VIVA LA DIFFÉRÉNCE? THE IMPACT OF DIVERSITY
ON THE JOB SATISFACTION OF PUBLIC EMPLOYEES
AND PERFORMANCE OF PUBLIC AGENCIES

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Abstract

This paper addresses previous shortcomings in diversity management scholarship by testing an expanded diversity model borrowed from the work of economist Scott Page. Page’s model assumes diversity can be measured as both a mean and a variance, and that it consists of cognitive, identity, and preference characteristics. We link his conceptualization of diversity to both individual-level outcomes and organizational productivity. Results indicate that identity diversity reduces agency productivity and increases turnover intentions, while cognitive diversity has small and mixed effects. Findings also suggest that individual employee discretion as well as overall discretion in the agency shape outcomes in more important ways than diversity, and that the impact of agency size is contingent on overall discretion in the agency. We conclude with a discussion on the theoretical ramifications of our findings.
Much has been written on the importance of representative bureaucracy and workforce diversity in public organizations since Kingsley’s (1944) early work on representation in the British civil service. Research on representative bureaucracy generally emphasizes the value of having a demographic profile in public organizations that mirrors society because of its possible implications for policy implementation and service delivery. Scholarship on workforce diversity assumes that diversity, when it is well managed, results in increased organizational performance by introducing new ideas and perspectives often useful in solving complex organizational problems (Pitts and Wise 2010; Page, 2007; Riccucci 2002; Selden 1997). Yet, despite its apparent relevance, research on representative bureaucracy and workforce diversity has been relatively narrow in scope, leading some to conclude this scholarship frequently fails to offer practitioners meaningful insight useful in managing workforce diversity effectively (see e.g., Pitts and Wise 2010; Wise and Tschirhart 2000).

Indeed, a recent critique offered by Pitts and Wise (2010) suggests scholarship on representative bureaucracy and workforce diversity has been limited by its tendency to: 1) consider diversity primarily in terms of sex/gender and race/ethnicity, 2) overlook whether public organizations are truly heterogeneous by treating diversity as a percentage (or mean) in empirical tests, and 3) neglect connecting workforce diversity to important individual outcomes and organizational performance. We seek to address these shortcomings by drawing on the work of economist Scott Page (2007). More specifically, using Page’s approach, we offer an expanded conceptualization of diversity—one that views diversity as having identity, preference, and cognitive characteristics. Additionally, we treat diversity as both a mean and a variance, and

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1 Pitts and Wise suggest treatments of diversity involving religion, age, language, sexual orientation, and diversity within local government jurisdictions, are far less common in existing research. Given these tendencies, they urge caution in drawing generalizations across dimensions of diversity. We share this critique, but go even further in arguing that other forms of diversity can be identified and are relevant to individual and organizational outcomes.
connect our conceptualization of diversity to individual and organizational outcomes. We also incorporate the work of Krause and Douglas (2011), who argue the impact of diversity is likely to be contingent on organizational size and structure. The next section of this paper begins with a review of Page’s theory and its relationship to diversity in public organizations as well as individual and organizational performance generally. This is followed by a discussion of our model, results, and findings. We conclude by reviewing the implications of our findings for both theory and practice.

Background

Over the past several decades, our understanding of representative bureaucracy and workforce diversity has increased substantially. In fact, scholars interested in representative bureaucracy have demonstrated: 1) passive and active representation shape resource allocation, policy preferences and implementation, and service delivery in meaningful ways, 2) passive representation frequently leads to active representation, and 3) passive representation has important symbolic meaning for both employees and citizens (see e.g., Smith and Fernandez 2010; Theobald and Haider-Markel 2009; Bradbury and Kellough 2008; Selden 1997; Hindera 1993). When coupled with the changing demographic profile of many public organizations, findings such as these have prompted growing interest in managing workforce diversity in ways that will diminish discriminatory practices, ameliorate the interpersonal tensions and conflict often associated with diversity, and allow organizations to capitalize on the strengths and benefits of diversity (see e.g., Riccucci 2002; Pitts and Wise 2010; Choi and Rainey 2010; Choi 2009, 2010; Ivancevich and Gilbert 2000; Naff and Crum 2003). To reach this end, public organizations have increasingly sought to develop and link internal organizational strategies and human resource management systems in ways that foster and draw more fully on the knowledge,
skills, and abilities of a diverse workforce. Ultimately, the hope is, by managing diversity well, organizations will have satisfied, high-performing employees capable of producing performance gains for their organizations.

Nevertheless, for those practitioners looking to tap anticipated performance benefits, studies on diversity management have arguably translated into “little usable knowledge” (Pitts and Wise 2010, p. 44). There are at least three reasons for this tendency. First and perhaps foremost, scholarship on representative bureaucracy and diversity management has been relatively narrow in scope, considering diversity primarily along the lines of sex and gender and race and ethnicity (see e.g., Pitts and Wise 2010; Wise and Tschirhart 2000). For all practical purposes, we have learned a great deal from this research. Female administrators, for example, are more likely to pursue women’s interests when greater numbers of women can be found within an organization’s leadership ranks (e.g., Dolan 2000; see also, Saidel and Loscocco 2005; Meier and Nicholson-Crotty 2006; Brudney, Herbert, and Wright 2000). Similarly, results consistently indicate racial and ethnic diversity translates into different policy decisions and service delivery outcomes (e.g., Choi 2010; Brudney et al. 2000; Selden 1997; Hindera 1993; Meier and Stewart 1992). Yet, as Pitts and Wise point (2010) out, research has generally failed to consider other forms of diversity that might matter, including, for instance, age, language, sexual orientation, and religious diversity. In doing so, researchers conflate different dimensions of diversity, assuming each matters equally in different organizational settings. The effect of this trend is to dampen the overall utility of diversity management research.

Second, although along somewhat related lines, diversity management scholars have generally failed to determine whether public organizations are truly and meaningfully heterogeneous (Pitts and Wise 2010). This tendency traces, in part, from methodological
difficulties and legitimate arguments about how diversity should be measured in the first place.\(^2\)

As a consequence though, research tends to focus on the average or percentage various groups realize within an organization (see Pitts and Wise 2010, p. 54). Unfortunately, examining diversity as an average or percentage tells us little about whether “diversity exists in different parts of the organization” (p. 54). In doing so, the true effects of diversity are likely to be either muted or exaggerated. Consequently, it becomes difficult to draw accurate generalizations about diversity and individual and organizational performance.

Finally, and surprisingly, diversity management scholarship generally fails to connect diversity to performance (see e.g., Pitts and Wise 2010). At best, studies consider the relationship between diversity and antecedents to performance, such as job satisfaction and work group cohesion (Pitts and Wise 2010; Choi and Rainey 2010; Choi 2009; Pitts 2006, 2009). Hereto, we have learned much from the literature. For instance, evidence suggests the benefits of representative bureaucracy and diversity management are, at least in part, contingent upon whether workers have sufficient resources and discretion (Sowa and Selden 2003; Meier and Bohle 2001; Ivancevich and Gilbert 2000). Yet, many of the performance-related benefits presumed attendant to diversity remain largely speculative. In fact, there exists conflicting evidence about whether diversity management strategies themselves lead to equitable work environments for employees (see e.g., Naff and Kellough 2003). Moreover, little has been done to thoroughly examine the role conflict and communication play in shaping diversity outcomes.

In this sense, we actually know quite little about whether and how diversity promotes (or constrains) individual and organizational performance.

One possible solution to the shortcomings found in previous diversity management research rests in the work of Scott Page (2007). Page (2007) adds to the diversity discussion by

\(^{2}\) For a recent discussion on measuring diversity, see Choi (2010).
broadening the concept of representation in two ways. First, he conceptualizes representation as not only a mean (e.g., the percent black, white, Hispanic; the percent liberal, moderate, conservative) but also as variance. While variance is entirely determined by the mean for dichotomous variables (gender), mean and variance are not identical for any other type of variable, or for combinations of dichotomous variables. Thus, an organization that is relatively homogeneous by gender (e.g., 80% male) could be heterogeneous with respect to race (e.g., 25% each among whites, African Americans, Hispanics, and Asians) and political preferences (e.g., 33% each among conservatives, moderates, and liberals). For Page, the property of variance becomes diversity.

