management for diversity, higher levels of gender diversity (.85, $p < .01$) had a positive association with organizational performance, while racial (−.52, $p < .01$) and age diversity (−1.34, $p < .01$) related negatively to performance.

Effects of Other Contextual Variables (H₃–H₅)

Effects of Other Contextual Variables (H_3–H_5)

Hypothesis 3a, which examined the effect of employees' organizational tenure on organizational performance, was not supported. The findings of the moderating effect of tenure were also not consistent with our hypothesis 3b. We predicted that organizational tenure would positively moderate the association between diversity and organizational performance. However, the results indicate that higher levels of racial diversity are negatively associated with perceived organizational performance when employees of the agency have longer organizational tenure. In contrast, higher levels of gender diversity tend to increase organizational performance when the employees worked together longer. The moderating effect of tenure on age diversity was not significant.

The effects of team processes and results-oriented organizational culture on organizational performance supported hypotheses 4a 5a. Both of these two variables were positively associated with organizational performance (.37, $p < .01$ and .38, $p < .01$, respectively).

Hypothesis 4b predicted that team processes would positively moderate the associations of the three attributes of diversity and organizational performance. Team processes showed a pattern of moderating effects similar to that of perceived diversity management. The moderating effects of team processes (.081, $p < .05$) were significant only in the relationship between racial diversity and organizational performance, suggesting that in agencies effectively

practicing teamwork and cooperation among members in work-groups, higher levels of racial diversity increased organizational performance.

Hypothesis 5b proposed that organizational culture should negatively moderate the relationship between diversity and organizational performance. However, the moderating effects of organizational culture on the relationship between diversity and organizational performance were mixed. The results showed that in agencies with high results-oriented culture, higher age diversity increased organizational performance, while the moderating effects of organizational culture on racial and gender diversity were insignificant.

Results of Control Variables

Female employees, supervisors, and Senior Executive Service members perceive higher organizational performance, while racial minority employees perceive lower organizational performance. However, organizational tenure of employees and organizational size were not significantly associated with organizational performance.

Discussion and Conclusion

Previous empirical research on the effects of diversity on organizational performance has found mixed results. Recently, researchers have reported that the actual effects of diversity under complex organizational conditions are much more complicated than they had predicted, suggesting the need for a more nuanced interpretation of diversity and for research that analyzes the impacts of diversity taking into account the complex reality of organizations (Bell and Berry 2007; Klein and Harrison 2007). This study responds to these needs, analyzing not only the main impacts of diversity but also moderating effects of contextual factors on organizational performance. The results of this study add to recent research that indicates the importance of contextual variables for understanding impacts of diversity on organizational outcomes (Jackson, Joshi, and Erhardt 2003; Kochan et al. 2003; Milliken and Martins 1996; Williams and O'Reilly 1998). The results suggest that contextual variables significantly affect the relationship between diversity and organizational performance. The most important evidence of such moderating effects comes from the finding that this very large sample of federal employees perceives lower organizational effectiveness where racial diversity is higher, but strikingly, where they perceive that diversity is effectively managed, perceived organizational effectiveness is higher when racial diversity is greater.

The findings suggest that the main effects of diversity may vary according to the types of diversity. This is consistent with the findings of previous research (Sackett and DuBois 1991; Watson, Kumar, and Michaelsen 1993; Wise and Tschirhart 2000). The main effect of racial diversity was consistent with social categorization and social identity theories that propose greater diversity is associated with less social integration, more conflict, and less

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cohesion in groups, consequently decreasing organizational performance (Milliken and Martins 1996; Williams and O'Reilly 1998). In contrast, higher levels of racial diversity decreased perceived organizational performance, while higher levels of gender diversity increased perceived organizational performance. One possible interpretation is that gender may lead to fewer conflicts than do other types of diversity, thus boosting the positive effects of diversity on organizational performance (Pelled, Eisenhardt, and Xin 1999). Gender diversity may be a less sensitive issue in work groups, as compared to racial diversity, and may require lower costs for conflict resolution or coordination. On the other hand, work groups with higher levels of racial diversity may experience more conflicts because of complicated differences arising from residual effects of racial injustice and related factors.

