

MANAGING SOCIAL CAPITAL AND DIVERSITY FOR PERFORMANCE IN PUBLIC ORGANIZATIONS

MALLORY E. COMPTON AND KENNETH J. MEIER

Managers concerned with the performance of their organizations will exploit available social, administrative, and human capital resources. However, extant theory and mixed empirical evidence leave the effect of social capital on performance unclear. The gains from these norms of reciprocity, participation, networking, and trust may disproportionately benefit only some of their clients, leading to disparities in outcomes among diverse clienteles. We argue that in such contexts, management will put in place policies to counter these disparities. Indeed, our empirical evidence from the management of public education supports the expectation that an institutional commitment to diversity successfully mitigates the uneven effects of social capital on organizational performance. This finding carries important implications for public management and equity in public policy outcomes and may be of particular relevance to management of outcomes relying on co-production.

INTRODUCTION

Although the study of social capital has generated an extensive literature examining the connectedness of communities, little work has examined how social capital affects public organizations and their management (notable exceptions include Tsai and Ghoshal 1998, and Andrews and Brewer 2013, 2015). Understanding the successful management of social capital may have important implications for public administration because this resource may facilitate effectiveness and efficiency in public programme implementation through pre-existing networks and coordination in communities (Putnam 1993, 2000). Social capital can play an important role in public administration, and managers should be able to interact with or shape the influences of social capital on the performance of public organizations.

In this article, we investigate how contexts of greater trust, networking, and reciprocity can influence organizational performance, and further how this social capital may disproportionately benefit some advantaged client groups. We argue that management can address this potential disparity with policies specifically aimed to help less-advantaged clients. In the context of education, an institutional commitment to diversity is one such managerial strategy to mitigate the uneven effect of social capital among disadvantaged students. We test our expectations with a set of original surveys of school principals that are linked to public data on programme performance. Our findings indicate that social capital is significantly associated with improvement in some students' achievement, but not with others, and that diversity management has little direct effect. Neither is a panacea. Further analysis, however, shows that diversity management can curb the impact of social capital to mitigate unequal performance. These findings call for more nuanced theorizing concerning public management, programme performance, and social capital.

SOCIAL CAPITAL IN PUBLIC MANAGEMENT

Following in the Tocquevillian tradition, scholars across the social sciences have long viewed social capital as a resource to be leveraged for better public policy outcomes

Mallory E. Compton and Kenneth J. Meier are at the Department of Political Science, Texas A&M University, USA.

(Bourdieu 1986; Coleman 1988; Putnam 2000; Bowles and Gintis 2002) or community resilience and recovery from shocks (Aldrich 2015). Many of these theorized expectations assume the concept of social capital as defined by Robert Putnam (1993, p. 167) as the 'features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions'. We adopt Putnam's definition of social capital as the interpersonal trust, norms (especially that of reciprocity), and networks, but we hesitate to wholly accept the latter contention of improved efficiency. It is this relationship between social capital and performance of public organizations that we reconsider.

Within public organizations, stronger social networks, shared norms of reciprocity, civic participation, and trust among individuals and institutions should encourage cooperation and productive sharing of information to improve performance and outcomes. More generally, intellectual capital should be improved by social capital, leading to better organizational performance and problem solving (Nahapiet and Ghoshal 1998). These effects of social capital are expected to advantage public organizations in achieving goals that lead to better government performance (Andrews 2011a). Shared norms of reciprocity and greater trust among individuals and public institutions help resolve collective action problems, making coordination in these environments less costly (Ostrom 1990). Put another way, social institutions and attitudes condition the effectiveness of individuals and institutions in achieving performance goals. This expectation is acute in the context of public organizations that rely on the efforts of clients and other community members to co-produce public goods, including fire and police services, social welfare and public health services, or education (Sharp 1980; Whitaker 1980; Schneider 2006; Andrews and Brewer 2010).

Empirical evidence has accumulated across disciplines that student achievement, particularly student behavioural outcomes, is higher in the presence of social capital (Coleman 1988; Portes 1998; McNeal 1999; Israel *et al.* 2001; Dika and Singh 2002; Goddard 2003; Perna and Titus 2005; Sandefur *et al.* 2006). In addition to the direct effects of family and community social capital on student performance, these group resources benefit organizations by improving resource exchange, innovation, the creation of intellectual capital, and cross-functional effectiveness (Adler and Kwon 2002). Research in public management has contributed to this line of inquiry by theorizing and testing how management can use social capital to affect organizational performance (Andrews 2011a, 2011b; Andrews and Brewer 2013). Early empirical evidence supports this expectation that aggregate outcomes and organizational performance are improved by social capital (Tsai and Ghoshal 1998), including school performance (Leana and Pil 2006).