Page also characterizes diversity, or representation, as having three specific properties: identity, preference, and cognitive properties. Identity properties, which include things like gender and race, often affect how people think and the choices they make. The preference characteristic refers to value-based preferences, as opposed to instrumental preferences or beliefs about what works (Page 2007, p. 255). Value-based preferences include ideological values, such as one’s public service motives; preferences about values (i.e., what is important) clearly affect choices and actions. Alternatively, cognitive representation refers to the kind of intellectual toolboxes we use to solve difficult problems. For example, economists use one set of tools, and lawyers another, and engineers still another. People who grow up in large cities or work for many years in large firms have different toolboxes than people who grow up on farms or who were self-employed for many years. Experienced auto mechanics bring a different toolbox to figuring out why a car fails to accelerate the way it should than one with no experience. For this reason, Page also asserts experience and training result in different cognitive maps. Page’s argument is that, when problems are difficult and there are a large number of problem solvers
(i.e., who can interact directly with each other), “diverse perspectives and tools enable collections of people to find more and better solutions [to difficult problems] and contribute to overall productivity” (Page 2007, p. 13). He further argues that “diverse fundamental preferences frustrate the process of making choices” (p. 13). Cognitive diversity includes diversity of instrumental preferences: some people think A works best to reduce congestion, while others think B is better. They may or may not agree on the goal (e.g., reduce congestion).

Using agent-based and formal mathematical models, Page proves two important theorems that apply to the collective ability of [large] groups to solve [difficult] problems. First, cognitive diversity trumps homogeneity. That is, compared to homogeneity, groups with cognitive diversity find faster and better paths to solving difficult problems. Diversity allows for the introduction of multiple problem solvers with different toolboxes. Homogeneity implies one problem solver or, alternatively, many problem solvers with the same tools. Homogeneous groups share the same local optimum for solving a particular problem (Page 2007, p. 157). In contrast, individuals in cognitively diverse groups all have different sets of local optima, making it more likely there is some intersection of local optima that beats (i.e., is better than) other local optima and will consequently be the dominant choice.\(^3\) If true, the diverse group is likely to outperform the homogenous group.

Second, Page shows that cognitive diversity trumps ability. That is, variance across cognitive toolboxes results in better performance than one really good toolbox. For Page, again, variance is more important than means. In this case, even lower than average ability among a diverse group of problem solvers generates better solutions than a homogeneous set of talented problem solvers. This prediction requires certain conditions. First, the problem has to be

\(^3\) Basically, Page argues, when a group is large and diverse enough, dominant intersections will have a cascading effect. In this case, a dominant intersection will improve on another, and then a new dominant intersection will be superior to the second one. This process continues until there is no better solution.
difficult. In other words, the solution cannot be obvious, even to an expert. Second, all the problem solvers are smart; they can identify whether \( x > y \) or \( x = y \). Third, diversity is important. There must be someone in the group who can improve on (even by a little) the current solution. Finally, the cognitively diverse group has to be large. It is unlikely a small group of problem solvers will be diverse enough to offer solutions that trump the current solution.\(^4\)

Ultimately, Page’s theorems represent probabilities rather than certainties. Moreover, several assumptions are built into this model. For instance, Page assumes all players have a voice and can potentially “speak” to each other (i.e., there is no hierarchy). He also assumes players are independent, such that A’s statement that \( x > y \) does not pressure B and C to say the same thing (p. 177). After all, B could really think that \( z > y \), and C could then point out that \( z > x \). But, if all of the players follow A (e.g., because of hierarchy or group-think), then the solution set stops at \( x > y \), and there will be no further improvement.

Page also notes the problem of aggregating diverse fundamental, ideological preferences: standard results from many scholars of politics show that it is generally not possible.\(^5\) However, he argues preference diversity may drive cognitive diversity. In other words, people with different fundamental preferences (e.g., for a small government vs. a fair government) may lean towards different toolboxes (e.g., economics vs. law). To the extent that this occurs, it is possible that preference diversity could [indirectly] produce superior outcomes. In fact, Page summarizes the empirical evidence supporting this claim, arguing it is consistent with the following three observations: 1) “cognitively diverse societies, cities and teams perform better than more homogenous ones”; 2) “fundamental preference diversity creates problems…(…people don’t get

\(^4\) Along these lines, Page points to cities, firms, universities, and other large organizations as pools sufficiently large enough to allow for cognitive diversity (p. 161).

\(^5\) In the case of politics, voting cycles mean there is no equilibrium. If there is equilibrium, the dominant choice is usually not optimal.
along); and 3) the interaction of cognitive with fundamental preference diversity “locates better outcomes and produces more conflict” (p. 299).

For Page, the empirical evidence clearly indicates groups can solve complex problems better than individuals, diverse management teams outperform more homogeneous ones, and large, diverse cities grow faster than small, homogenous cities. However, when both identity and cognitive diversity are present, findings are mixed. Evidence generally suggests the net effect will be positive only if identity diversity adds more to cognitive diversity than it subtracts from the ability to get along and communicate. In this case, a positive outcome is most likely when there is a common goal and low preference diversity (p. 327). More importantly, Page recognizes that diversity (especially identity and preference diversity) can be poorly managed.

It is also worth mentioning that Page’s model, and the evidence he relies on to support it, assumes the importance of [large] groups of individuals who can potentially communicate with one another. Some of the best examples include electronic prediction markets (e.g., stock markets), cities, universities, randomized problem solving experiments, and certain firms. However, for Page, the sorts of boundaries often attendant to hierarchy make the kind of interaction he describes more costly. Thus, the benefits of diversity are likely to be less in hierarchical organizations, including many firms and public agencies.

On its face, this claim appears reasonable, and, indeed, there is extensive literature pointing to the inherent difficulties (e.g., group-think, free riders, conflict and negotiation, the management of agreement) associated with decision-making and communication in diverse organizations (see e.g., Daft 2008; Harvey 1988; Starks 2006; Schermerhorn, Hunt, and Osborn 2003). Scholars have also long railed against the many seemingly innate dysfunctions of hierarchies and bureaucracies, arguing they are likely to be impersonal and unresponsive,
inefficient, resistant to change and innovation, hampered by layers of authority and red tape, and subject to considerable goal displacement (e.g., Merton et al. 1952; Dahl and Lindblom 1953; Lynn 1981; DiMaggio and Powell 1983; Osborne and Gaebler 1992; Gore 1993). Interestingly, these dysfunctions appear to be compounded in public organizations due primarily to the political context within which these organizations operate (Wilson 1989; Lynn 1981; Warwick, Meade, and Reed 1975). In other words, because public organizations lack market-based controls and pressures, bureaucratic dysfunctions frequently reflect intensified efforts to secure the control, coordination, and cooperation of employees (see e.g., Downs 1967). Unfortunately, efforts to secure the cooperation of employees can, instead, promote further bureaucratic dysfunctions—not the least of which include communication and information distortions and authority leakage throughout the hierarchy (Downs 1967; Tullock 1965). In this sense, there is support for Page’s (2007) overarching argument concerning the possible limitations of hierarchy.