The moderating effects of diversity management on the relationship between diversity and organizational performance contribute the most interesting findings of this study. Although policy makers and public managers may understand the importance of workforce diversity very well, they may not realize the crucial need for effective management practices to enhance the positive impacts of diversity on organizational performance. This study developed two measures of diversity management—a subjective measure and an objective measure. Even though the results of these two measures did not exactly match, the pattern of the impacts is consistent. The findings suggest that the effects of diversity management can enhance or even reverse the main impacts of diversity on organizational outcomes. When an agency's employees perceived that leaders managed racial diversity effectively, higher levels of racial diversity improved perceived organizational performance. In contrast, higher levels of racial diversity in agencies that were not successful in managing diversity significantly decreased perceptions of the agency's performance. These results support the integration and learning perspective on diversity, which proposes that if organizations properly manage employees' varied perspectives, diversity can be a source of growth, learning, and intuition, thus enhancing organizational performance (Foldy 2004; Thomas and Ely 1996, 2001). The results are also consistent with Cox and Blake's (1991) conclusion that managing diversity can bring a number of benefits to organizations by improving creativity and problem-solving capacity and reducing turnover.

Along similar lines, when an agency manages diversity poorly, higher levels of age diversity decrease organizational performance. On the other hand, the moderating effects of diversity management on the relationship between gender diversity and organizational performance appear to be more complicated to interpret. In agencies that manage gender diversity poorly, higher levels of gender diversity increased organizational performance. As mentioned previously, gender diversity may not cause high costs for conflict resolution and coordination, thereby not requiring managerial capacity or efforts for diversity.

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Table 4 Hierarchical Regression Analysis Predicting Organizational Performance

	Coefficient	Std. Err.
Step 1: Controls		
Size	.0013	.0028
Tenure	−.0011	.0015
Gender	.0335***	.0073
Supervisor	.2107***	.0080
Executive	.1149***	.0232
Minority	−.0173*	.0081
R^2 = .0171 Adjusted R^2 = .0170		
F = 224.09***		
Step 2: Diversity Effects		
Race diversity (RD)	−.4163***	.0389
Gender diversity (GD)	.3102***	.0945
Age diversity (AD)	−.0719	.1147
R^2 = .0186 Adjusted R^2 = .0185		
F = 162.62***		
Step 3: Management Effects		
Diversity management	.5781***	.0030
EEO complaints	−.0310***	.0102
R^2 = .3319 Adjusted R^2 = .3318		
F = 3484.66***		
Step 4: Teamwork and Organizational Culture Effects		
Team processes	.3669***	.0029
Results-oriented culture	.3783***	.0033
R^2 = .5691 Adjusted R^2 = .5690		
F = 7840.82***		
Step 5: The Moderating Effects of Diversity Management		
Diversity management * RD	.1264***	.0256
Diversity management * GD	−.0873	.0612
Diversity management * AD	−.0479	.0714
EEO * RD	−.5225***	.1180
EEO * GD	.8450***	.2924
EEO * AD	−1.3439***	.3246
R^2 = .5694 Adjusted R^2 = .5693		
F = 5370.71***		
Step 6: The Moderating Effects of Organizational Tenure		
Tenure * RD	−.0609***	.0148
Tenure * GD	.0654*	.0290
Tenure * AD	.0373	.0285
R^2 = .5695 Adjusted R^2 = .5694		
F = 4640.38***		
Step 7: The Moderating Effects of Team Processes		
Team processes * RD	.0811**	.0296
Team processes * GD	.0501	.0705
Team processes * AD	−.1387	.0825
R^2 = .5696 Adjusted R^2 = .5694		
F = 4084.45***		
Step 8: The Moderating Effects of Organizational Culture		
Organizational culture * RD	−.0022	.0347
Organizational culture * GD	−.0223	.0825
Organizational culture * AD	.3608***	.0974
R^2 = .5697 Adjusted R^2 = .5695 F = 3647.97***		

* Significant at .10 level; ** significant at .05 level; *** significant at .01 level.