More recent evidence suggests, however, that the anticipated benefits of social capital do not always accrue in public service outcomes (see Andrews 2011b for a review) or in private organizations (see Kwon and Adler 2014 for a review). Not only is social capital unevenly distributed within communities (Lin 2000), but public service clients do not benefit equally (Hero 2003; Kao and Rutherford 2007; Hawes and Rocha 2011), the effects of this resource are conditional on substitute resources available to management (Meier *et al.* 2016), and benefits may be conditional on economic context (Doh 2014). Given this mixed and conditional evidence, and because education policy recommendations have relied on the finding that social capital improves educational outcomes (e.g. Israel *et al.* 2001; Sandefur *et al.* 2006), it is an important task to identify when, where, and how social capital can benefit public organizations.

The reason for these inconsistent results may be the uneven distribution of social capital within society (Lin 2000), leading to disparities in outcomes across groups. Rodney Hero

(2003, 2007) has argued that social capital in the US context can generate or strengthen disparities because it is not equally distributed among racial groups. Social capital, in his view, links together similar individuals and offers a tool to exclude individuals who are different. These social resources can be used to generate and exploit lobbying efforts and pre-existing institutional biases to channel benefits to those groups with more resources. In this case, social capital could exacerbate disparities in public policy outcomes. Supporting this perspective, growing empirical evidence indicates that policy outcomes are made less equal by social capital, particularly within education (Hero 2003; Perna and Titus 2005; Hawes and Rocha 2011).

Public management, however, can interact with and respond to contextual factors such as social capital. Indeed, recent evidence suggests that social capital and human capital in public organizations serve as substitutes in the production of education, suggesting that management can direct these resources to serve certain goals (Andrews 2011a, 2011b). This supports the findings from a small line of literature in the study of management that investigates how the multiple types of organizational social capital can have different effects (for a recent review, see Kwon and Adler 2014). Paralleling research in political science that theoretically distinguishes between 'bridging' and 'bonding' social capital and their differential effects in communities (Putnam 2000), this research in management considers how organizational social capital can 'bind' or 'blind' (Grabher 1993; Smith-Doerr and Powell 2010). Too much trust may lead to a paucity of innovation (Smith-Doerr and Powell 2010). Too much solidarity within professional or other sub-groups in an organization can limit broad cooperative behaviour by deepening insider–outsider divisions. Just as community social capital may contribute to biases against disadvantaged groups, organizational social capital can be used to serve some client groups better than others.

In the specific context of education, organizational performance defined by student outcomes relies on the efforts of teachers, principals, extra-curricular organizations, after-school programmes, and, of course, parents. Social capital may enhance the efforts of these actors through a number of channels, but the students from social capital rich groups may benefit from these resources more than other students if social capital is not equally distributed. Community organizations and parents with stronger social networks may find it easier to organize effectively in the context of education policy. These parents may participate more in parent–teacher organizations to direct the distribution of financial, human, or material resources. They may also participate in higher-level debates on curriculum policy. Schools may be more responsive to the demands of parents with stronger ties to the community, managers, and other parents, because their support may be deemed more important to meeting school goals. These parent and community groups may also be more informed about policy alternatives, because they have greater access to other bureaucratic or government institutions. Lastly, the communication between teachers and parents from similar groups may be more effective, leading to more productive efforts by parents to improve student performance. Given that social capital does not always generate equal benefits for community members and that it may not always advantage organizational performance, what role does management play in activating social capital to improve public organizational outcomes?

Evidence of the uneven effects of social capital for less privileged, lower income, and minority groups calls into question how management responds to this potential disparity. Two basic principles of organization theory are that organizations are open systems (and are thereby influenced by environmental factors, but also influencing those environmental factors) and that they are goal-oriented collectivities. Relevant to the first principle,

managers are aware of environmental influences on their organization. The costs and benefits of social capital should be readily apparent to a manager with even a modest monitoring of the organization and its clientele. Where outcomes rely on the collective efforts of the organization members and clientele, managers should be able to identify these resources. Related to the second principle, we can assume that managers are interested in the performance of their organization. Where diversity is associated with both unequal outcomes and the uneven distribution of social capital, managers interested in improving outcomes among all client groups should be able to recognize and use (or counter) social capital.

Given the challenge of delivering services under social capital's disparate influences, management can implement strategies and implement goals to counter these effects. A nascent literature on diversity management studies how an organization might bring about the benefits of diversity among its employees (new ideas, create exchanges, recruitment and outreach, etc.) while avoiding the costs (misunderstanding, conflict, etc.; see Pitts 2005, 2006, 2009). Although research on diversity management generally focuses on efforts to manage diversity among organization employees, this management style also shapes how various factors (including social capital) affect the well-being of different client groups. Some principals, for example, will put in place procedures or programmes targeted to benefit underperforming student groups. Where unequal performance coincides with diversity among student groups, an institutional commitment to promoting, respecting, and valuing diversity may help address performance disparities.