Nevertheless, there is also considerable evidence that hierarchies are a highly efficient and effective mechanism for coordinating human action and behavior. In fact, several public administration scholars have credited public organizations with being both innovative and responsible for countless public sector advances (e.g., Rainey and Steinbauer 1999; Brewer and Selden 2000; Goodsell 1983; Wilson 1989; Wolf 1993). Others have argued that hierarchies and bureaucracies often produce better decisions, comparatively, than markets; here, the general assumption is that the transaction costs associated with uncertainty are frequently better managed by hierarchies (see e.g., Williamson 1975; Chandler 1977; Simon 2000; Frederickson and Stazyk 2010). In part, this argument reflects Weber’s (1952) original assertion that bureaucracy is technically superior to all other forms of organizing due to its ability to secure the coordination and cooperation of diverse groups of individuals simultaneously; absent hierarchy, it may be
difficult to find large groups of individuals capable of communicating with one another and working toward a common purpose.\(^6\) However, this argument also reflects an awareness that many of the key characteristics identified by Weber as being fundamental to bureaucracies (e.g., written rules, occupation of position based on training and professional qualification) promote organizational stability and enhance decision-making through, for example, a reliance on technical expertise and a written history (often in the form of organizational rules) that reduce the need to revisit decisions repeatedly and lower the transaction costs associated with uncertainty. In this sense, when confronting highly complex problems, it is possible the benefits of diversity may be contingent on the existence of organizational hierarchies.

Interestingly, there are at least three other reasons to assume diversity and hierarchy may be linked when tackling highly complex problems. First, well designed organizational hierarchies specify clear channels of communication and accountability, making it easier for employees to share information with appropriate organizational members. As such, it is possible organizational hierarchies actually enhance communication in the types of large group situations Page (2007) considers. Second, there is also evidence hierarchy and centralization may help clarify individual roles and organizational goals for employees—particularly in the presence of low political support and environmental uncertainty (see e.g., Stazyk and Goerdel 2010; Stazyk, Pandey, and Wright 2011). Here, hierarchy serves to connect employees to an organization’s broader mission, thereby allowing a diverse group of individuals to work toward a common, shared purpose. It may be difficult for diverse groups to reach meaningful and lasting consensus absent the degree of coordination inherent in hierarchies; in other words, institutionalized forms of coordination may allow large groups to more fully capitalize on the benefits of diversity.

\(^6\) But, see Elinor Ostrom’s (1990) work for an alternate perspective on this point.
Finally, recent work by Portillo and DeHart-Davis (2009) indicates that hierarchy and organizational rules provide individuals typically disenfranchised in organizations—meaning primarily women and minorities—a source of formal authority (or a voice) upon which to draw when confronting otherwise hostile work environments.\(^7\) Put in the context of Page’s (2007) model, there are few checks on discrimination in many of the large group situations Page considers; hierarchy and formal authority may protect diversity by linking it directly to authority in position rather than in person. When taken together, there are seemingly several different grounds for assuming Page’s (2007) model holds true even in the face of organizational hierarchies and within public agencies.

A more nuanced understanding of the relationship between diversity and hierarchy can be found in recent work by Krause and Douglas (2011). Essentially, Krause and Douglas argue the advantages of diversity are contingent on organizational size (see also, Page 2007; Surowiecki 2005). Smaller groups, which tend to have little hierarchy, are more likely to benefit from diversity and heterogeneous representation, but are less likely to be diverse enough to make good decisions. Conversely, large groups, especially decentralized (relatively flat) hierarchies, have greater diversity, but are more likely to suffer from coordination problems (e.g., the free rider problem) that also limit the likelihood of reaching good decisions. Krause and Douglas suggest the challenge in large group settings is to “limit diverse perspectives or interests” through formal mechanisms, incentives, and rules; small groups, on the other hand, must “ameliorate the lack of rich information content by [more fully] exploiting diverse perspectives or interests” (p. 25). In this sense, decision-making is enhanced when the advantages of diversity and hierarchy are harnessed in ways that strike an appropriate balance between organizational size and diversity.

\(^7\) In this sense, Portillo and DeHart-Davis provide evidence—perhaps unintentionally—supporting Weber’s arguments about the importance of authority attaching to an organizational position rather than a particular person.
Given these arguments, we believe the costs and benefits of hierarchy vis-à-vis diversity are, at the very least, debatable. Furthermore, because representative bureaucracy scholarship clearly indicates diverse organizations produce different results that, at least in theory, more closely approximate the needs and expectations of all citizens, we assume public organizations and hierarchies are important institutional mechanisms worthy of consideration and likely to be staffed by workers with diverse cognitive, identity, and preference characteristics. Based on these assumptions, we propose and test a model incorporating cognitive, identity, and preference diversity in the next section of our paper. This model, which represents a broader take on diversity, along with organizational size and hierarchy, examines whether greater diversity has important implications for individual behaviors and organizational performance.

**Research Design, Data and Measurement**

We first test whether cognitive, identity, and preference diversity affect individual and organizational outcomes using data from the 2005 survey of federal employees carried out by the Merit Systems Protection Board (MSPB). The survey was mailed to a randomly selected sample of 74,000 employees in 24 Federal agencies, and produced a response rate of 50%. The MSPB reports that the demographic characteristics of respondents did not differ significantly from the characteristics of the survey population (van Rijn 2005). We next examine whether the impact of diversity is contingent on hierarchy, once organizational size accounted for.

We measure job performance using responses to a question about the performance of the respondent’s work agency. We assume that responses to the term “agency” refer not to the cabinet level department, but rather to the agency within the department. Agencies within cabinet-level departments have distinct missions. For example, while DOD has a general mission, the mission of the Army is quite different than that of the Army Corps of Engineers.
Similarly, the Interior Department has a general mission, but the Bureau of Indian Affairs has a mission that is quite different from that of the National Park Service. There are 57 agencies. Agencies include Food Safety and Inspection Service, Forest Service, and Natural Resources Conservation Service (NRCS) within USDA (and “other”); within DOD, the Army, the US Army Corps of Engineers, the AirForce, the Marines, the Navy, DCMA, DFAS, and DLA (and “other”) are all listed as agencies.\(^8\)

The responses are an index that sums the responses to two questions. The first question asks respondents how much they agree with the statement: “My agency produces high quality products and services.” Responses range from 1-5, where “5” represents the highest level of agreement. The second question asks respondents how much they agree with the statement: “My agency is successful in accomplishing its mission.” Responses also range from 1 to 5.\(^9\) The correlation between the two variables is .66, indicating that they probably measure a common dimension. The summative index of the two indicators ranges from 2 to 10. The modal (and the mean) response is 8; 29% of responses are less than that, while 35% are above it. The standard deviation is 1.6. Among the agencies that report the highest productivity scores (8.5 < score < 9) are the Secret Service in DHS, the Executive Office of the U.S. Attorney in DOJ, and the Comptroller of the Currency in Department of Treasury. Nearly as high, with scores of 8.3-8.4 are the government science and technology agencies: NASA, NIST, and NOAA. The two agencies with the lowest scores are Immigration and Customs Enforcement (6.5) and FEMA (7.11) in DHS.

Subjective ratings of productivity have the advantage that they are comparable across diverse tasks, but they have many disadvantages. The most obvious is that people inflate not only

\(^8\) A complete listing may be found in the Appendix to this paper.

\(^9\) The coding for both responses has been reversed from that of the original survey.
their own performance, but also that of their agency, and the degree of inflation is not likely to be random. Construct validity requires that variables respond as they are expected to, especially when the theory is not contested. In a competitive market economy, educated individuals earn more because they are more productive, and market sorting means that productive workers are likely to be matched with more productive work units (Mincer 1974). Even though government employment is not profit oriented, it must offer a compensation package that represents what employees forego in the private market. Thus, sorting in competitive labor markets means that, even in the public sector, we expect that more educated (\textit{i.e.}, more productive) workers will be matched with more productive agencies, and they will receive higher salaries. Similarly, competitive human capital markets also value work experience, especially in the internal labor market (Mincer 1974). It follows that, if educated, experienced and well-paid federal employees report their agency is more productive than that reported by lower paid, less educated and experienced employees, it suggests that the measure of productivity is valid because it responds as it is expected to by an accepted model of employment markets. In fact a regression of the individual rating of agency productivity on the average salary in the agency, the average level of education in the agency, and the average years of experience working at the agency indicates a positive and significant (partial) regression coefficient for all three variables, supporting this concept of construct validity (Table not shown.)