The findings concerning the effects of other contextual factors are also interesting. The moderating effects of organizational tenure were significant, but had only a small effect on the relationship between diversity and performance. When employees worked together longer, higher levels of gender diversity increased performance, but racial diversity decreased performance. In this study, organizational tenure does not strongly affect the relationship between diversity and performance, contrary to other studies that have found significant moderating effects of organizational tenure on diversity and organizational effectiveness (e.g., Chatman and Flynn 2000; Ely 2004; Harrison et al. 2002). These mixed findings may be attributed to the oversimplification of the dynamics of diversity. Page (2007) argued that when group members have the same organizational tenure, they are likely to think in the same way. Others, however, contend that depending on the context, differences in some attributes such as race/ethnicity and sex can have greater impacts on organizational outcomes than others. This suggests that stronger impacts of racial or sex diversity can cause differences in tenure and age to fade in significance (Bell and Berry 2007).

Team processes appear to have marginal moderating effects on the relationship between diversity and performance. Even so, racial diversity significantly improved performance in the agencies that encourage teamwork and cooperation among employees. Team processes that encourage frequent interactions and communication among members increase positive effects of racial diversity on organizational performance.

The findings regarding results-oriented organizational culture partially supported our expectation. Only age diversity had a positive association with performance in agencies that emphasized the performance and productivity of employees. As discussed earlier, results-oriented organizational culture tends to promote competition among members in workgroups, potentially increasing conflicts (Lawrence 1988; Pelled, Eisenhardt, and Xin 1999). Higher levels of age diversity in an agency that emphasizes results-oriented culture may increase organizational performance, reducing competition and conflicts among employees.

Further research should address potential limitations of this study. Because this research analyzed cross-sectional data, it does not conclusively establish the causal directions of the relations observed. Some variables were measured by self-reported responses from FHCS, so monomethod biases could affect the results. The analysis, however, does include variables that use multiple sources (e.g., CPDF, archival data, and No FEAR Act), reducing the possibility of such biases. In addition, subjective evaluations of diversity management may not capture the actual effectiveness of diversity management in an organization. Kalev, Dobbin, and Kelly (2006) found that diversity management programs targeting individual bias or network isolation were less effective than organizational structures that strengthen responsibility for diversity (e.g., affirmative action programs and diversity committees). Future research should develop more rigorous measures of diversity management and more independent, "objective" measures of performance. Even so, examining how people in organizations feel about their organization's performance, and about other matters analyzed here, has great value (e.g., Brewer 2006).

Our results have important implications for public managers and policy makers. Especially for racial diversity, the evidence shows the importance of managing diversity effectively. The benefits of racial diversity are enhanced when leaders work well with employees of diverse backgrounds, show a commitment to a workforce that is representative of all society, and establish policies and procedures that promote diversity. The evidence here supports decisions to invest resources in developing such leadership behaviors, policies, and procedures.

Appendix: Construction of Index Variables
(Five-point Likert-type scales)

Organizational Performance

(Cronbach's alpha = .74, eigenvalue = 2.280, factor loadings = .72–.80)

- How would you rate the overall quality of work done by your work group?
- Overall, how good a job do you feel is being done by your immediate supervisor/team leader?
- The workforce has the job-relevant knowledge and skills necessary to accomplish organizational goals.
- The skill level in my work unit has improved in the past year.

Diversity Management

(Cronbach's alpha = .85, eigenvalue = 2.308, factor loadings = .87–.89)

- Supervisors/team-leaders in my work unit are committed to a workforce representative of all segments of society.
- Policies and programs promote diversity in the workplace (for example, recruiting minorities and women, training in awareness of diversity issues, mentoring).
- Managers/supervisors/team leaders work well with employees of different backgrounds.

