



ANDREW YOUNG SCHOOL
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**Ethnic Diversity and Organizational Performance:
Assessing Diversity Effects at the Managerial and Street Levels**

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Abstract

As the public sector workforce becomes more ethnically diverse and as government agencies make attempts to “manage” that diversity, the importance of understanding how diversity affects workplace interactions and work-related outcomes increases. Little public sector research has examined the impact of diversity on performance outcomes. This paper seeks to fill this gap by studying the effects of the ethnic diversity of managers and street level bureaucrats on work-related outcomes. We use basic in-group/out-group theories from psychology to form hypotheses relating diversity to performance. The results of diversity research using social identification and categorization theory and similarity/attraction theory led us to form the hypothesis that greater levels of ethnic diversity among public managers and street-level bureaucrats will lead to lower organizational performance, when the task requires significant coordination and collaboration. Diversity research that uses the information and decision-making theory, while scant, led us to form a second hypothesis that greater levels of ethnic diversity among public managers and street-level bureaucrats will lead to higher organizational performance, when the task does not require significant coordination and collaboration. Our results were mixed. We found support for the first hypothesis with respect to street-level bureaucrats but not for managers. The results did not support our second hypothesis—we actually found an opposite relationship for street-level bureaucrats from what we expected. Overall, the results support previous research that suggests that increased levels of ethnic diversity can lead to process-oriented difficulties in the workplace and negatively affect work-related outcomes.

Introduction

The U.S. workforce is becoming more balanced with respect to ethnic minorities, with more workforce participation than ever by African-Americans, Asian-Americans, and Hispanics.ⁱ As public organizations become more diverse along ethnic lines, it makes sense to pay more attention to how different groups interact with one another at work. Increased emphasis on diversity and its management has been a key theme in the public administration research literature of the past twenty years; indeed, the field has seen inquiry devoted to diversity management programs (Kellough & Naff, 2004; Naff & Kellough, 2003), the impact of diversity on performance outcomes (Pitts, 2005; Wise & Tschirhart, 2000), the status of different minority groups in public employment (Lewis, 1998; Lewis & Nice, 1994), and the role of diversity in public administration education (Pitts & Wise, 2004).

Emphasis on ethnic diversity in the academy has been matched by a slew of new diversity management programs in public organizations. Kellough & Naff (2004) report that almost 90% of federal agencies have a program in place that aims to “manage” diversity. An entire industry of diversity consulting has come into being, with practitioners and academics alike stepping in to help organizations formulate effective programs. However, as Wise & Tschirhart (2000) point out in their meta-analysis of diversity research, there is very little to go on when it comes to understanding the actual impact of ethnic diversity on performance outcomes in the public sector. If we, as a field, do not understand what diversity actually *does* in an organization, how can we understand how to manage it? Should the field not understand whether diversity has good or bad (or both) impacts on work-related outcomes? Becoming familiar with the diversity-performance linkage will assist scholars in determining how to go about managing diversity’s effects.

This paper seeks to fill a gap in the public management literature by examining the impact of ethnic diversity on work-related outcomes in a set of public organizations. We will examine how diversity affects three different types of performance, as well as how diversity's effects vary by level in the organization – managers and street-level bureaucrats. We will begin by defining diversity and reviewing the literature linking ethnic diversity to performance in public organizations, followed by formulation of hypotheses and explanation of the data and methods. We will then review the results and close with implications and directions for future research.

Defining Diversity

This study will consider diversity as a social-psychological phenomenon based in a sense of “likeness” and “otherness.” In a group of two or more people, diversity refers to the ways in which the individuals vary on some dimension (McGrath et al., 1995, cited in Ely & Thomas, 2001). Research has established that humans tend to be ethnocentric, such that intergroup relationships tend to involve categorization based on available attributes, no matter how seemingly minor (Triandis et al., 1994). As such, a member of a group tends to categorize all of the other members of the group in different ways – by sex, by ethnicity, by physical attractiveness, and many other dimensions. This process of categorization results in behaviors that are modified, depending on the level of diversity present among the categories. That is, social categorization theory tells us that individuals will act differently in the presence of a homogenous group than they would in the presence of a heterogeneous group (Turner, 1987).

In addition to process-oriented changes in behavior, diversity can result in substantive changes in group outcomes. Simply put, the more differences present in a group of people, the

more ideas that group will have to solve a problem, create a product, or serve a population of people (Adler, 2003). The “cultural synergy” definition of diversity claims that heterogeneity within a group, when managed well, can result in contributions by each member that produce an end-result that is greater than the sum of its parts. This approach to diversity provides the theoretical lens through which the “business case” for diversity is articulated. The business case refers to the position taken by a number of management consultants and pracademics who argue that organizational diversity is important in order to serve the client of the 21st century (see, e.g., Gardenschwartz & Rowe, 1993; Morrison, 1992; Thomas, 1990; Wilson, 1997). These authors note that the more creative solutions present in an organization, the more likely the business will succeed.