Managerial commitment to diversity could take a variety of forms. Emphasizing the acceptance of diversity as an important goal, providing special training programmes on diversity, or ensuring communication with all client groups are some of the tools available for diversity management. However, evidence for a positive impact on performance from diversity management is mixed (Sabharwal 2014). Although a direct effect may not be seen, this form of management may successfully target and constrain other influences on performance. In the case of education, where minority and disadvantaged student groups are often lower performing, principals can implement such policies, formally or informally, with the specific goal of benefiting these students. Where managers recognize how social capital influences student performance and the potential disparities therein, they can adopt policies tailored to benefit diversity both inside and outside the organization.

A THEORY OF SOCIAL CAPITAL IN DIVERSITY MANAGEMENT

Bringing together these existing arguments, we argue that the effects of social capital on organizational performance are contingent on management efforts, specifically diversity management. If social capital is associated with greater benefits for some clients in comparison to those who are less advantaged, then management can act to compensate and focus on the disadvantaged clients. Diversity efforts, therefore, will benefit disadvantaged clients and limit disparities in the benefits of social capital. Thus, we argue that observed differences in the effects of social capital between client groups will be less where diversity management is implemented.

These arguments generate three testable hypotheses. First, we start with the expectation that social capital provides resources to benefit public policy outcomes, but these resources benefit some client groups more than others. Specifically these benefits should accrue less to minority and disadvantaged students, in the context of US schools.

Hypothesis 1: Social capital has a smaller positive effect on disadvantaged student performance than on other students' performance.

Second, we recognize that managers can put in place strategies to improve organizational performance. Diversity can generate innovation and learning if management cultivates these opportunities successfully; but diversity management also entails strategic policies targeted to the diversity of clients' needs. Just as with social capital, the benefits of diversity management may be uneven across client groups. The key difference, however, is that the benefits of an institutional commitment to diversity should accrue more to disadvantaged clients. In the context of public education, it is minority and low-income students who are commonly disadvantaged. These groups may have needs that differ from the majority; diversity management should be most responsive to the diversity of needs among these students.

Hypothesis 2: Diversity management has a larger positive effect on disadvantaged student performance than on other students' performance.

Third, we argue that the observed impact of social capital on the equity of public policy outcomes is conditional on management strategies. Diversity management should mitigate the differences we see in the effects of social capital across client groups. The impacts of diversity management should be concentrated on disadvantaged students, yet disadvantaged students may be less benefited by social capital. We posit, then, that disparities in the effects of social capital among student groups will be less where managers practise diversity management.

Hypothesis 3: Diversity management reduces differences in the effect of social capital on performance between student groups.

In the following sections, we introduce our research design and the context in which we will test these hypotheses. We follow this with a discussion of our results, and the substantive implications of our findings.

MANAGING DIVERSITY AND SOCIAL CAPITAL IN SCHOOLS

To test these expectations, we implemented two original surveys of school principals in Texas, which were then matched with archival data on schools and school performance. We omitted from our analysis charter schools and schools that reported spending more than \$28,000 or less than \$1,000 per pupil on instructional expenditure or that reported a student-teacher ratio larger than 35 or smaller than 2.86 because such schools are typically alternative schools or career centres. This sample of organizations offers a number of advantages. First, by considering only schools within a single state, all national and state-level regulations are held constant, leaving individual school principals responsible for much of the observed variation in policy and implementation. Second, because numerous studies have used this sample in the past, the implications of our findings can be placed within a well-understood context. Third, Texas is one of the most diverse states in the US (US Census Bureau 2012), making diversity management a strategy of real interest and consequence to public education. Perhaps the most important advantage of this sample, however, is the nature of education administration. In this context, outcomes (student performance) rely on coordinated efforts between parents, teachers, principals, after-school programmes, and other community organizations. Student academic achievement is, in part, reliant on the success of these actors and groups to cooperate and communicate. This element of education administration means that social capital's influence will more likely be observed in student performance than in other policy outputs that are less reliant on co-production.

To collect our data, we employed a nonprobability sampling method by surveying the population of Texas school principals with a questionnaire designed by the authors. Surveys were emailed to school principals in 2011 and 2012; we used an exclusively web-based survey. The 2011 survey was fielded between 22 February and 4 May, and generated 1,509 valid responses (29 per cent response rate). The 2012 survey was fielded from 14 February to 26 June, and generated 1,034 valid responses (20.7 per cent response rate). Because our data are self-administered and entirely voluntary, missing outcome variable responses necessitated that we drop some cases (e.g. some schools had too few students of a given racial group to conduct the analysis), resulting in a final sample of 1,610 school campuses. Although the response rates compare favourably with the response rates of other surveys of public officials (e.g. Hefetz and Warner 2011; Gazley 2014), we recognize the concern that analysis of our nonprobability sample may lead to biased results.