Results-Oriented Organizational Culture

(Selected items—contact authors for the others)

(Cronbach's alpha = .94, eigenvalue = 5.74, factor loadings = .69–.89)

- In my work unit, steps are taken to deal with a poor performer who cannot or will not improve.
- Employees are rewarded for providing high quality products and services to customers.
- Awards in my work unit depend on how well employees perform their jobs.
- In my work unit, differences in performance are recognized in a meaningful way.

Team Processes

(Cronbach's alpha = .63, eigenvalue = 1.46, factor loading = .86)

- The people I work with cooperate to get the job done.
- Employees in my work unit share job knowledge with each other.

Notes
1. The Central Personnel Data File, an information system intended to support statistical analysis of federal personnel management programs, is composed of two primary data files—the status file and the dynamics file. This study extracted 2004 employees' demographic data of the target agencies of the federal government from the dynamic file, which has information about personnel actions such as accessions, separations, and promotions over a period of time. The CPDF is limited to federal civilian employees and covers all agencies under the executive branch except for the Board of Governors of the Federal Reserve, Central Intelligence Agency, Defense Intelligence Agency, National Imagery and Mapping Agency, National Security Agency, Office of the Vice President, Postal Rate Commission, Tennessee Valley Authority, U.S. Postal Service, and White House Office. The coverage of Federal Bureau of Investigation, the legislative branch, and the judicial branch is limited. All data of the CPDF are submitted by the agencies from their own separate personnel systems on a quarterly basis (OPM 2006).
2. Previous research on diversity employed various attributes of diversity, such as age, education, ethnicity, gender, institutional location, job category, national origin, supervisory status, and race. Because of limited data availability, this research focuses on three dimensions of diversity: race, gender, and age diversity. Archival data on the race, gender, and age of federal employees by agency come from the CPDF. The data represent one time period and were collected in 2004.
3. Response rates involving the questions about institutional location (27.2 percent), ethnic background (27.1 percent), pay category/grade (27.2 percent), tenure in federal government (24.2 percent) and in current agency (23.9 percent), and age (27.2 percent) are very low and limited to only the defense agencies.
4. On May 15, 2002, President George W. Bush signed the Notification and Federal Employee Antidiscrimination and Retaliation of 2002 Act into law. The No FEAR Act, with an effective date of October 1, 2003, requires federal agencies to be more accountable for violations of antidiscrimination and whistle-blower protection laws. The act requires each federal agency to post quarterly on its public Web site certain statistical data relating to federal sector equal employment opportunity complaints filed with such agency and for other purposes. Under the act, every federal agency is required to notify employees and applicants for employment about their rights under the discrimination and whistleblower laws; to post statistical data relating to federal sector equal employment opportunity complaints on its public Web site; to ensure that their managers have adequate training in the management of a diverse workforce, early and alternative conflict resolution, and essential communications skills; to conduct studies on the trends and causes of complaints of discrimination; implement new measures to improve the complaint process and the work environment; to initiate timely and appropriate discipline against employees who engage in misconduct related to discrimination or reprisal; to reimburse the Judgment Fund for any discrimination and whistleblower related settlements or judgments reach in federal court; and to produce annual reports of status and progress to Congress, the attorney general, and the U.S. Equal Employment Opportunity Commission.
5. Specifically, the significance of the interaction term regression weights may be attributable only to the overlap between the interaction terms and untested but significant nonlinear trends, and not to an actual interaction between the variables.

References
Aiken, Leona S., and Stephen G. West. 1991. *Multiple Regression: Testing and Interpreting Interactions.* Newbury Park, CA: Sage Publications.

Allison, Paul D. 1977. Testing for Integration in Multiple Regression. *American Journal of Sociology* 83: 144–53.

Argyris, Chris, and Donald A. Schön. 1996. *Organizational Learning II: Theory, Method, and Practice.* Reading, MA: Addison-Wesley.