Both of these foundations – social categorization theory and cultural synergy theory – are based in a definition of diversity as a number of variations among parts of a whole. This is important, since a number of definitions of diversity are more limited. For example, when people hear the word “diversity” they often think of dyads: majority vs. minority, black vs. white, or domestic vs. foreign. However, diversity is much more nuanced, since differences can exist, for example, between “minority” groups. Operationalizing diversity as the percent of minorities in a sample misses the key differences that might exist between those who come from minority backgrounds. This study will formulate a quantifier of diversity that taps into the fact that differences exist between all ethnic groups, not just between whites and minorities. This study will not, however, consider other dimensions of diversity besides ethnicity. Research shows that the relationship between one dimension of diversity and work-related outcomes is not generalizable to other dimensions of diversity (Wise et al., 1997), so the results of this study

should not be taken as evidence for the relationship between sex, disability status, or any other dimension of diversity, and performance.

Review of the Literature

Very little research using public sector organizational data has assessed the impact of diversity on performance outcomes (Wise & Tschirhart, 2000). With regard to ethnicity as a social phenomenon, the bulk of research comes from psychologists, sociologists, and those interested in education policy (see, e.g., Blau, 1977; Hallinan & Smith, 1985; Phinney, 1996). Many characterize research on ethnic diversity in organizations as being relatively lacking, although it is much more prevalent in organizational behavior or “generic management” research than in the public sector literature (see, e.g., Alderfer & Thomas, 1988; Cox & Nkomo, 1990; Nkomo, 1992;). Some researchers have characterized research on diversity as moving away from a focus on ethnicity and closer to interest in functional and educational diversity (Williams & O’Reilly, 1998), but a recent meta-analysis found that performance studies using an ethnicity variable outnumbered studies of any other diversity dimension (Wise & Tschirhart, 2002). It remains clear, however, that there is much to be understood about how diversity operates, specifically in the public-sector context. The following section will review both the theoretical and empirical literature relating ethnicity to performance in the work setting.

Theories of Diversity

A large share of the theoretical underpinnings relating diversity to performance stems from basic in-group/out-group psychology. Three general clusters of theory exist: social identification and categorization theory, similarity/attraction theory, and information and

decision-making theory. These three sets of theory are almost always used as foundations for studies linking ethnic diversity and some measure of group/organizational outcomes.

Unfortunately, these theories do not line up consistently with each other on one hypothesis.

Rather, two of the theories (social identification and categorization theory, similarity/attraction)

predict that ethnic diversity will have a negative impact on outcomes, while the third

(information and decision-making) predicts a positive relationship. We review the basic tenets of each theory below.

Social Identification & Categorization Theory

Much of the research on diversity effects, if not the majority, predicts a negative relationship between diversity and performance that is premised on faulty work processes. As a group becomes more and more diverse, breakdowns in communication, coordination, and cohesion make it harder for members to work together effectively. These process-oriented difficulties prevent the group from producing a final product, solution, or idea that is on par with one produced by a group that did not fall prey to the same procedural difficulties (see, e.g., Tajfel, 1981; Turner, 1982, 1987).

Social identification begins with the assumption that each individual wishes to maximize his or her self-esteem. In order to ensure high self-esteem, individuals engage in a series of social comparisons with others. These self-comparisons involve individuals placing themselves, and others, into a series of categories along organizational, religious, gender, ethnic, and socioeconomic lines, among others. This process leads each individual to establish his or her social identity, with that identity defined as one's membership in a given group of different categories. Given the initial assumption – that an individual does all of this in order to maintain a

high level of self-esteem – it follows that individuals will deem the categories in which they belong as “good” (often called the in-group) and the categories in which others belong as “bad” (the out-group). Empirical research has shown that individuals often (falsely) attribute negative characteristics to out-group members as part of this process, believing the out-group to be comprised of individuals who are less trustworthy, honest, cooperative, or intelligent (Brewer, 1982; Stephan, 1985; Tajfel, 1982).

The process of categorization often involves physical traits such as gender, ethnicity, and age (Messick & Massie, 1989). Given that membership in the out-group is seen as a deficiency, this classification often results in individuals assuming those from different ethnic backgrounds are either inherently “worse” than they are, or at the very least, untrustworthy (Loden & Rosener, 1991). Social identification and categorization theory, then, assumes that individuals quickly stereotype and make judgments about those from other groups. In a diverse work team or organization, there are many more out-groups than in-groups, a pattern which is expected to cause heightened problems with trust, communication, and cooperation. As a result, work processes will be made much more difficult, thus causing the final product, idea, or solution to be weaker. This theory, then, suggests a negative relationship between organizational diversity and work-related outcomes.

Similarity/Attraction Theory

The similarity/attraction stream of research is predicated on the notion that similarity in attributes, particularly demographic variables, increases interpersonal attraction and liking (Byrne et al., 1966). Individuals with similar backgrounds may find that they have more in common with each other than with others from different backgrounds, making it more

comfortable for them to work together and collaborate toward producing a product or solving a problem. Similarity allows one to have his or her values and ideas reinforced, whereas dissimilarity causes one to question his or her values and ideas, a process that is likely to be unsettling. Research has shown that in a situation where an individual has the opportunity to interact with one of a number of different people, he or she is most likely to select a person who is similar (Burt & Regans, 1997; Lincoln & Miller, 1979).