As Lee *et al.* (2012) have discussed, nonprobability sampling methods (like ours) may lead to biased inferences from the analysis of non-representative samples, and we designed our analysis to address this concern. To enhance our response rate, we sent three follow-up requests by email. Although we do not report the results here, there is no difference when bootstrapped standard errors are used to calculate statistical significance; indeed, our results become more significant with this approach. Further, the advantage of using a self-administered (and confidential) survey is a reduction in social desirability bias. Also, the use of an exclusively web-based survey makes data coding concerns negligible. Next, the inclusion in our models of a dummy variable for each survey wave accounts for any systematic bias produced by either survey form. The key advantage, however, of using primary data was our ability to design the survey question items to validly represent our theoretical concepts. Although we are confident in the validity of our results, we are careful in our discussion to avoid generalizing our results beyond this policy context.

To more directly address this concern about sample bias, we compared the characteristics of the schools with a principal response to the schools with a principal who did not respond. Although schools with larger black and Latino student populations, with higher teacher salaries, and with higher standardized exam pass rates were slightly less likely to be selected into our sample, the differences were not statistically significant. The percentage of low-income students and school size (enrolment) appeared to have no effect on the likelihood of being selected. To assess whether or not sample selection biased our regression results, we estimated models identical in specification to those presented in this article while weighting observations by their predicted probability of not being selected into the sample (using estimates from a logistic regression model) following the method introduced by Heckman (1976). The coefficient and standard error estimates from the weighted models were nearly identical to those presented here (and yielded the same substantive conclusions), indicating that our results are not biased in any substantial way by sample selection. We therefore present the results from our unweighted models in the following sections.

Dependent variable: student pass rate

We measure organizational performance as the percentage of students passing all sections (maths, reading, writing, etc.) of the statewide performance exam. Although the state of Texas changed its exam between our surveys from the Texas Assessment of Knowledge and Skills (TAKS) to the State of Texas Assessment of Academic Readiness (STAAR),

TABLE 1 *Summary statistics*

| Variable | Mean | Std. Dev. | Min | Max |
|-----------------------|-------|-----------|-------|-------|
| All pass rate | 76.30 | 12.30 | 12.0 | 99.0 |
| Black pass rate | 67.58 | 15.90 | 13.0 | 100.0 |
| Latino pass rate | 72.59 | 12.68 | 14.0 | 100.0 |
| Low-income pass rate | 70.63 | 12.10 | 6.0 | 100.0 |
| Diversity management | 0.00 | 1.01 | -4.31 | 2.46 |
| Social capital | 0.03 | 1.00 | -2.61 | 2.06 |
| Personnel capital | 0.03 | 0.95 | -4.78 | 2.22 |
| Teacher salary | 46.67 | 4.22 | 33.32 | 59.70 |
| Student-teacher ratio | 14.08 | 3.02 | 3.09 | 31.43 |
| Average experience | 12.18 | 2.79 | 1.87 | 29.50 |
| Enrolment | 6.08 | 4.72 | 0.23 | 33.69 |

TABLE 2 *Correlations between key variables*

| | Social capital | Diversity manage. | Personnel capital | All student pass rate | Black student pass rate | Latino student pass rate | White student pass rate |
|------------------------------|----------------|-------------------|-------------------|-----------------------|-------------------------|--------------------------|-------------------------|
| Social capital | 1.00 | | | | | | |
| Diversity management | 0.13 | 1.00 | | | | | |
| Personnel capital | 0.24 | 0.36 | 1.00 | | | | |
| All student pass rate | 0.39 | 0.06 | 0.22 | 1.00 | | | |
| Black student pass rate | 0.23 | 0.08 | 0.20 | 0.72 | 1.00 | | |
| Latino student pass rate | 0.29 | 0.08 | 0.22 | 0.89 | 0.64 | 1.00 | |
| White student pass rate | 0.34 | 0.09 | 0.17 | 0.83 | 0.58 | 0.68 | 1.00 |
| Low-income student pass rate | 0.26 | 0.09 | 0.22 | 0.92 | 0.73 | 0.89 | 0.73 |

$p < 0.05$ for all coefficients

both exams are criterion-based and seek to measure overall student performance; their outcomes should be comparable. Any change in the mean pass rate between years is modelled by including survey year fixed effects. This measure of performance represents a high stakes exam, which students must pass to receive a regular diploma from the state of Texas. Schools and school districts are also evaluated on the basis of their exam scores and given a rating by the state. Because these ratings are public knowledge and are widely recognized as an indicator of school quality, we consider pass rates on this exam to be an outcome of critical interest to managers. Principals will be keenly attuned to patterns in pass rates across student groups and their improvement. State evaluations are based on performance for individual racial and income groups. Summary statistics for these and all other measures are reported in table 1, and the correlations between our key variables are shown in table 2.