The second dependent variable is intent to leave the agency. Assuming that dissatisfied employees are more likely to wish to change jobs, we measure job dissatisfaction with responses to a question about the respondent’s desire to leave the agency. The question asks “How likely is it that you will leave your agency in the next 12 months?” Responses range from “Very likely”
Retirement is one reason to leave an agency; but retirement, in the absence of health problems, is often driven by job dissatisfaction. The mean response for this dependent variable is 2.15, with a standard deviation of 1.43. The agency with the highest mean is TSA (2.82); next highest is the Coast Guard (2.53), also in DHS. Other agencies with scores between 2.4 and 2.5 include FEMA, NIH and DFAS. The agencies with the lowest scores are Natural Resources and Conservation Service (1.75) and NOAA (1.80). The correlation between the two dependent variables in our study is slightly negative: $r = -0.20$.

The key theoretical variables in this study require measures of agency averages and variances for indicators of cognitive and identity characteristics. We use the 57 agencies listed in the appendix as the aggregate workplace.

We measure cognitive characteristics with two sub-agency level variables: the mean and standard deviation of education and years of agency experience. Individual levels of education range from 0 (No degree), 1 (High school or GED or equivalent), 2 (Associates), 3 (Bachelors), 4 (Masters) to 5 (Doctorate or equivalent). The mean individual-level value is just under 3, at 2.8, and the standard deviation is 1.3. Agency means and variances vary also. The agency level education mean is also 2.8, but between-individual education diversity is greater than between-agency diversity, since the standard deviation of means across the 57 sub-agencies is only .34. The agencies with the highest mean levels of education are NIST (in Commerce), with a mean of 3.6, and NASA with a mean of 3.5. The agencies with the lowest mean levels of education are the Defense Logistics Agency (2.2), TSA (2.3), Bureau of Prisons (2.3) and the Marines (2.3). Diversity varies also. The most homogeneous agency with respect to education is NRCS in USDA (variance = .64); the most educationally diverse agency is FSIS, also in USDA (variance = .64).

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10 We grouped “don’t know/can’t judge” responses with the “neither likely nor unlikely group.”
11 We have no direct measure of policy or ideological preferences; we assume that they are largely driven by the cognitive and identity characteristics that we do measure, and by the agency fixed effects.
Years of agency experience is another indicator of a cognitive property. At the individual level, the mean years of agency experience is 16.2 (σ= 9.6). At the agency level, the mean is also 16.2, but the standard deviation is less (σ= 2.4). The range of agency means is from 7.1 years to 21.4 years. The agencies with the highest mean years of employee experience include the Social Security Administration with 21.4 years, followed closely by the IRS with 20.8 years, and the Forest Service and Natural Resources Conservation Service in USDA at 20 years in both. The agencies whose employees have the least years of experience are all in DHS: ICE and FEMA (employees with 11.8 and 12 years of agency experience, respectively), and at the very bottom are the TSA and U.S. Coast Guard, whose employees have 7 years of agency experience. Theoretically, variances within sub-agencies will be important also. The mean of the within-agency standard deviation in years of experience at the agency is 9; the variance in this mean is small (.9), implying that most agencies are similarly homogeneous in terms of the variance in employee experience at the agency. In general, the agencies with the highest mean tend to have the highest variances in employee experience. As examples, the agencies that are the most homogenous with respect to years of employee experience are DFAS and DLA in DOD (agency variance = 62 and 63, respectively); FDIC (s² = 56), TSA (s² = 58) and Coast Guard (s² =57) in DHS; and Bureau of Prisons (s² =53) and DEA (s² =48) in Dept of Justice. The agencies with the most heterogeneity with respect to years of experience are both independent agencies: SSA (s² = 123 years) and OPM (s² = 119 years); just behind is the Veterans Benefits Administration (s² = 117).

Identity diversity is another theoretically important construct. We measure identity as the nexus of gender and race/ethnicity. Specifically, for each agency we record the percent that are
in the following 8 subgroups: Asian male, Asian female, Black male, Black female, Hispanic male, Hispanic female, White male, and White female. The agencies with the highest proportion of white males are Natural Resources Conservation Service in USDA (67%), Army Corps of Engineers (66%), and NOAA (67%). The agencies with the lowest proportion of white males are NIH (16%)\(^{12}\); HUD (26% white males); IRS, SSA, and BIA (28 or 29% white males). We use the Simpson diversity index to measure identity diversity. This is a measure of the absence of subgroup predominance. For example, if white males hold the predominant share of a sub-agency labor force (say the proportion is .9), and the total share of the other groups is .1, then a measure of dominance is the sum of the variance of those shares: .9^2 + .1^2 = .81. If white males held the entire share of slots, then the measure of dominance would be 1. In our case, there are 8 subgroups. If the agency were as diverse as possible, each subgroup would have equal proportions: .125 in each group, and the measure of dominance would be a low as possible: .125 = .125^2*8. We seek to measure diversity, not homogeneity or concentration; consequently we subtract the index from 1: diversity = 1 – \(\sum p_i^2\) , where \(i = 1…8\) subgroups, \(p = \) proportion in each subgroup.\(^{13}\) The mean sub-agency diversity score is .67 with a range from .5 (Natural Resources and Conservation in USDA, with NOAA in Commerce a near tie) to .8 (the Patent and Trade Office in Commerce; HUD is not far behind, with a score of .77).

Page (and others) recognizes that the impact of diversity characteristics is likely to be directly or contingently affected by the structure of the organization. To measure how hierarchical the organization is, we first measure the level of discretion reported by individual employees in each sub-agency; we then use the mean level of discretion in each sub-agency as an

\(^{12}\) We note that the largest subgroup at NIH is white women.

\(^{13}\) The term \(\sum p_i^2\) is the Herfindahl-Hirschman Index of concentration; subtracting this from 1 gives us a common measure of diversity (Hirschman 1964; Blau, Blum, and Schwartz 1982; Gibbs and Martin 1962).
indicator of the sub-agency’s decentralization. The indicator of discretion is a scale that sums the responses to two items. The first item is the degree of agreement (from strongly disagree to strongly agree, or 1-5 respectively) with the statement: “My opinions count at work.” The second is the degree of agreement with the statement: “Creativity and innovation are rewarded.” The possible range is from 2 to 10. The responses to these items are highly related: \( r=0.66 \), suggesting that they both measure the same underlying concept. The individual-level scale mean is 6.75 (s.d.=2), and the observed range is from 2 to 10.\(^{14}\) We measure hierarchy as the sub-agency mean of individual scores. The sub-agency mean is the same as the individual level mean (6.75), but the standard deviation is (predictably) a lot less, at .34. The range of sub-agency scores is from 5.44 (Patent and Trade Office, the most hierarchical, using this measure) to 7.62 (NASA, the least hierarchical).

The impact of diversity may also be contingent on agency size. Larger groups may be “wiser”; or, larger groups may be “lazier” because of free riding or unable to act because of coordination costs. In either case, the size of the agency will directly affect agency performance, either positively or negatively. We measure agency size indirectly. Recall that the sample is a simple random sample of respondents from 24 agencies. It follows that larger agencies will have more respondents in the sample than smaller agencies. Consequently, our indicator of (relative) agency size is the number of respondents from each agency. The mean is 593, ranging from 263 (HUD) to 934 (Contract Management Agency in DOD).