That one is likely to be most attracted to those with similar attributes yields clear predictions for the relationship between organizational diversity and work-related outcomes. Early research using the similarity/attraction concept found that dissimilarity led to a lack of “attraction” to others that manifested itself through decreased communication, message distortion, and communication error (Barnlund & Harland, 1963; Triandis, 1960). As with social identification and categorization theory, similarity/attraction research would predict that high levels of diversity in an organization or in a work group are likely to lead to faulty work processes. These faulty work processes will, in turn, lead to weaker performance.

Information & Decision-Making Theory

The stream of research on information and decision-making in groups is predicated on the notion that the composition of the work group will affect how the group processes information, communicates, and makes decisions (Gruenfield et al., 1996; Wittenbaum & Stasser, 1996). One might expect, given the orientation of the first two theories of group interaction, that this theory would also predict a negative relationship between diversity and outcomes. If theories of social identification and categorization and similarity/attraction theory tend to argue that diversity will cause breakdowns in collaboration and communication, then it

would seem to follow that diversity would also cause problems in information generation and decision-making.

However, the literature on information and decision-making in groups tends to show that, for these two specific functions (producing information and making decisions), the faulty processes that result from high levels of heterogeneity are overcome by benefits gained from more creativity, a larger number of ideas, and a larger pool of knowledge (Tziner & Eden, 1985). Research has shown that, even in situations where diversity has a clearly negative impact on work processes, the increase in information available to the group that comes from diversity is enough to offset process problems (Ancona & Caldwell, 1992; Jehn et al., 1997; Zenger & Lawrence, 1989). The idea that diversity brings a number of new perspectives to the table, making it possible for an organization to be more effective, has served as the basis for a number of claims that diversity is a strength and resource for organizations (see, e.g., Adler, 2003; Dobbs, 1998; Thomas, 1990).

The theory is not quite so straightforward, however, and it is important to consider the type of task when determining whether one might rely on information and decision-making research to predict a positive relationship between diversity and outcomes. For example, a routinized task that involves little discretion or group interaction is not likely to benefit from diversity (Adler, 2003). Since more information, knowledge, and creativity are usually of little use for such a task, it seems most probable that these substantive benefits will not be enough to offset the faulty work processes that will result from group heterogeneity. Rather, diversity is most likely to provide positive results when the task is to solve a complex problem, generate a set of creative ideas or innovations, or produce a new product. In these cases, the more

information and viewpoints that are present, the more likely the group will be to come to an optimal solution.

A second caveat, and one that applies directly to this study, is that most of the research on information and decision-making in groups is based on diversity of education and function, not ethnicity (Ancona & Caldwell, 1992; Bantel & Jackson, 1989; Pelled et al., 1997). In fact, there is very little work that uses information and decision-making theory to produce a positive hypothesis for ethnic diversity and performance. Cox et al. (1991) use the individualism/collectivism value divide to suggest that ethnic diversity creates a variety of perspectives that will benefit organizations and produce synergies. A handful of other studies use the same framework – differences in values that run along ethnic lines – to test hypotheses related to information and decision-making, but the literature is fairly shallow in this area (McLeod & Lobel, 1992; Watson et al., 1993). While this theoretical stream does suggest a positive relationship between diversity and performance, it is a weak hypothesis and one that should be approached with caution.

Empirical Research on Diversity Effects

Perhaps the earliest study on record that examined ethnicity and work-related outcomes was conducted in 1958. Katz et al. studied the interpersonal relations between blacks and whites in a laboratory study comprised of 18 four-person teams. Each team included two white students and two black students. The study used open and positive communication as the outcome of interest. Not surprisingly, white students were more likely than blacks to communicate, and when they did communicate, they tended to direct their comments to each other, not to the black students in their team. These results likely reflect the status differences between blacks and

whites during the 1950s, something that makes any older study relating ethnicity to work-related outcomes questionable. Other early studies (Hoffman et al., 1962; Hoffman & Maier, 1961; Levy, 1964) suffer from the same generalizability issue. When considering a diversity dimension like ethnicity that is so politically- and socially-charged, it is important to consider the social context when determining whether any given study remains relevant.

More recent research on diversity effects has found mixed results – some studies show a positive relationship between ethnic diversity and performance, while others show a negative relationship. Studies showing a positive relationship have come from both laboratory and field experiments. For example, Watson et al. (1993) created 36 groups of students in a management course and asked them to engage in a series of case studies. Groups with high levels of diversity tended to consider a wider range of perspectives and alternatives than groups that were relatively homogeneous. McLeod and Lobel (1992) gave a brainstorming exercise to a large sample of college students, both graduate and undergraduate, organized into groups. While the diverse groups did not tend to produce a larger number of ideas or solutions, the ideas and solutions they produced were of higher quality than those generated by homogeneous groups. Two recent field studies provide evidence for a positive relationship between diversity and performance as well. Mullen & Cooper (1994) found that in-groups and out-groups changed over the course of the task, such that the initially-created groups, based on task-irrelevant issues, disappeared, and new groups arose that were more task-specific. They found that in-groups and out-groups that were specifically related to the task were not detrimental to the organization in achieving positive outcomes. O'Reilly et al. (1997) studied an organization with a reputation for valuing employee diversity, and found that, within the organization's work teams, diversity created positive, performance-related results.