In order to test our hypotheses about the relative performance of disadvantaged students, we consider separately the pass rates of four student groups. In the context of US public education, disadvantage is associated primarily with minority and low-income students. Therefore, we identify black students, Latino students, and low-income students as being disadvantaged in the administration of education. Low-income students are defined as those eligible for free or reduced price school lunch programmes. In our analysis, we

TABLE 3 *Measuring diversity management, social capital and personnel capital: the factor analysis*

| | Indicator | Loading |
|----------------------|---|---------|
| Diversity management | <i>My school conducts special training and programmes on cultural differences and values.</i> | 0.57 |
| | <i>In my school, employees generally value ethnic and cultural differences</i> | 0.79 |
| | <i>My school is successful in achieving racial balance or reducing racial isolation among students.</i> | 0.75 |
| | <i>From my perspective, the racial balance of my school is important.</i> | 0.48 |
| | <i>Our school communicates with parents in their language of origin.</i> | 0.30 |
| | Eigenvalue: | 1.84 |
| Social capital | <i>In general, people in the communities served by my school:</i> | |
| | <i>Exhibit a high level of social trust towards others</i> | 0.73 |
| | <i>Are very active in civic and community affairs</i> | 0.91 |
| | <i>Participate in a wide range of community organizations (e.g. film societies, sports clubs, etc.)</i> | 0.88 |
| | <i>Attend PTA meetings/school functions</i> | 0.77 |
| | <i>Make charitable contributions, give blood, do volunteer work, etc.</i> | 0.88 |
| Eigenvalue: | 3.51 | |
| Personnel capital | <i>Assessment of the quality of teachers</i> | 0.61 |
| | <i>Assessment of the quality of professional development</i> | 0.56 |
| | <i>The people I have in this school ... can make virtually any programme work</i> | 0.75 |
| | <i>Recommend a subordinate for a principal position in another school</i> | 0.61 |
| | Eigenvalue: | 1.65 |

compare the performance of these three student groups to that of white students and the average performance of all students.

Diversity management

To measure managerial commitment to diversity, school principals were asked to respond to five questions using a 4-point agree/disagree Likert scale. These questions covered a wide range of attitudes and behaviours: (1) my school conducts special training and programmes on cultural differences and values, (2) in my school employees generally value ethnic and cultural differences, (3) my school is successful in achieving racial balance or reducing racial isolation among students, (4) from my perspective the racial balance of my school is very important, and (5) our school communicates with parents in their language of origin. Principal component factor analysis indicated a single factor with positive loadings for all questions (see table 3). The last question item we include, inquiring whether the school communicates with parents in their native language, has the weakest loading of this question battery. Because this action is likely the most financially costly in comparison to the other behaviours questioned, and therefore more likely to be influenced by factors other than managerial strategies and policies, it is not surprising that it is the weakest component of this factor. The results of this factor analysis are reported in the top of table 3.

Social capital

We use a measure of social capital based on principals' perceptions of the community served by their school. Principals were asked to use a 4-point scale to indicate the extent to which they agree (from strongly agree to strongly disagree) that, 'In general, people in

the communities served by my school': (1) exhibit a very high level of social trust towards others, (2) make charitable contributions, give blood, do volunteer work, etc., (3) are very active in civic and community affairs, (4) participate in a wide range of community organizations (e.g. film societies, sports clubs, etc.), and (5) attend PTA (parent–teacher association) meetings/school functions. The response to PTA attendance correlates at 0.51 with another question that asks the principal to evaluate the quality of parental involvement in the school. Each of these five question items relates directly to our theoretical definition of social capital, which was first offered by Putnam (2000). These items were factor analysed, and they loaded heavily on a single factor (see table 3) with an eigenvalue of 3.51. All of the individual items correlated with the factor at 0.72 and above, with trust and attending PTA meetings having the lowest loadings. These results are reported in table 3.

Control variables

As suggested above, social capital is one form of capital that may be leveraged to benefit student outcomes. Successful management may also be a function of the available human capital in an organization, or personnel capital. Our operationalization of this human capital resource focuses on the quality of personnel in the organization and is adapted from a similar measure validated by Meier and O'Toole (2009) for school superintendents. Meier and O'Toole (2009) also include a question about the quality of principals in their measure, and their questions refer to the district and ask about recommending a subordinate for a superintendent position in another district. Much of the effort in public management seeks to improve the skills and abilities of individuals employed by the organization. Principals were asked to rate the quality of teachers and the quality of professional development on a 4-point scale ranging from excellent to inadequate. They were also asked to agree or disagree on a 4-point scale (from strongly agree to strongly disagree) with the statements: 'With the people I have in this school, we can make virtually any programme work' and 'I am quite likely to recommend a subordinate for a principal position in another school.' Table 3 shows that the four items generate a single factor with positive loadings for all four variables (eigenvalue 1.65). This variable represents the quality of personnel available to management, or the availability of human capital.