We include several control variables. One is the respondent’s level of education. Educated respondents are both more likely report that their agency is more productive, and they are more likely to leave, because they have more employment opportunities in the private sector. Recall that the agency level (and variance) of education is one of the cognitive diversity

\(^{14}\) The scores for these items are inversions of the original MSPB scale.
properties that we include. Thus it is particularly important to separate individual from aggregate level characteristics in order to estimate the impact of the latter (Recall that the mean level of education in the sample is 2.8, just under the attainment of a BA; s = 1.3.). We also include as control variables an indicator for whether the respondent has supervisory status (=1), and the scale value for the respondent’s level of discretion, to separate it from the impact of the overall sub-agency level of discretion. Similarly, we include as a control the respondent’s years of experience in the agency (mean=16.2, s= 9.6) to separate it from the impact of the sub-agency average years of experience. Further, we also control for the respondents years of experience in the federal government but outside the sub-agency (mean = 3.5, s=6.7), as well as years of experience outside the federal government (mean= 8.4, s = 8.4), since these variables are likely to affect productivity (job experience usually adds to productivity) and job opportunities outside the sub-agency. We also control for 45 sub-agency fixed effects, and report standard errors clustered by sub-agency.15

**Results**

Table 1 reports the results of regressing agency productivity on individual level variables, sub-agency cognitive and identity diversity (and mean) characteristics, and sub-agency hierarchy and size.16 Consider first the properties of cognitive diversity and averages, measured as sub-agency variance and mean experience and education, respectively. Considering experience first, the higher the average years of experience at the sub-agency, the lower the agency productivity (the parameter estimate is -.02, and the t-statistic is -3.49). The beta is not large (-.04), but the parameter estimate implies that, for each additional 10 years of experience, agency performance

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15 The 7 remaining agency fixed effects indicators are collinear with the other theoretically relevant agency-level properties that we include in the estimating equations.

16 Ordered logit produces similar results, but the model fit is considerably worse than the simple regression.
drops by .2 on the 2-10 scale. The variance in years of agency experience also has a negative effect: using a one-sided test, the parameter estimate is not large (beta = -.01), but it is significant at the .05 level. Controlling for the individual’s level of education, higher average levels of education leads to higher agency productivity. The parameter estimate is .13 and the t-statistic is 3.25. The impact is clearly positive, although it is not especially large in absolute or relative (beta = .03) terms. By contrast, higher variance in agency education has a negative effect on agency productivity (parameter estimate = -.03, t-statistic = -2.46); the coefficient is not large in absolute or relative (beta = -.01) terms. Identity diversity also has a clear negative effect on agency productivity: for each one point increase in the diversity scale, agency productivity drops by -1.63 points on the 2-10 productivity scale (t-statistic = -9.58). Substantively, this increase is the maximum possible, and does not exist in our sample. However, a .1 point increase in the diversity scale (which is observed in the sample) reduces agency productivity by nearly .2 point on the 2-10 scale. This is the most important of the diversity properties: beta = -.07. Agency size has no direct effect one way or another on productivity.

Overall, these results imply that the overall relative impact of the 3 properties of agency diversity that we measure (education, experience, and identity diversity) are negative, since the sum of the 3 beta weights is -.09, and each of the individual impacts is clearly negative. The overall relative negative impact of diversity is not entirely counteracted by the positive effect of a high average level of agency education (recall that beta = .03).

With respect to the control variables, additional years of experience at the agency and prior to the federal government lead to (slightly) higher productivity ratings; supervisory status appears to have no significant impact. Higher levels of individual education are associated with slightly lower ratings of agency productivity, given that the agency average is held constant. The
most important finding concerns discretion. While the result may be endogenous, there is a clear positive association between reports of individual discretion and agency productivity. Each unit change on the 2-10 individual discretion scale raises agency productivity by .41 on the 2-10 scale (t-statistic = 67.5). This is substantively large; the beta weight (.52) suggests its relative importance as well. Higher average levels of agency discretion also lead to higher ratings of agency productivity. For each additional point in sub-agency average discretion, the rating of agency productivity increases by .11 on the 2-10 scale (t-statistic= 2.08). The actual range of agency discretion varied by only 2.5 points, so a one-point change is large, implying that the average effect size is not large; nor is the relative effect (beta = .02). Nonetheless, it is clear that, together, both individual and sub-agency discretion have a clear positive association with sub-agency productivity. Structure may matter more than diversity.

The second dependent variable in our study is intent to leave the agency, measured on a 1-5 scale.\textsuperscript{17} Consider first the relation between indicators of sub-agency cognitive diversity and averages (sub-agency variance and mean of experience and education) and individual expression of intent to leave. First of all, the variance of sub-agency education and experience has no impact on individual intent to leave, but the averages are significant and negative. As the average years of experience in a sub-agency increase by 1, the intent to leave drops slightly on the 1-5 scale (parameter estimate = -.05; t-statistic = -7.2); more realistically, as the average years of experience increase by 2, the intent to leave drops by .1. The beta (-.09) suggests that this may be more important than some of the other variables, such as average agency education. As the average level of education in a sub-agency increases by 1, the intent to leave drops by .22 (t-

\textsuperscript{17} Just as in Table 1, ordinal logit results for the variable in Table 2 have a poorer fit but similar results to those reported. More importantly, the parameter estimates in Tables 1 and 2 are not independent. The two equations have different dependent variables, but use the same data and the same independent variables. Consequently, the stochastic terms in the two equations are likely to be related. Estimating the equations jointly using seemingly unrelated regression yields results that do not differ substantially from those reported.
statistic = -5.67). (The corresponding beta weight is -.05.)

Greater identity diversity increases the individual’s intent to leave the agency. For a one-unit (maximum possible) change in the sub-agency diversity scale, the intent to leave increases by .63 on the 5-point scale. A more realistic increase of .1 on the diversity scale increases the intent to leave by .06 on the 1-5 scale (beta = .03).

The control variables are important too. Clearly, more individual education and experience increase the intent to leave: all of the coefficients are significant and positive. In terms of relative importance, the three experience variables clearly trump the education variable both individually and collectively (The beta weight for education is .04, while the beta weights for the three variables the measure aspects of individual experience sum to .32, and the smallest beta weight for an experience variable is .07.)

Discretion matters too, and again appears to trump diversity characteristics in terms of relative importance. A unit increase in the 2-10 individual discretion scale reduces intent to leave (a 1-5 scale) by .17 (t-statistic = -29.2; beta = -.25). The average level of discretion in the sub-agency (suggesting a flatter organization) has an opposite effect: controlling for other variables in the equation, a unit increase in sub-agency discretion (where the range is about 2.5 units) increases the intent to leave by .23 on the 1-5 scale (t-statistic = 3.19; beta = .06).

Agency size has a marginally significant negative effect on intent to leave: for each additional 100 persons in the agency sample, intent to leave drops by -.06 on the 1-5 scale (t-statistic = -1.99; beta = -.06).

It is critical to re-examine these results in terms of agency hierarchy. While the overall impact of agency size on the performance indicators is either none (for the productivity indicator) or small (intent to leave), the impact of agency size is likely to depend on structure:
large agencies probably work better when there is more organizational discretion; further, the impact of diversity may well depend on structure, although prior theory is not determinative of the likely direction. Some theorists argue that diversity works well when it is structured with hierarchy (e.g., Williamson, 1975), while others (e.g., Page, 2007) argue that diversity works best when individuals can communicate directly. The results in Tables 3 and 4 cast empirical light on these issues in the context of the federal workforce.

With respect to the indicator of productivity, the top panel of Table 3 shows the results for agencies whose aggregate levels of discretion are below the mean; these agencies are the most hierarchical in the sample. In these agencies, individuals with higher levels of discretion report that their agency is more productive than do individuals with lower levels of discretion ($b = .42$, $t = 49.5$, $\beta = .53$). Individual level discretion is not only the single most important correlate of productivity in hierarchical organizations. The lower panel in Table 3 shows that it is also important in flatter organizations. In hierarchical agencies, the indicators of cognitive diversity (variance in agency experience and education) have little effect on agency productivity (top panel of Table 3). Variance in agency experience has no significant impact. Variance in agency education has a statistically significant positive impact, but the substantive relevance is questionable. Not only is the beta small (.01), but the unstandardized coefficient implies that a 1-point increase in the variance of agency education (which is nearly 1/2 of the entire variance scale, which has a range of 2.5) corresponds to a small .04 increase on the 1-5 productivity scale.