Other studies have shown a negative relationship between diversity and performance. Many of these studies use individual performance evaluations as the outcome of interest, and the bulk of the studies show that, in diverse units or organizations, employees are less likely to receive positive performance evaluations from supervisors (Greenhaus et al., 1990; Lefkowitz, 1994; Sackett et al., 1991). Greenhaus et al. (1990) also found a relationship between organizational diversity and lower career satisfaction, lower organizational commitment, and employee perceptions of unlikely promotion. Tsui et al. (1992) found that, in diverse work teams, members of the minority, or the primary out-group, were less committed to the organization, more likely to be absent from work, and more likely to be in active search of other employment. Kizilos et al. (1996) found that diverse groups exhibited less prosocial behavior than homogeneous groups, and Pelled et al. (1997) provided evidence that high levels of ethnic diversity are related to more emotional conflict in work teams. Riordan & Shore (1997) found that, in diverse work groups, employees are less likely to be committed or to perceive that they are likely to advance in the organization. Studies showing a negative relationship between ethnic diversity and performance seem to be slightly more prevalent than those showing a positive relationship, causing the literature to branch out in two different directions and making it difficult to articulate hypotheses.

Hypotheses

Given the above research on diversity effects, it is difficult to formulate credible hypotheses relating diversity to performance outcomes. Two streams of theory suggest diversity will harm organizations, while a third suggests it will create benefits. The empirical research shows both positive and negative relationships. The bottom line is that diversity makes it

difficult for people to work effectively together. If a performance outcome requires employees to work extensively with one another, then that situation is perhaps more likely than others to see a negative diversity effect. If a performance outcome requires employees to work relatively independently, then it is more likely than others to see a positive effect, since the benefits of increased knowledge and information will not be outweighed by process difficulties.

It seems most likely, given the above literature review, that one would hypothesize a negative relationship for tasks requiring collaboration and coordination. As mentioned previously, most of the research on information and decision-making theory is based on functional and education diversity, not ethnicity. That makes it a weak theory on which to rest a study of this size, especially given that two other more prominent theories (similarity/attraction and social categorization and identification) suggest a different (negative) relationship. Furthermore, while we have not engaged in formal meta-analysis, it appears that the majority of empirical studies linking ethnic diversity to performance show a negative, not positive relationship. However, if the task itself requires little to no coordination, there is no reason to expect a negative relationship, since the theoretical perspectives outlined above are based explicitly in process-oriented difficulties. As a result, we frame the following hypotheses relating ethnic diversity to performance:

- H₁: Greater levels of ethnic diversity among public managers and street-level bureaucrats will lead to lower organizational performance, when the task requires significant coordination and collaboration.
- H₂: Greater levels of ethnic diversity among public managers and street-level bureaucrats will lead to higher organizational performance, when the task does not require significant coordination and collaboration.

Data and Methods

We will consider the relationship between ethnicity and organizational performance in the context of public schools. In order to do so, we will use data from all public school districts in the state of Texas collected between 1995 and 2002. This provides an excellent opportunity for examining the impact of ethnic diversity in the public sector for several reasons. First, public education is the most prominent type of bureaucracy in the United States, and the state of Texas contains one out of every 14 school districts in the country. As a result, this data set contains a not insignificant share of all public organizations in the U.S. context, at least by comparison to other available data. Second, the public education policy setting is an area in which it is relatively easy to operationalize key variables. For example, the target population is easily identified – students – and data on them are readily available. Street-level bureaucrats consist, of course, of teachers, and these teachers have a significant amount of discretion and power over organizational outcomes. Managers consist of assistant principals, principals, centrally-located administrators, and superintendents. Diversity variables are easily constructed at the organizational level for all of these groups, since the state of Texas requires districts to report the data. Performance in the context of public education is fairly straightforward as well – all school districts answer to political overseers (school boards) that establish performance criteria that are, for the most part, consistent across the state of Texas. Data are available for a host of control variables. Those variables help to account for environmental influences that might confuse the relationship between ethnicity and performance.

Models

In order to test the relationship between ethnic diversity and organizational performance, we use three different measures of performance as dependent variables (Figure 1). Each model will also include a lagged version of the dependent variable and a series of dichotomous variables for each of the years of data that we use; these are two precautions taken against the serial correlation that can result from pooled cross-sectional data. Each model will include a variable measuring ethnic diversity among managers, as well as a separate variable measuring ethnic diversity among teachers. Finally, we will include a vector of control variables to account for the environmental influences that tend to predict student outcomes. All of these variables are described in detail in the sections below.

[Insert Figure 1 about here]

We will test these models using Ordinary Least Squares (OLS) regression. The dependent variables that we will employ are all continuous, so it will not be necessary to use a more advanced technique. Moreover, the relevant theory does not suggest non-linear relationships between the independent variables of interest and the dependent variables. Since the data themselves do not exhibit non-linearity either (scatterplots do not reveal anything other than linear relationships between the independent and dependent variables), we do not include any transformations or multiplicative terms in the models.