A similar set of additional control variables are consistently employed by the education literature in specifying an 'education production function', selected for their theoretical relationship with student performance. Aggregate production functions vary from study to study, but they generally include controls for task difficulty and for resource availability, both concepts being inconsistently defined. Task difficulty is often operationalized as the disadvantaged student population, and in this case we include measures of black, Latino and low-income students (those on free or reduced price student lunch programmes) as a percent of the total student body. To control for the resources dedicated to educating students, we control for average teacher salary, the student to teacher ratio, and teacher experience. Because most educational expenditures are on personnel and teacher salaries, there is no need to control for total budget size at the school level when including measures of average teacher salary, a surrogate for class size (student enrolment), and teacher experience (many pay systems are based on seniority). Any remaining budget items are less clearly related to student instruction (e.g. transportation costs). We further include indicators for whether the school has elementary, middle school or high school grade levels (the levels are not mutually exclusive).

Modelling educational performance

To test our hypotheses, we model separately the pass rates for all students, black students, Latino students, white students, and low-income students; this allows for comparison of effect sizes across student groups. Because our dependent variable is a continuous measure, we use OLS (ordinary least squares) regression and we calculate standard errors using seemingly unrelated regression to deal with any correlated errors across the equations. This requires that after using OLS regression to generate coefficient estimates, we calculate heteroscedastic robust standard errors for each student group model from a simultaneous covariance matrix. Because the error terms in our five models are correlated, this is the most appropriate method, and reporting robust standard errors is important to account for unobserved factors that may generate unequal variance in standard errors across schools. Lastly, this method of calculating standard errors allows for convenient cross-model hypothesis testing; with one simple additional Wald test we can meaningfully compare effects across the models of student performance (Clogg *et al.* 1995). This is important for testing our hypotheses, which imply differences in effect sizes across groups.

To test our hypotheses, we proceed in three steps. First, we model performance as a linear additive function of every dependent variable discussed above, except personnel capital. We omit personnel capital initially because we are concerned about the relationship between commitment to diversity and quality of human capital. These measures may both tap into overall management quality, and we are concerned about multicollinearity in estimation. Second, we add personnel capital to our model for its theoretical relevance to performance management, allowing us to draw implications about the relative effects of commitment to diversity and personnel capital. This comparison allows some implications to be drawn about the relative influence of organizational human capital and the influence of specific management strategies in student performance. Lastly, we include a multiplicative interaction term between our social capital and commitment to diversity measures, Social Capital \times Diversity Management, which allows a test of our third hypothesis. In the following sections we report our results and discuss the implications of these findings.

RESULTS AND FINDINGS

Table 4 presents the results from our models omitting the personnel capital measure, and it leads to some interesting findings in regard to both social capital and diversity management. Looking first at the estimated effect of social capital, we see that it is significant and positive across each dependent variable model, except that of black students. This offers some initial support for our first hypothesis, that social capital will have a smaller effect on the performance of disadvantaged students, here defined as black students, Latino students, and low-income students. Social capital seems not to benefit the black student pass rate, but it does slightly improve low-income and Latino students' performance. Indeed, the effect of social capital on Latino student pass rates is estimated to be larger than that on white students. This result runs counter to our expectations.

The results in table 4 also contradict our second hypothesis, that managerial commitment to diversity will benefit the performance of disadvantaged students more than other students. The all student, white student, and low-income student pass rates are all significantly improved by our measure of diversity management, but a significant effect is not seen in black student and Latino student performance. The largest coefficient size is seen in the model of low-income student performance, but it is not the black or Latino student

TABLE 4 *Non-interactive model of student performance*

| | All students | White students | Black students | Latino students | Low-income students |
|-------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Social capital | 1.51*** (0.28) | 1.28*** (0.27) | 0.29 (0.54) | 1.37*** (0.32) | 1.14*** (0.31) |
| Commitment to diversity | 0.61* (0.24) | 0.54* (0.26) | 0.84 (0.48) | 0.49 (0.29) | 0.76** (0.27) |
| % Black | -0.16*** (0.03) | 0.05 (0.03) | -0.03 (0.04) | -0.03 (0.04) | -0.14*** (0.03) |
| % Latino | -0.06*** (0.02) | 0.09*** (0.02) | 0.04 (0.04) | -0.01 (0.02) | -0.04* (0.02) |
| % Low income | -0.21*** (0.02) | -0.26*** (0.02) | -0.27*** (0.04) | -0.19*** (0.03) | -0.12*** (0.02) |
| Teacher salaries | 0.30*** (0.08) | 0.01 (0.09) | 0.72*** (0.16) | 0.43*** (0.09) | 0.48*** (0.09) |
| Student-teacher ratio | 0.29 (0.22) | -0.31 (0.26) | 0.15 (0.38) | 0.36 (0.22) | 0.30 (0.22) |
| Teacher experience | -0.09 (0.11) | 0.20 (0.10) | 0.04 (0.18) | -0.18 (0.12) | -0.14 (0.12) |
| Enrolment | 0.08 (0.10) | 0.30** (0.11) | 0.08 (0.15) | 0.00 (0.11) | -0.10 (0.10) |
| Elementary school | 4.24*** (0.70) | 2.76*** (0.72) | 5.13* (2.03) | 4.53*** (0.89) | 5.14*** (0.82) |
| Middle school | -0.06 (0.65) | -0.10 (0.65) | 1.11 (1.93) | -0.37 (0.85) | -0.12 (0.77) |
| High school | -1.92 (1.00) | -3.66*** (1.10) | -2.20 (2.20) | -2.13 (1.13) | -0.25 (1.06) |
| Year 2012 | -1.38** (0.48) | -0.79 (0.49) | 3.14*** (0.90) | -0.49 (0.58) | -1.09* (0.55) |
| Constant | 74.05*** (4.18) | 92.60*** (4.37) | 39.67*** (7.91) | 59.73*** (4.74) | 54.00*** (4.65) |
| N | 1,692 | | | | |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ for a two-tailed hypothesis test. OLS with standard errors calculated by simultaneous estimation in parentheses.