With respect to agency level means, agencies with higher mean levels of experience report slightly higher levels of productivity ($b=.01$, $t=4.53$, $\beta = .01$), but higher agency levels of education has no significant association with productivity, at least in hierarchical agencies, holding other variables in the equation constant. Just as it did in the full sample, identity diversity
continues to have a negative effect on agency productivity in hierarchical agencies: the unstandardized coefficient (-1.46, t = -15.7) is about the same at that for the full sample, just as is the beta coefficient (= -.05). The most striking result for hierarchical agencies concerns size: larger agencies are less productive. Among hierarchical agencies, for each additional 100 employees in the agency size indicator (which has a range of about 650), the 1-5 productivity score drops by .09. The corresponding beta weight is -.07.

The lower panel of the table reveals why this result is striking: among the flat agencies, agency size has a positive effect whose magnitude is about the same as that in hierarchical agencies. In flat agencies, for each additional 100 employees in the agency size indicator, the 1-5 productivity scale increases by .07 (t = 31.4; beta = .08). Thus, larger agencies will be more productive when they are flat, but less productive when they are hierarchical. Individual discretion is also important in flat agencies; as we noted above, it is the most important correlate of productivity in both hierarchical and flat agencies. The indicators of cognitive diversity in flat agencies tell a mixed story. Variance in agency experience significantly lowers productivity (t= -18.9; beta = -.09), but variance in agency education significantly raises it (t = 22.8; beta = .10). The corresponding beta weights show the same relative importance, but with opposite signs. Cognitive means tell a similarly mixed story. Mean education in flat agencies has a significant negative association with productivity (t = – 2.9; beta = -.01), but its substantive significance is dubious. By contrast, mean experience in flat agencies significantly raises productivity (t = 13.3, beta = .10). The indicator of identity diversity in agencies is collinear with agencies dummies, so it is omitted.18

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18 Future research will determine what the collinear agency dummies are, and drop the dummies (rather than drop the theoretically relevant variable).
Table 4 reports similar results for intent to leave in hierarchical agencies (top panel) and flatter agencies (lower panel). In hierarchical agencies, larger size significantly (t= 22.1) increases the intent to leave (beta = .05). However, individual level discretion continues to remain the most important correlate: a one-point increase in the individual discretion measure (2-10 scale) reduces intent to leave (1-5 scale) by .18 (t = -18.3, beta = -.25). Indicators of cognitive diversity continue to show a mixed picture. Variance in agency experience significantly raises the intent to leave (t= 8.06), but the substantive importance is small; variance in agency education has no significant effect on intent to leave. Agency cognitive means, however, are significant in hierarchical agencies: a ten-year increase in average years at the agency reduces the intent to leave by .7 on the 1-5 scale (t = -32.8, beta = -.15). An increase of 1 point in the 1-5 education scale reduces the intent to leave by .32 on the 1-5 scale (t = 21.4; beta = -.07). For hierarchical agencies, the cognitive means clearly trump the diversity indicators. Identity diversity continues to have a (small) adverse effect: a unit increase in the diversity scale (which is the range of the entire scale) increases the intent to leave by .33 on the 1-5 scale (t = 6.4, beta = .01).

The lower panel reports the corresponding results for flatter agencies. Individual discretion continues to be the most important correlate of intent to leave. A unit increase in discretion (2-10 scale) reduces the intent to leave by .17 (1-5 scale) (t= -24.7; beta = -.25). Agency size in flat agencies continues to have the opposite effect than it does in hierarchical agencies. While intent to leave rises in hierarchical agencies, the lower panel in Table 4 shows that intent to leave drops significantly (t = -61.3) in flatter agencies. The indicator is substantively important too, since a 100 person increase in the size indicator reduces intent to leave by .09 on the 1-5 intent-to-leave scale (beta = -.11). The indicator of identity diversity in
agencies is again collinear with agencies dummies, so it is omitted.\textsuperscript{19} The other indicators of
cognitive diversity continue to tell a mixed story. Greater variance in experience in flat agencies
significantly reduces the intent to leave ($t = -43.2$, $\beta = .20$). In contrast, greater variance in
education among flat agencies significant increases the intent to leave ($t = 19.9$; $\beta = .09$). With
respect to cognitive means, an increase in average years of experience in flat agencies
significantly augments the intent to leave ($t = 15.7$, $\beta = .11$), but mean years of education have
no significant effect.

Overall, the results for the two dependent variables continue to show that, within both flat
and hierarchical agencies, indicators of cognitive diversity have a decidedly mixed and small
effect. The indicator of identity diversity is consistently negative, at least in hierarchical
agencies. Individual level discretion, which is is consistently significant, raises agency
productivity and reduces the intent to leave in both hierarchical and flat agencies. This variable is
undoubtedly endogenous: supervisors in productive agencies are more willing to give employees
more discretion, and employees use discretion to increase agency productivity.\textsuperscript{20} The most
striking result concerns the interaction of agency size with agency structure: in hierarchical
agencies, larger size reduces agency performance and increases the intent to leave; in flatter
agencies, large size increases agency performance and reduces the intent to leave. While none of
these effects is especially “large”, they do offset one another and explain why size has no
significant effect in the regressions for the whole sample.

\textsuperscript{19} Future research will determine what the offending collinear agency dummies are, and drop the dummies (rather
than drop the theoretically relevant variable).

\textsuperscript{20} Discretion is also correlated with education, and may explain why individual education appears to have a small
and sometimes puzzling effect on the indicators of agency performance.
Discussion

Overall, for the full sample, controlling for important individual level variables and sub-agency fixed effects, these results suggest that indicators of agency cognitive and identity diversity tend to reduce agency productivity and increase employee’s intent to leave, while agency averages either have no effect or varying effects, slightly increasing agency productivity (mean education) or reducing it (mean years of agency experience) while simultaneously reducing intent to leave. The indicator of sub-agency size has no direct effect on agency performance (controlling for sub-agency fixed effects). The dominant effect is an organizational property: discretion. Individuals with more discretion are associated with rating their sub-agency as more productive, and individuals in flatter agencies with higher average levels of discretion rate their sub-agency as more productive. Individuals with more discretion are less likely to leave an agency; however, individuals in flatter sub-agencies with higher average levels of discretion are more likely to leave.

While the results in Tables 1 and 2 suggest that agency hierarchy may have a direct effect on agency performance, the impact of diversity may nonetheless depend on agency structure. Tables 3 and 4 show that most of these results do not, in fact, depend on agency structure; the exception is the effect of agency size. Specifically, the results for the two dependent variables continue to show that, within both flat and hierarchical agencies, indicators of cognitive diversity have a decidedly mixed and small effect. The indicator of identity diversity is consistently negative, at least in hierarchical agencies. Individual level discretion is consistently significant, important, raises agency productivity, and reduces the intent to leave in both hierarchical and flat agencies. There is some evidence that individual discretion is more important in hierarchical than in flat agencies. This variable is undoubtedly endogenous: supervisors in productive agencies are
more willing to give employees more discretion, and employees use the discretion to increase agency productivity.\footnote{Discretion is also correlated with education, and may explain why individual education appears to have a small and sometimes puzzling effect on the indicators of agency performance.} The most striking result concerns the interaction of agency size with agency structure: in hierarchical agencies, larger size reduces agency performance and increase the intent to leave; in flatter agencies, large size increases agency performance and reduces the intent to leave. While none of these effects is especially “large”, they do offset one another and explain why size has no significant effect in the regressions for the whole sample.