Ashforth, Blake E., and Fred Mael. 1989. Social Identity Theory and the Organization. *Academy of Management Review* 14(1): 20–39.

Bell, Myrtle P., and Daphne P. Berry. 2007. Viewing Diversity through Different Lenses: Avoiding a Few Blind Spots. *Academy of Management Perspectives* 21(4): 21–25.

Brewer, Gene A. 2002. Public Workforce Integration: A Field Essay. Paper presented at the Annual Meeting of the Southern Political Science Association, November 6–9, Savannah, GA.

———. 2006. All Measures of Performance Are Subjective: More Evidence on U.S. Federal Agencies. In *Public Service Performance*, edited by George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard A. Walker, 35–54. Cambridge: Cambridge University Press.

Bunderson, J. Stuart, and Kathleen M. Sutcliffe. 2002. Comparing Alternative Conceptualizations of Functional Diversity in Management Teams: Process and Performance Effects. *Academy of Management Journal* 45(5): 875–93.

Byrne, Donn. 1971. *The Attraction Paradigm*. New York: Academic Press.

Chatman, Jennifer A., and Francis J. Flynn. 2001. The Influence of Demographic Composition on the Emergence and Consequences of Cooperative Norms in Groups. *Academy of Management Journal* 44(5): 956–74.

Chatman, Jennifer A., and Karen A. Jehn. 1994. Assessing the Relationship between Industry Characteristics and Organizational Culture: How Different Can You Be? *Academy of Management Journal* 37(3): 522–53.

Chatman, Jennifer A., Jeffrey T. Polzer, Sigal G. Barsade, and Margaret A. Neale. 1998. Being Different yet Feeling Similar: The Influence of Demographic Composition and Organizational Culture on Work Processes and Outcomes. *Administrative Science Quarterly* 43(4): 749–80.

Cohen, Jacob. 1978. Partialed Products Are Interactions; Partialed Powers Are Curve Components. *Psychological Bulletin* 85(4): 858–66.

Cohen, Jacob, and Patricia Cohen. 1983. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*. Hillsdale, NJ: Lawrence Erlbaum.

Cornwell, Christopher, and J. Edward Kellough. 1994. Women and Minorities in Federal Agencies: Examining New Evidence from Panel Data. *Public Administration Review* 54(3): 265–70.

Cox, Taylor, Jr. 1993. *Cultural Diversity in Organizations: Theory, Research, and Practice*. San Francisco: Berrett-Koehler.

Cox, Taylor, Jr., and Stacy Blake. 1991. Managing Cultural Diversity: Implications for Organizational Competitiveness. *Academy of Management Executive* 5(3): 45–56.

Cox, T. J., Sharon A. Lobel, and Poppy L. McLeod. 1991. Effects of Ethnic and Group Cultural Differences on Cooperative and Competitive Behavior on a Group Task. *Academy of Management Journal* 34(4): 827–47.

De Dreu, Carsten K., and Laurie R. Weingart. 2003. Task versus Relationship Conflict, Team Performance, Team Member Satisfaction: A Meta-Analysis. *Journal of Applied Psychology* 88(4): 741–49.

Dutton, Jane E., and Robert B. Duncan. 1987. The Criteria of Momentum for Change through the Process of Strategic Issue Diagnosis. *Strategic Management Journal* 8(3): 279–96.

Ely, Robin J. 2004. A Field Study of Group Diversity, Participation in Diversity Education Programs, and Performance. *Journal of Organizational Behavior* 25(6): 755–80.

Foldy, Erica Gabrielle. 2004. Learning from Diversity: A Theoretical Exploration. *Public Administration Review* 64(5): 529–38.

Friedrich, Robert J. 1982. In Defense of Multiple Terms in Multiple Regression Equations. *American Journal of Political Science* 26(4): 797–833.

Garson, David G. 1998. http://faculty.chass.ncsu.edu/garson/PA765/regress.htm.