pass rate that is improved by a managerial commitment to diversity. These results again offer mixed evidence for our second hypothesis. An emphasis on diversity could, in fact, benefit any students by providing exposure to diverse individuals and cultures.

To investigate these findings further, we include our personnel capital variable in the models presented in table 5. Because managers may be able to shape both personnel quality and an organization's commitment to diversity, the influence of these two factors may be correlated. To test our second and third hypotheses, we want to ensure that we identify the specific role played by diversity management, and not that of overall management quality or style. Our findings with respect to social capital are unchanged after controlling for the overall quality of human capital within these schools. Our findings with respect to diversity management, however, are substantially changed. Not only have the estimated effects of diversity management diminished across each model in table 5, but in none of these models is its coefficient statistically significant. These results call into question the limited support we observed in the initial models. Strategies specifically targeting support to diverse students appear to have no significant effect on the performance of any student group, although personnel quality does seem to have an important impact.

TABLE 5 *Non-interactive models of student performance with personnel capital*

| | All students | White students | Black students | Latino students | Low-income students |
|-------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Social capital | 1.30*** (0.28) | 1.21*** (0.27) | 0.15 (0.55) | 1.12*** (0.32) | 0.88** (0.31) |
| Commitment to diversity | 0.23 (0.25) | 0.41 (0.27) | 0.48 (0.49) | 0.03 (0.30) | 0.29 (0.28) |
| Personnel capital | 1.26*** (0.28) | 0.44 (0.29) | 1.10* (0.51) | 1.51*** (0.32) | 1.59*** (0.31) |
| % Black | -0.16*** (0.03) | 0.05 (0.03) | -0.02 (0.04) | -0.03 (0.04) | -0.13*** (0.03) |
| % Latino | -0.06*** (0.02) | 0.09*** (0.02) | 0.05 (0.04) | -0.01 (0.02) | -0.04* (0.02) |
| % Low income | -0.21*** (0.02) | -0.26*** (0.02) | -0.27*** (0.04) | -0.19*** (0.03) | -0.12*** (0.02) |
| Teacher salaries | 0.27*** (0.08) | 0.00 (0.08) | 0.69*** (0.16) | 0.40*** (0.09) | 0.45*** (0.09) |
| Student-teacher ratio | 0.30 (0.22) | -0.31 (0.26) | 0.15 (0.38) | 0.37 (0.22) | 0.31 (0.22) |
| Teacher experience | -0.09 (0.11) | 0.20* (0.10) | 0.05 (0.18) | -0.18 (0.12) | -0.14 (0.12) |
| Enrolment | 0.07 (0.10) | 0.29** (0.11) | 0.07 (0.15) | -0.02 (0.11) | -0.12 (0.10) |
| Elementary school | 4.25*** (0.69) | 2.76*** (0.72) | 5.06* (2.00) | 4.56*** (0.87) | 5.18*** (0.80) |
| Middle school | 0.02 (0.64) | -0.06 (0.65) | 1.15 (1.88) | -0.26 (0.83) | 0.00 (0.76) |
| High school | -1.65 (1.00) | -3.56** (1.11) | -2.08 (2.17) | -1.79 (1.13) | 0.09 (1.05) |
| Year 2012 | -1.58** (0.48) | -0.87 (0.50) | 2.95** (0.91) | -0.73 (0.58) | -1.33* (0.56) |
| Constant | 75.19*** (4.12) | 93.04*** (4.33) | 40.76*** (7.90) | 60.91*** (4.68) | 55.41*** (4.59) |
| N | 1,692 | | | | |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ for a two-tailed hypothesis test. OLS with standard errors calculated by simultaneous estimation in parentheses.