Taken together, our findings add new insights into on-going debates in public management research. First and foremost, by testing an expanded series of diversity measures related to individual outcomes and organizational performance, we offer a broader conceptualization of diversity in public agencies. That our measures of diversity are associated with a decline in reported organizational productivity and an increase in turnover intentions\footnote{Admittedly, turnover intention may not, in reality, translate into actual turnover. However, past research links turnover intention to a range of negative individual and organizational outcomes, including, for example, diminished performance (e.g., Llorens and Stazyk 2010; Moynihan and Pandey 2008; Mobley et al., 1979; Selden and Moynihan 2000).} indicates various dimensions and sources of diversity affect performance—likely in quite different ways. As Pitts and Wise (2010) have suggested, public management scholars have been slow to consider other dimensions of organizational diversity and to determine how diversity, in its various forms and sources, influences individual and organizational outcomes. Our findings lend weight to Pitts and Wise’s assertion, while also offering evidence that diversity may, at times, actually reduce organizational performance and have negative ramifications on individual behavior. In this sense, our results urge caution in assuming diversity management will inherently lead to better outcomes for employees and organizations.
Second, our findings also expand upon existing research involving issues of bureaucracy, hierarchy, and discretionary authority. For example, while past research clearly indicates discretionary authority has important ties to individual performance and job satisfaction (e.g., Sowa and Selden 2003; Meier and Bohte 2001; Moynihan and Pandey 2007; Langbein 2009; Llorens and Stazyk 2010), our results suggest discretion may be the so-called elephant in the room. In other words, discretionary authority clearly matters more than diversity—at least as we have measured it—in our current sample, suggesting organizations should spend more time ensuring employees feel empowered in their jobs rather than focusing on diversity management tactics. Additionally, our findings also highlight the importance of considering how structure and size affect individual and organizational outcomes. Here, results clearly demonstrate size and hierarchy matter differently in different situations. Future research is needed to determine how and when size and structure matter.

Conclusions

This paper has attempted to address previous shortcomings in diversity management scholarship by testing an expanded diversity model borrowed from the work of economist Scott Page. Page’s model assumes diversity can be measured as both a mean and a variance, and that it consists of cognitive, identity, and preference characteristics. We link his conceptualization of diversity to both individual-level outcomes and organizational productivity. Results indicate diversity reduces agency productivity and increases turnover intentions. Findings also suggest employee discretion and organizational size and structure shape outcomes in important ways.

On whole, our findings conflict with the prevailing sentiments found in much of the diversity management scholarship, which assumes diversity leads to increased individual and organizational performance. Yet, as Pitts and Wise (2010) argue, little empirical evidence exists
demonstrating diversity management translates into increased performance. We believe our findings highlight the tendency of public management scholars to oversimplify the impact of increased diversity in public organizations. As evidence of this trend, very few studies consider, in detail, the role conflict plays in shaping diversity management outcomes. Similarly, few studies assess what sorts of diversity management initiatives actually lead to better outcomes in public organizations.

Fortunately, we think the lack of research on diversity and individual and organizational outcomes provides substantial opportunities for public management scholars to learn from other fields and traditions. For instance, business administration and social psychology have long considered issues of diversity and diversity management. In these fields, we find discussions on the relationship between diversity and various forms of conflict, including, for instance, task and emotional conflict (Pelled, Eisenhardt, and Xin 1999). Alternatively, from studies on organizational demography, we learn about the importance of cohorts in producing positive individual outcomes (Pfeffer 1985). From social psychology, we learn that inclusion is possible on several different levels within organizations and that individuals have a range of direct and indirect interests that exist at both micro and macro levels (Mor Barak 2005). Public management scholars would do well to draw on the perspectives found in these fields when considering how diversity and performance connect.

Finally, despite our findings, there remain strong, normative reasons for continued interest in diversity across public organizations. As the representative bureaucracy scholarship clearly indicates, diverse organizations make different decisions—decisions that seemingly benefit a broader range of citizens. Moreover, as public entities, the representativeness of our organizations has strong symbolic (if not legal) implications for society, signifying, at the very
least, the importance of diversity, equity, and inclusiveness. For these reasons, studies on representative bureaucracy and diversity management are much needed.

**References**


Table 1

```
.regress aprod education supstat discret yearsagency yrsotherfed yearsprefed me
> anyrsagency varyrsagy agencyaved agyvared agencydiscret diversity agencyNsize
> _ISUBAGYNEW_2 _ISUBAGYNEW_4 _ISUBAGYNEW_5 _ISUBAGYNEW_7 _ISUBAGYNEW_9 _ISUBAG
> YNEW_12 _ISUBAGYNEW_29 _ISUBAGYNEW_31 _ISUBAGYNEW_37 _ISUBAGYNEW_39 _I
> SUBAGYNEW 45 _ISUBAGYNEW 47 _ISUBAGYNEW 48 _ISUBAGYNEW 50 _ISUBAGYNEW 53 _ISUB
> AGYNEW_55 _ISUBAGYNEW 59, cluster (SUBAGYNEW)
```

Linear regression  Number of obs = 30356
F(13, 56) = .
Prob > F = .
R-squared = 0.3386
Root MSE = 1.3062

```
|                  | Coef.  | Std. Err. | t     | P>|t|    | [95% Conf. Interval] | beta |
|------------------|--------|-----------|-------|-------|----------------------|------|
| aprod            | -.02455303 | .0115029  | -2.13 | 0.037 | -.0475733 -.0014872 | -.02 |
| education        | .0272443 | .0202038  | 1.35  | 0.183 | .0132287 .0677174  | .03  |
| supstat          | .4069013 | .0060309  | 67.47 | 0.000 | .39482 .4189826   | .52  |
| discret          | .0029051 | .0012314  | 2.36  | 0.022 | .0004383 .005372  | .02  |
| yearsagency      | .001165  | .0014115  | -0.83 | 0.413 | .0039925 .0016626 | -.00 |
| yrsotherfed      | .0029106 | .0012808  | 2.27  | 0.027 | .0000347 .0054764 | .02  |
| yearsprefed      | -.0024943 | .0069641  | -3.49 | 0.001 | -.0382451 -.0103436 | -.04 |
| mean yrs agency  | .013247  | .007663   | -1.73 | 0.089 | .0028598 .002103  | -.01 |
| agencyaved       | .1251162 | .0385007  | 3.25  | 0.002 | .04799 .2022423  | .03  |
| agyvareduc       | -.0333477 | .0135311  | -2.46 | 0.017 | -.0604538 -.0062416 | -.01 |
| agencydisc-t     | .1119282 | .0496109  | 2.25  | 0.029 | .0121448 .2117115 | .02  |
| diversity        | -.631162 | .1702439  | -9.58 | 0.000 | -.1.972202 -.1.290123 | .07  |
| agencyNsize      | .0000322 | .0002499  | 0.13  | 0.898 | -.0004685 .0005329 | .00  |
```

(sub-agency fixed effects included but not shown)
Table 2

| Variable               | Coef. | Std. Err. | t    | P>|t|  | [95% Conf. Interval] | beta |
|------------------------|-------|-----------|------|------|----------------------|------|
| leaveagency            | .0447154 | .0077662 | 5.76 | 0.000 | .0291578 -.060273    | .04  |
| education              | .0447154 | .0077662 | 5.76 | 0.000 | .0291578 -.060273    | .04  |
| supstat                | .0112202 | .0115451 | 0.97 | 0.335 | -.0119074 .0343477   | .01  |
| discret                | -.1745146 | .0059698 | -29.23 | 0.000 | -.1864736 -.1625556  | -.25 |
| yearsagency            | .0141067 | .0019068 | 7.40 | 0.000 | .010287 .0179264    | .09  |
| yrsotherfed            | .0333016 | .0018514 | 17.99 | 0.000 | .0295928 .0370103   | .16  |
| yearsprefed            | .01165 | .0013913 | 8.37 | 0.000 | .0088629 .0144371   | .07  |
| meanyrsage-y           | -.0509906 | .0071092 | -7.17 | 0.000 | -.065232 -.0367432  | -.09 |
| varyrsagy              | .0003228 | .0008522 | 0.38 | 0.706 | -.0013844 .00203    | .00  |
| agencyaved             | -.2167562 | .0382509 | -5.67 | 0.000 | -.2933819 -.140136  | -.05 |
| agvareduc              | .0049358 | .0127917 | 0.39 | 0.701 | -.020689 .0305606   | .00  |
| agencydisc-t           | .2287771 | .0717106 | 3.19 | 0.002 | .1051236 .3724307   | .06  |
| diversity              | .6254279 | .1928187 | 3.24 | 0.002 | .2391657 1.01169    | .03  |
| agencyNsize            | -.000575 | .0002893 | -1.99 | 0.052 | -.0011545 4.42e-06  | -.06 |