Gladstein, Deborah L. 1984. A Model of Task Group Effectiveness. *Administrative Science Quarterly* 29(4): 499–517.

Greenhaus, Jeffrey H., Saroj Parasuraman, and Wayne M. Wormley. 1990. Effects of Race on Organizational Experiences, Job Performance Evaluations, and Career Outcomes. *Academy of Management Journal* 33(1): 64–86.

Hambrick, Donald E., and Phyllis A. Mason. 1982. Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review* 9(2): 193–206.

Harrison, David A., Kenneth H. Price, Joanne H. Gavin, and Anna T. Florey. 2002. Time, Teams, and Task Performance: Changing Effects of Surface- and Deep-Level Diversity on Group Functioning. *Academy of Management Journal* 45(5): 1029–45.

Ibarra, Herminia. 1993. Personal Networks of Women and Minorities in Management. *Academy of Management Review* 18(1): 56–87.

Jackson, Susan E., Aparna Joshi, and Niclas L. Erhardt. 2003. Recent Research on Team and Organizational Diversity: SWOT Analysis and Implications. *Journal of Management* 29(6): 801–30.

Jehn, Karen A. 1995. A Multimethod Examination of the Benefits and Detriments of Intragroup Conflict. *Administrative Science Quarterly* 40(2): 256–82.

Jehn, Karen A., and Katerina Bezrukova. 2004. A Field Study of Group Diversity, Workgroup Context, and Performance. *Journal of Organizational Behavior* 25(6): 703–29.

Jehn, Karen A., and Elizabeth A. Mannix. 2001. The Dynamic Nature of Conflict: A Longitudinal Study of Intragroup Conflict and Group Performance. *Academy of Management Journal* 44(2): 238–51.

Jehn, Karen A., Gregory B. Northcraft, and Margaret A. Neale. 1999. Why Difference Make a Difference: A Field Study of Diversity, Conflict, and Performance in Workgroups. *Administrative Science Quarterly* 44(4): 741–63.

Kalev, Alexandra, Frank Dobbin, and Erin Kelly. 2006. Best Practices or Best Guesses? Assessing the Efficacy of Corporate Affirmative Action and Diversity Policies. *Academy of Management Perspectives* 71(4): 589–617.

Kanter, Rosabeth M. 1979. Power Failure in Management Circuit. *Harvard Business Review* 57(4): 65–75.

Katz, Ralph. 1982. The Effects of Group Longevity on Project Communication and Performance. *Administrative Science Quarterly* 27(1): 81–104.

Kellough, J. Edward. 1990. Integration in the Public Workplace: Determinants of Minority and Female Employment in Federal Agencies. *Public Administration Review* 50(5): 557–66.

Klein, Katherine J., and David A. Harrison. 2007. On the Diversity of Diversity: Tidy Logic, Messier Realities. *Academy of Management Perspectives* 21(4): 26–33.

Kochan, Thomas, Katerina Bezrukova, Robin Ely, Susan Jackson, Aparna Joshi, Karen Jehn, Jonathan Leonard, et al. 2003. The Effects of Diversity on Business Performance: Report of the Diversity Research Network. *Human Resource Management* 42(1): 3–21.

Kozlowski, Steve W. J., and Bradford S. Bell. 2003. Work Groups and Teams in Organizations. In *Handbook of Psychology*, vol. 12, *Industrial and Organizational Psychology*, edited by Walter C. Borman, Daniel R. Illgen, and Richard J. Klimoski, 333–75. New York: Wiley.

Kramer, Roderick M. 1991. Intergroup Relations and Organization Dilemmas: The Role of Categorization Processes. *Research in Organizational Behavior* 13: 191–228.

Krislov, Samuel, and David H. Rosenbloom. 1981. *Representative Bureaucracy and the American Political System*. New York: Praeger.

Lawrence, Barbara S. 1988. New Wrinkles in a Theory of Age: Demography, Norms, and Performance Ratings. *Academy of Management Journal* 31(2): 309–37.