Variables

In the following section, we will operationalize all of the variables that we will use in this study. First, we will operationalize the main independent variable of interest – manager and teacher diversity. Next, we will discuss the three dependent variables that will be used across the different models. Third, we will outline the different environmental factors included in the vector of control variables. Finally, we will discuss the two variables used to counteract the negative impact of serial correlation: the lagged dependent variable and the dichotomous variables for the years of data.

Ethnic Diversity

In order to test for the effects of diversity, we use the Blau (1977) Index of Variability, a common means of measuring variation in categorical data, to compute the overall variation in ethnic makeup of both managers and street-level bureaucrats (Figure 2). The Blau index allows one to calculate the level of ethnic diversity present among a group of individuals. A perfectly homogeneous group would receive a score of 0, while a perfectly heterogeneous group (with members spread evenly among an infinite number of categories) would receive a score of 1.ⁱⁱ This variable deals explicitly with variation among the ethnic groups in the organization; the characteristics of the target population are not considered in this measure, nor should they be. This variable operationalizes diversity as a concept of variation that could make processes in work groups more difficult. As such, there is no theoretical need to consider whether the organization matches those that it serves.

In this sample, the diversity measure for managers varies from perfect homogeneity (0) to 0.70, with a mean of 0.35 and a standard deviation of 0.18 (Figure 2). This indicates that ethnic

diversity tends to be moderate on the average, with cases that extend almost to the practical extremes of the variable. To illustrate, an organization that scored at the mean for this sample (0.350) might employ 80% whites, 10% African-Americans, 5% Hispanics, and 5% from all other categories (Figure 2). For the street-level bureaucrats in this sample, the diversity measure varies from 0 to 0.64, with a mean of 0.14 and a standard deviation of 0.14. It is not surprising that ethnic diversity is lower among street-level bureaucrats. The organizations in our sample employ many more teachers than managers, so targeted recruitment of qualified members of underrepresented groups is much more easily accomplished for managers.

[Insert Figure 2 about here]

Performance Indicators

Public organizations often have multiple and conflicting goals (Rainey 1993, 2003), and this is particularly evident in the policy area of education, where schools must choose the extent to which they focus on college preparation, life skills, basic reading and writing skills, and in some areas bilingual education. The most solid research would therefore test numerous performance indicators. In order to test the relationship between representation and performance in a general sense, we use three indicators. We will use the overall student pass rate on the Texas Assessment of Academic Skills (TAAS)ⁱⁱⁱ test as the primary performance outcome. Until 2003, all Texas students in the eleventh grade had to pass this exam in order to receive a regular high school diploma, and its results were used by the state to evaluate the performance of school districts. We will also consider the percentage of students earning above 1110 on the SAT and

dropout rate for each school district. This gives us the opportunity to explore low (dropout rate), middle (TAAS pass rate), and high-end (SAT above 1110) indicators.

We framed hypotheses relating diversity and performance as being dependent upon whether the performance indicator reflected a process that was relatively routine or dependent upon collaboration and coordination. Of the three performance indicators used to test diversity questions, we classify two of them as being “collaboration and coordination intensive” and one as being more routine. For the TAAS graduation exam, the process leading up to the outcome is not one that requires substantial coordination and collaboration. While schools may choose to engage in workshops or professional development activities specifically related to the TAAS exam, the work involved in preparing students for it takes place primarily in the classroom. As such, teachers do not have to work together to coordinate programs or activities, or even communicate back and forth. Rather, they simply do the best they can to prepare students for the TAAS exam while in their class.

On the other hand, the other two performance indicators reflect more substantial coordination and communication. There is an emphasis in Texas on keeping students from dropping out of school, so much that the Texas Education Agency publishes a quarterly newsletter with “best practices” for dropout prevention programs. A glance through these programs reveals that a number of schools sponsor supplementary programs for at-risk students that involve teachers serving on task forces, committees, or “leadership teams.” Almost all of these programs tend to involve teachers being as creative as possible to formulate strategies for keeping students in school – the bottom line is that teachers are working together, not separately, on the issue of dropouts.

The story is similar for college-bound students. Getting students prepared for the SAT and ready to go to college involves extracurricular programs that require teachers to work together. We have decided to classify this performance indicator, along with the dropout rate, as coordination and collaboration intensive, and therefore of use for Hypothesis 2. We have decided to classify the TAAS pass rate as relatively routine and of use for Hypothesis 1. We will discuss more about the different processes involved for each performance indicator in the results sections that follow.

Environmental Control Variables

In order to control for environmental influences, we separated the potential contributors to performance into two categories: resources and constraints (Tables 1 and 2).^{iv} To create a control variable for environmental resources, we conducted a factor analysis of the standardized values of eleven indicators: average salary for teachers, central administrators, campus administrators, and professional support staff; superintendent pay; student-staff and student-teacher ratios; and taxable property value, revenue, operating expenditures, and instructional expenditures, all per pupil. The factor analysis derived two factors, on which ten of the variables loaded (Table 1). We call one the “staff spending” factor (eigenvalue = 3.014), which included all of the pay and salary indicators, and we term the other one the “student spending” factor (eigenvalue = 4.457), which included student-staff and student-teacher ratios, revenue per student, and operating and instructional expenditures per student. We created a variable for each of these using the calculated factor scores.^v

[Insert Table 1 about here]