(Std. Err. adjusted for 57 clusters in SUBAGYNEW)
Table 3

<table>
<thead>
<tr>
<th>Regressions with agydiscretdum, agydiscretdum = 0</th>
<th>Regressions with agydiscretdum, agydiscretdum = 1</th>
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</thead>
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<tr>
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<td>Linear regression</td>
</tr>
<tr>
<td>Number of obs = 15082</td>
<td>Number of obs = 15274</td>
</tr>
<tr>
<td>F(  5,    29) = .</td>
<td>F(  5,  26) = .</td>
</tr>
<tr>
<td>Prob &gt; F = .</td>
<td>Prob &gt; F = .</td>
</tr>
<tr>
<td>R-squared = 0.3263</td>
<td>R-squared = 0.3238</td>
</tr>
<tr>
<td>Root MSE = 1.3635</td>
<td>Root MSE = 1.2451</td>
</tr>
</tbody>
</table>

### Robust Regression Results

| Variable     | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] | Beta |
|--------------|-------|-----------|-------|------|----------------------|------|
| education    | -0.0126273 | 0.0162165 | -0.78 | 0.442 | -0.0457937 - 0.0205392 | -.01 |
| supstat      | 0.007194 | 0.0322421 | 0.02  | 0.982 | -0.065223 - 0.0666619 | .00  |
| discretn     | 0.4242343 | 0.0085643 | 49.54 | 0.000 | 0.4067184 - 0.4417502 | .53  |
| yearsagency  | 0.0028901 | 0.0018524 | 1.56  | 0.130 | -0.0008985 - 0.0066787 | .02  |
| yrsotherfed  | 0.001638 | 0.0023325 | 0.07  | 0.944 | -0.0046066 - 0.0049342 | .00  |
| yearsprefed  | 0.0038019 | 0.0021256 | 1.79  | 0.074 | -0.0005456 - 0.0081493 | .02  |
| meanyrsagey  | 0.0070145 | 0.0015494 | 4.53  | 0.000 | 0.0038457 - 0.0101834 | .01  |
| varyrsagy    | 0.0001917 | 0.0001804 | 1.06  | 0.297 | -0.0001772 - 0.0005606 | .00  |
| agencyaved   | -0.0124207 | 0.0023537 | -0.53 | 0.602 | -0.0060556 - 0.0035718 | -.00 |
| agyvareduc   | 0.0359702 | 0.0066807 | 5.90  | 0.000 | 0.0234934 - 0.048447 | .01  |
| agencyNsize  | -1.463407 | 0.0931493 | -15.71| 0.000 | -1.653918 - 1.272895 | -.05 |
| diversity    | -0.008863 | 0.0000535 | -16.57| 0.000 | -0.0009956 - 0.0007769 | -.07 |

| Variable     | Coef. | Std. Err. | t     | P>|t| | [95% Conf. Interval] | Beta |
|--------------|-------|-----------|-------|------|----------------------|------|
| education    | -0.0366091 | 0.0156085 | -2.35 | 0.027 | -0.0686928 - 0.0045255 | -.03 |
| supstat      | 0.056978 | 0.023065 | 2.47  | 0.020 | 0.0095659 - 0.1043897 | .05  |
| discretn     | 0.3874131 | 0.0073626 | 52.62 | 0.000 | 0.372791 - 0.4025471 | .51  |
| yearsagency  | -0.0027843 | 0.0015746 | 1.77  | 0.089 | -0.0004523 - 0.0060209 | .02  |
| yrsotherfed  | -0.0025803 | 0.001511 | -1.71 | 0.099 | -0.0056842 - 0.0005236 | -.01 |
| yearsprefed  | -0.003483 | 0.001357 | 1.36  | 0.185 | -0.0009423 - 0.0046387 | .01  |
| meanyrsagey  | -0.0086859 | 0.0066807 | 13.27 | 0.000 | 0.0749534 - 0.1024183 | .10  |
| varyrsagy    | -0.0092943 | 0.0004917 | -18.90| 0.000 | -0.010305 - 0.0082836 | -.09 |
| agencyaved   | -0.0429296 | 0.0148433 | -2.89 | 0.008 | -0.0734405 - 0.0124187 | -.01 |
| agyvareduc   | 0.3767636 | 0.01651 | 22.82 | 0.000 | 0.3428269 - 0.4107003 | .10  |
| agencyNsize  | 0.0006744 | 0.000215 | 31.42 | 0.000 | 0.0006303 - 0.0007186 | .08  |
Table 4

| variable          | Coef.  | Std. Err. | t     | P>|t|   | [95% Conf. Interval] | beta |
|-------------------|--------|-----------|-------|-------|----------------------|------|
| education         | .0513464 | .0085962 | 5.97  | 0.000 | .0337652              | .0689275 | .05 |
| supstat           | -.0012878 | .0172587 | -0.07 | 0.941 | -.0365858             | .0340103 | -.00 |
| discret           | -.1756085 | .0095759 | -18.34| 0.000 | -.1951934             | -.1560235 | -.25 |
| yearsagency       | .0141176 | .0025832 | 5.47  | 0.000 | .0088834              | .0194009 | .09 |
| yrsotherfed       | .0329311 | .0022024 | 14.95 | 0.000 | .0284266              | .0374356 | .15 |
| yearsprefed       | .0073355 | .0017545 | 4.18  | 0.000 | .0037471              | .0109238 | .04 |
| meanyrsagency     | -.0473601 | .0222647 | -32.83| 0.000 | -.078992              | -.0697282 | -.15 |
| varyrsagy         | .0016861 | .0002093 | 8.06  | 0.000 | .0012581              | .0021141 | .02 |
| agencyaved        | -.3237968 | .0151583 | -21.36| 0.000 | -.3547991             | -.2927945 | -.07 |
| diversity         | .3350699 | .0523407 | 6.40  | 0.000 | .2280212              | .4421186 | .01 |
| agyvareduc        | .0005951 | .0000269 | 22.13 | 0.000 | .0005401              | .0006501 | .05 |

(Std. Err. adjusted for 30 clusters in SUBAGYNEW)
Appendix

List of Sub-Agencies

1. Agriculture: Food Safety and Inspection Service; Forest Service; Natural Resources Conservation Service; Other
2. Air Force
3. Army: Corps of Engineers; Other
4. Commerce: National Institute of Science and Technology; NOAA; Patent and Trade Office; Census; Other
5. DOD: Contract Management Agency; Defense Finance and Accounting Service; Defense Logistics Agency; Other
6. Education
7. Energy
8. EPA
9. FDIC
10. GSA: Buildings Service; Other
11. HHS: Centers for Disease Control and Prevention; Indian Health Service; NIH; Other
12. DHS: Customs and Border Protection; Immigration and Customs Enforcement; FEMA; TSA; Coast Guard; Secret Service; Other
13. HUD
14. Interior: Bureau of Land Management; Indian Affairs; National Park Service; Other
15. Justice: Alcohol, Tobacco, Firearms and Explosives; Prisons; Drug Enforcement Administration; Executive Office of U.S. Attorney; Other
16. Labor
17. NASA
18. Navy: Marine Corps; Other
19. OPM
20. SSA
21. State
22. DOT: FAA; Other
23. Treasury: IRS; Comptroller of Currency; Other
24. VA: Veterans Benefits Administration; Veterans Health Administration; Other