Marks, Michelle A., John E. Mathieu, and Stephen J. Zaccaro. 2001. A Temporally Based Framework and Taxonomy of Team Processes. *Academy of Management Review* 26(3): 356–76.

McLeod, Poppy L., and Stephen Lobel. 1992. The Effects of Ethnic Diversity on Idea Generation in Small Groups. Paper presented at the Annual Meeting of the Academy of Management, Las Vegas, NV.

Miller, Vincent P., and John M. Quigley. 1990. Segregation by Racial and Demographic Group: Evidence from the San Francisco Bay Area. *Urban Studies* 27(1): 3–21.

Milliken, Frances J., and Luis L. Martins. 1996. Searching for Common Threads: Understanding the Multiple Effects of Diversity in Organizational Groups. *Academy of Management Review* 21(2): 402–34.

Mohammed, Susan, and Linda C. Angell. 2004. Surface- and Deep-Level Diversity in Workgroups: Examining the Moderating Effects of Team Orientation and Team Process on Relationship Conflict. *Journal of Organizational Behavior* 25(8): 1015–39.

O'Reilly, Charles A., III, David F. Caldwell, and William P. Barnett. 1989. Work Group Demography, Social Integration, and Turnover. *Administrative Science Quarterly* 34(1): 21–37.

O'Reilly, Charles A., III, Katherine Y. Williams, and Sigal G. Barsade. 1997. Group Demography and Innovation: Does Diversity Help? In *Research in the Management of Groups and Teams,* vol. 1, edited by Elizabeth A. Mannix and Margaret A. Neale, 183–207. Greenwich, CT: JAI Press.

Ospina, Sonia. 2001. Managing Diversity in the Civil Service: A Conceptual Framework for Public Organizations. In *Managing Diversity in the Civil Service,* 11–29. Amsterdam: IOS Press.

Page, Scott. 2007. Making the Difference: Applying a Logic of Diversity. *Academy of Management Perspectives* 21(4): 6–20.

Pelled, Lisa Hope, Kathleen M. Eisenhardt, and Katherine R. Xin. 1999. Exploring the Black Box: An Analysis of Work Group Diversity, Conflict, and Performance. *Administrative Science Quarterly* 44(1): 1–28.

Pettigrew, Thomas F., and Joanne Martin. 1989. Organizational Inclusion of Minority Groups: A Social Psychological Analysis. In *Ethnic Minorities: Social Psychological Perspectives,* edited by Jan Pieter Van Oudenhoven and Tineke M. Willemsen, 169–200. Berwyn, PA: Swets North America.

Pfeffer, Jeffrey. 1983. Organizational Demography. In *Research in Organizational Behavior,* vol. 5, edited by L. L. Cummings and Barry M. Staw, 299–357. Greenwich, CT: JAI Press.

Pielou, E. C. 1977. *Mathematical Ecology.* New York: Wiley.

Pitts, David W. 2005. Diversity, Representation, and Performance: Evidence about Race and Ethnicity in Public Organizations. *Journal of Public Administration Research and Theory* 15(4): 615–31.

Reardon, S. F. 1998. Methods of Measuring Diversity and Segregation in Multi-Group Populations: With Examples Using Racial School Enrollment Data. Unpublished draft, supported by the Spencer Foundation Small Grants Program.

Reichers, Arnon E., and Benjamin Schneider. 1990. Climate and Culture: an Evolution of Constructs. In *Organizational Climate and Culture,* edited by Benjamin Schneider, 5–39. San Francisco: Jossey-Bass.

Riccucci, Norma M. 2002. *Managing Diversity in Public Sector Workforces.* Boulder, CO: Westview Press.

Richard, Orlando. 2000. Racial Diversity, Business Strategy, and Firm Performance: A Resource-Based View. *Academy of Management Journal* 43(2): 164–77.