We constructed the control variable for environmental constraints by conducting a factor analysis of the standardized values of five indicators: the student dropout rate from the previous year; the percent of teachers with less than five years teaching experience; the percent of low income students in the district; the percent of non-certified teachers; and the teacher turnover rate from the previous year. Teachers, as employees in the organization and a form of street-level bureaucrat, are not explicitly part of the environment, but we include three teacher-based variables as part of this factor analysis. These three variables point specifically to the district's difficulty in obtaining and retaining quality teachers. As such, some underlying environmental factor is causing the school district to rely on potentially under-qualified staff, and that factor likely relates negatively to performance. The factor analysis derived two factors, on which the five variables loaded differently (Table 2). We call one the "staff constraint" factor (eigenvalue = 1.810), which included the three teacher variables, and the other one the "student constraint" factor (eigenvalue = 1.181), which included the dropout and low-income rates. We created a variable for each of the factors using the factor scores.

[Insert Table 2 about here]

Other Variables

Each model will also include an independent variable that represents the previous year's performance on the same indicator being used for the dependent variable. This lagged dependent variable creates a set of fixed effects that permits the model to take into account everything that went into predicting performance during the previous year. As such, the model necessarily

includes any time-constant phenomenon that might play a role in any given district and whose impact might otherwise show up in one of the independent variables of interest, creating bias. The lagged dependent variable is also important to the model from a theoretical standpoint, since bureaucracy is known to be fairly inertial, and organizational performance in a bureaucratic organization is based strongly on performance during previous years or cycles. Given how much such a variable tends to predict, inclusion of the lagged dependent variables creates a tough test for the other independent variables and makes it difficult for them to achieve statistical significance. We include it nevertheless, as both a methodological precaution and theoretical necessity.

We also include a series of four dichotomous variables in each model in order to account for any time-varying influences that might bias the other independent variables. For example, we use data from 1995-2002. As a result, we will include a dichotomous variable for 1995 (1995=1, all others=0), 1996 (1996=1, all others=0), 1997, 1998, 1999, 2000, and 2001, for a total of seven. It is unnecessary to include a variable for 2002, since it will be represented by values of zero across the other four variables. We are not interested in the substantive impact of these variables on the dependent variable or whether they reach a given level of statistical significance. They are included strictly as control variables.^{vi}

Findings

We outlined the different performance indicators chosen for this study and classified them as either “coordination- and collaboration-extensive” or not. Of the three indicators used in models relating diversity to performance, two of them test the first hypothesis, and one of them tests the second hypothesis. Dropout rate and college attendance rate reflect processes that involve

extensive coordination and collaboration, so they test the first hypothesis, whereas the TAAS examination does not involve as much coordination and collaboration, so it tests the second hypothesis. The next sections will address each hypothesis.

Hypothesis 1

Results provide limited support for the first hypothesis, that greater levels of ethnic diversity among managers and street-level bureaucrats will lead to higher organizational performance (Table 3). Manager diversity was not related to performance in a statistically significant manner for either of the two outcomes being predicted. Ethnic diversity, at least among managers, does not seem to affect performance in either a positive or negative way. This is an interesting result, since it counteracts two major arguments in public administration research – that management matters, and that diversity matters. When combining the two, at least in these models, it would seem that *neither* matters, although these models do not explicitly operationalize a management function, so the results must be taken with some amount of caution.

When examining street-level bureaucrats, however, there is a statistically-significant relationship present in each of the two models, and a negative one at that. When it comes to teacher diversity, increases lead to lower organizational performance, a finding that is consistent with the literature. These results suggest that when teachers have to coordinate, communicate, and collaborate in ways that go beyond the classroom, they will fall prey to the difficulties involved in work processes for diverse work groups. Whereas there may be a number of reasons for an organization to encourage or embrace diversity, and a number of convincing normative arguments on its behalf, this study offers no performance-based support for a pro-diversity argument.

These results speak clearly about the impact of ethnic diversity on outcomes, especially given the large number of control variables included in the models and the diagnostic tests conducted to ensure that there were no methodological interferences. These results exist in the face of control variables for manager and student ethnicity and a host of control variables that take into account, either directly or by rough proxy, school resources, teacher quality and experience, district socio-economic characteristics, and student quality. Variables that could not be measured, but affected performance during the previous year, are also included in the model by virtue of the lagged dependent variable. That ethnic diversity among teachers could reach statistical significance and produce a coefficient noting a fairly important substantive effect, at least for college preparation, indicates how strong the impact really is. As mentioned in previous sections, the presence of the lagged dependent variable produces a “tough test” for the rest of the independent variables, one that is met by the negative impact teacher diversity has on performance.

Why, then, would teacher diversity be so strongly related to outcomes, while manager diversity is unrelated in any way? One explanation is that bureaucrats at the street level in public education simply have much more impact over target population outcomes than do managers. If managers are responsible for setting policies and creating programs, and teachers are responsible for implementing those policies and programs alongside their teaching duties, it would appear that the influence of diversity is in implementation, not at the formulation stage. Teachers do enjoy substantial discretion in their work, which is one of the reasons that representative bureaucracy studies so frequently use public education as a policy context for testing representation. At least in public education, this study provides support for the notion that those closest to the target population are those most likely to influence results. Another explanation, or

at least a partial one, is that most of the managerial influence is filtered down *through* the teachers. Managers influence student outcomes by hiring certain teachers, encouraging them to engage in certain programs, and overseeing teacher interaction. It could be that the direct influence from managers is simply less visible than the indirect influence that results in larger coefficients and statistical significance for the teacher variables.