Richard, Orlando, and Nancy Brown Johnson. 2001. Understanding the Impact of Human Resource Diversity Practices on Firm Performance. *Journal of Management* 13(2): 177–95.

Sackett, Paul R., and Cathy L. DuBois. 1991. Rater–Ratee Race Effects on Performance Evaluation: Challenging Meta-Analytic Conclusion. *Journal of Applied Psychology* 76(6): 873–77.

Schneider, Benjamin. 1987. The People Make the Place. *Personnel Psychology* 40(3): 437–53.

Schneider, Sherry K., and Gregory B. Northcraft. 1999. Three Dilemmas of Workplace Diversity in Organizations: A Social Identity Perspective. *Human Relations* 52(11): 1445–67.

Simons, Tony L., and Randall S. Peterson. 2000. Task Conflict and Relationship Conflict in Top Management Teams: The Pivotal Role of Intragroup Trust. *Journal of Applied Psychology* 85(1): 102–11.

Smith, Kent W., and M. S. Sasaki. 1979. Decreasing Multicollinearity: A Method for Models with Multiplicative Functions. *Sociological Methods and Research* 8(1): 35–56.

Tajfel, Henri, and J. C. Turner. 1985. The Social Identity Theory of Intergroup Behavior. In *The Psychology of Intergroup Relations,* edited by Stephen Worchel and William G. Austin, 7–24. Chicago: Nelson-Hall.

Thomas, David A., and Robin J. Ely. 1996. Making Differences Matter: A New Paradigm for Managing Diversity. *Harvard Business Review* 74(5): 79–90.

———. 2001. Cultural Diversity at Work: The Effects of Diversity Perspectives on Work Group Processes and Outcomes. *Administrative Science Quarterly* 46(2): 229–73.

Triandis, Harry C., and Eunkook M. Suh. 2002. Cultural Influences on Personality. *Annual Review of Psychology* 53: 133–60.

Tsui, Anne S., Terri D. Egan, and Charles A. O'Reilly III. 1992. Being Different: Relational Demography and Organizational Attachment. *Administrative Science Quarterly* 37(4): 549–79.

Tsui, Anne S., Terri D. Egan, and Katherine R. Xin. 1995. Diversity in Organizations: Lessons from Demography Research. In *Diversity in Organizations: New Perspectives from a Changing Workplace,* edited by Martin M. Chemers, Stuart Okampo, and Mark A. Constanzo, 191–219. Thousand Oaks, CA: Sage Publications.

Turner, John C. 1987. *Rediscovering the Social Group: A Self-Categorization Theory.* Oxford, UK: Blackwell.

U.S. Equal Employment Opportunity Commission (EEOC). 2005. 29 C.F.R. Part 1614. http://edocket.access.gpo.gov/2006/E6-12432.htm [accessed September 27, 2009].

U.S. Office of Personnel Management (OPM). 2006. FedScope: Federal Human Resources Data. http://www.fedscope.opm.gov/datadefn/acpdf.asp [accessed September 27, 2009].

Watson, Warren E., Kamales Kumar, and Larry K. Michaelsen. 1993. Cultural Diversity's Impact on Interaction Process and Performance: Comparing Homogeneous and Diverse Task Groups. *Academy of Management Journal* 36(3): 590–602.

Wiersema, Margarethe F., and Karen A. Bantel. 1992. Top Management Team Demography and Corporate Strategic Change. *Academy of Management Journal* 35(1): 91–121.

Williams, Katherine Y., and Charles A. O'Reilly III. 1998. Demography and Diversity in Organizations: A Review of 40 Years of Research. *Research in Organizational Behavior* 20: 77–140.

Wise, Lois Recascino, and Mary Tschirhart. 2000. Examining Empirical Evidence on Diversity Effects: How Useful Is Diversity Research for Public-Sector Managers? *Public Administration Review* 60(5): 386–94.

Wright, Gerald C. 1976. Linear Models for Evaluating Conditional Relationships. *American Journal of Political Science* 20(2): 349–73.