[Insert Table 3 about here]

Hypothesis 2

Results for the second hypothesis reiterate those from models testing the first (Table 4). The TAAS pass rate is the culmination of a process that does not involve much coordination or collaboration, so research suggests that diversity would result in a positive relationship. However, for managers, there is no relationship between diversity and outcomes at all, and for teachers, the relationship is negative. There is some consistency here, since teachers related to performance in a negative manner for the other hypothesis, but the outcomes being measured (TAAS pass rate vs. dropout rate and college preparation) are very different. These results do not support the second hypothesis.

Why, then, might teacher diversity lead to negative student outcomes? It is difficult to suggest that omitted variables bias is really at play here, since there are so many control variables in the model. All of the things that tend to go along with both teacher diversity and lower student outcomes – student diversity, large numbers of poor students, large numbers of dropouts, lower expectations for student achievement, and teacher quality – are included in the model. Perhaps there is more coordination and collaboration involved in preparing students for the TAAS than

was originally thought. While it might seem at first glance that teachers find out what is on the test and then prepare students on those topics, it could be that there is much more in the way of planning curricular enhancements to boost student performance, and that type of planning would involve coordination and implementation by teachers as a group.

Alternatively, it could also be the case that the TAAS exam is biased toward majority students, and students who are taught by majority teachers are more likely to get the skills and concepts better than those who are taught by a wider variety of perspectives. While it could be the case that students who have a diverse cadre of teachers will learn more, gain a larger set of cultural and social skills, and be better-rounded, if the TAAS examination measures only a narrow set of skills, then that learning will not be reflected in the examination. This speaks more to whether the TAAS examination is a valid measure of learning than whether it is a valid measure of organizational performance, and that is a question that this study is not prepared to answer. As a measure of performance, particularly for public organizations, the TAAS examination is valid because it is held in such high regard by the political overseers responsible for school district management. On the other hand, a substantial literature in the education policy arena seeks to understand whether certain outcomes really reflect learning. This dataset might be a useful way to address some of those questions, but this study cannot inform that literature as it is currently formulated.

Two additional findings warrant particular mention. First, as was mentioned for the first hypothesis, we see a significantly larger impact by ethnicity among street-level bureaucrats than among managers. In the public education context, teachers clearly enjoy a strong amount of discretion and influence student outcomes much more than managers, at least as far as these results can show. Second, in a larger sense, this difference between managers and street-level

bureaucrats illustrates that studies of diversity should look at different layers of the organization separately. One cannot assume that mid-level manager diversity will affect performance in the same ways as street-level diversity, and future studies linking diversity to work-related outcomes should explicitly control for the level of employees in the organization.

[Insert Table 4 about here]

Conclusion

Does this study show definitively that ethnic diversity causes process problems that lead to weaker performance? No. This is a large-N study that uses data and results to infer what is going on inside the “black box” of a Texas school district. There are no direct observations here, and there are no survey questions that ask specifically about process-oriented difficulties in work groups. Ideally, this study would be paired with a qualitative study that included information direct from teachers and managers about their experiences with diversity. However, we believe that these results can be taken with confidence for several reasons. First, there is a large and well-developed literature linking ethnic diversity and performance, and it finds consistently that process-oriented difficulties in diverse work groups lead to performance issues. Our hypotheses are well-formulated and theoretically-driven. Second, there is a multitude of control variables in the model, and these account for a number of other explanations. While we have not measured work process directly, it is evident for these two reasons that one might reasonably infer that process is the driver behind the ethnicity-performance link in this study.

The next step for research is to look into these process issues directly. Work process can be measured and observed, and the link between ethnicity and performance might be more solid

if multiple methods were used in research. This is the first public administration study to use large-N data to link a measure of diversity to organizational performance, but the field is still waiting on the first study to use qualitative data to achieve the same goal. It will also be important to consider the diversity-performance link in other policy contexts. For example, in policy areas where street-level bureaucrats have less discretion, is it manager diversity that seems to have a larger impact on performance? What about policy areas where street-level bureaucrats are less educated and do not have to go through the same certification mechanisms? Finally, research should consider the diversity-performance relationship for other dimensions of diversity. As noted earlier, different dimensions of diversity affect performance differently, and it is important not to use findings about ethnicity to inform research on other dimension.

Figure 1: Model Specification

$$\mathbf{P}_t = \boldsymbol{\alpha} + \mathbf{P}_{t-1} + \mathbf{M}_t + \mathbf{T}_t + \mathbf{X}_t + \mathbf{Y}_t + \boldsymbol{\varepsilon}_t$$

where \mathbf{P}_t = Performance outcome
 \mathbf{P}_{t-1} = Autoregressive term
 \mathbf{M}_t = Manager diversity
 \mathbf{T}_t = Teacher diversity
 \mathbf{X}_t = Vector of environmental control variables
 \mathbf{Y}_t = Vector of dichotomous variables for years of data
 $\boldsymbol{\varepsilon}_t$ = Error term

Figure 2: Diversity Variable Operationalization

$$D = 1 - \sum p_i^2$$

Where

p = Proportion of managers or street-level bureaucrats in each ethnic group

i = The number of different ethnic categories

Example

An organization is comprised of 80% whites, 10% African-Americans, 5% Hispanics, and 5% from all other categories. As a result, $D = 1 - [(0.80)^2 + (0.10)^2 + (0.05)^2 + (0.05)^2]$, or **0.345**.

When four categories of ethnicity are used, the values of the variable range from 0 (perfect homogeneity) to 0.75 (perfect heterogeneity).

Table 1: Factor Analysis of Environmental Resource Variables

<i>Variables</i>	<i>Factor</i>	
	Student Spending	Staff Spending
Student-teacher ratio	-0.864	0.139
Operating expenditures per pupil	0.890	0.317
Student-staff ratio	-0.834	0.060
Instructional expenditures per pupil	0.890	0.304
Revenue per pupil	0.829	0.327
Average teacher salary	0.088	0.832
Average central administrator salary	-0.251	0.748
Average campus administrator salary	-0.275	0.678
Superintendent pay	-0.416	0.718
Average support staff salary	-0.328	0.627
Eigenvalue	4.457	3.014
Percent of variance	40.52%	27.40%

Table 2: Factor Analysis of Environmental Constraints

<i>Variables</i>	<i>Factor</i>	
	Student Constraints	Staff Constraints
Drop-out rate, previous year	0.803	0.240
Percent low income students	0.576	0.518
Percent teachers with <5 years experience	-0.297	0.732
Teacher turnover rate	-0.338	0.722
Percent of non-certified teachers	-0.044	0.653
Eigenvalue	1.181	1.810
Percent of variance	23.62%	36.20%

Table 3: OLS Regression Results for Hypothesis 1

Dependent Variable: Student Dropout Rate

<i>Variables</i>	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t-score</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	
Manager diversity	0.047	0.060	0.009	0.784
Teacher diversity	0.474	0.105	0.065	4.501***
Student diversity	-0.016	0.063	-0.003	-0.260
Student constraints	0.016	0.012	0.015	1.390
Staff constraints	0.222	0.024	0.209	9.152***
Student resources	-0.062	0.016	-0.045	-3.895***
Staff resources	0.015	0.017	0.014	0.894
Lagged dropout rate	0.292	0.020	0.309	14.775***
Adjusted R ² : 0.301 Standard Error: 0.880 F: 193.837 N: 6,691 Statistical significance (one-tailed): *** 0.001 ** 0.01 * 0.05				

Dependent Variable: College Bound Rate

<i>Variables</i>	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t-score</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	
Manager diversity	0.088	0.673	0.001	0.131
Teacher diversity	-5.579	1.139	-0.067	-4.897***
Student diversity	2.081	0.706	0.031	2.949**
Student constraints	-0.733	0.136	-0.058	-5.397***
Staff constraints	-0.991	0.146	-0.082	-6.781***
Student resources	0.014	0.181	0.001	0.076
Staff resources	1.376	0.186	0.110	7.411***
Lagged college bound rate	0.493	0.011	0.484	42.863***
Adjusted R ² : 0.360 Standard Error: 9.498 F: 234.611 N: 6,225 Statistical significance (one-tailed): *** 0.001 ** 0.01 * 0.05				

Table 4: OLS Regression Results for Hypothesis 2

Dependent Variable: TAAS Pass Rate

<i>Variables</i>	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>	<i>t-score</i>
	<i>B</i>	<i>Std. Error</i>	<i>Beta</i>	
Manager diversity	-0.369	0.302	-0.006	-1.222
Teacher diversity	-3.469	0.523	-0.041	-6.628***
Student diversity	-0.471	0.319	-0.007	-1.478
Student constraints	-0.614	0.062	-0.049	-9.896***
Staff constraints	-0.592	0.071	-0.048	-8.358***
Student resources	0.255	0.075	0.017	3.379***
Staff resources	0.446	0.083	0.036	5.361***
Lagged TAAS pass rate	0.749	0.007	0.841	104.652***
Adjusted R ² : 0.859 Standard Error: 4.553 F: 2,845.100 N: 6,993 Statistical significance (one-tailed): *** 0.001 ** 0.01 * 0.05				

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Endnotes

ⁱ Estimates provided by the Bureau of Labor Statistics; <http://stats.bls.gov>. Website accessed September 10, 2005.

ⁱⁱ The upper limit for our data would be 0.75, since there are only four categories.

ⁱⁱⁱ The TAAS exam has recently been dropped in favor of a different standardized test, the Texas Assessment of Knowledge and Skills (TAKS).

^{iv} A vast literature links resources and constraints in the environment to student outcomes (Burtless, 1996; Fuller et al., 1996; Necochea & Cune, 1996).

^v We will also include all of these variables separately in a different version of each model, in order to ensure that combining them into factor variables does not bias the results.

^{vi} The trend, however, may be substantively interesting, but we will not address those results in this study.