A valid test of our hypotheses, however, requires that we compare the magnitude of the social capital coefficient across these models. Table 6 reports the results of a series of linear Wald cross-model tests of coefficient differences. A significant Wald χ^2 statistic implies that each pair of coefficients is statistically distinct. Table 6.A reports the test results for the models in table 5, and highlights a few important points. First, the effect of social capital for black students is significantly different (smaller) than the effect on white student and the all student pass rates. Second, low-income student performance is improved by social capital, but to a significantly smaller degree than the total student population. Lastly, the effects of social capital on Latino student, white student, and all students are indistinguishable – they are not significantly different.

The regression results in table 5 also provide a test of our second hypothesis about the effect of diversity management. These results offer no support for our expectation; not only are the effects indistinguishable across student groups, they are also indistinguishable from zero. Table 6.B: Diversity Management Coefficient Differences reports the results of

TABLE 6 *Wald tests of coefficient differences*

| <i>A: Social capital coefficient differences</i> | | |
|--|------------------------|------------------------------|
| Effect of social capital on: | χ^2 statistic | |
| | White pass rate | All student pass rate |
| Black pass rate | 3.92* | 5.48* |
| Latino pass rate | 0.09 | 0.97 |
| Low-income pass rate | 1.65 | 11.59** |
| + p < 0.1, * p < 0.05, ** p < 0.01. | | |
| <i>B: Diversity management coefficient differences</i> | | |
| Effect of diversity management on: | χ^2 statistic | |
| | White pass rate | All student pass rate |
| Black pass rate | 0.02 | 0.30 |
| Latino pass rate | 1.83 | 1.45 |
| Low-income pass rate | 0.25 | 0.24 |
| + p < 0.1, * p < 0.05, ** p < 0.01. | | |
| <i>C: Interaction coefficient differences</i> | | |
| Effect of soc. cap × diversity manage. on: | χ^2 statistic | |
| | White pass rate | All student pass rate |
| Black pass rate | 4.27* | 5.32* |
| Latino pass rate | 0.17 | 0.4 |
| Low-income pass rate | 0.07 | 0.53 |
| + p < 0.1, * p < 0.05, ** p < 0.01. | | |

tests for differences between the coefficients on diversity management across each model reported in table 5. We see here that the effects of diversity management for each student group are statistically indistinguishable. After controlling for overall personnel capital, an institutional commitment to diversity has no significant effect on the pass rate of any student group.

We now turn to a test of our third hypothesis, that managerial commitment to diversity will reduce divergence in the effects of social capital on average student performance and that on disadvantaged students' performance. To do this, we include a multiplicative interaction modelling the effect of social capital to be conditional on diversity management. First, we see from table 7 that the coefficients on the multiplicative interaction terms are insignificant in each dependent variable model. The sign of these coefficients, however, aligns with our expectations. A negative interaction coefficient suggests that the effect of each component variable is diminishing in the other – an increase in the value of one term decreases the marginal effect of the other. A positive interaction coefficient thus suggests that the effect of each component variable is increasing in the other – an increase in the value of one term increases the marginal effect of the other. The positive interaction coefficient for black student pass rates therefore suggests that the positive effect of social capital on these students' performance is increased where there is a greater commitment to diversity. These coefficients are not, however, statistically significant.

TABLE 7 *Interactive model of student performance*

| | All students | White students | Black students | Latino students | Low-income students |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| Social capital | 1.36*** (0.27) | 1.26*** (0.27) | 0.02 (0.55) | 1.21*** (0.32) | 0.93** (0.31) |
| Commitment to diversity | 0.25 (0.25) | 0.44 (0.27) | 0.45 (0.49) | 0.06 (0.30) | 0.30 (0.28) |
| Soc. capital × com. to diversity | -0.31 (0.19) | -0.30 (0.20) | 0.46 (0.37) | -0.40 (0.24) | -0.24 (0.23) |
| Personnel capital | 1.24*** (0.27) | 0.42 (0.28) | 1.14* (0.51) | 1.48*** (0.32) | 1.57*** (0.31) |
| % Black | -0.16*** (0.03) | 0.05 (0.03) | -0.02 (0.04) | -0.03 (0.04) | -0.13*** (0.03) |
| % Latino | -0.06*** (0.02) | 0.09*** (0.02) | 0.05 (0.04) | -0.01 (0.02) | -0.04* (0.02) |
| % Low income | -0.21*** (0.02) | -0.26*** (0.02) | -0.27*** (0.04) | -0.19*** (0.03) | -0.12*** (0.02) |
| Teacher salaries | 0.28*** (0.08) | 0.00 (0.09) | 0.69*** (0.16) | 0.40*** (0.09) | 0.45*** (0.09) |
| Student-teacher ratio | 0.30 (0.22) | -0.31 (0.26) | 0.15 (0.38) | 0.37 (0.22) | 0.31 (0.22) |
| Teacher experience | -0.10 (0.11) | 0.19 (0.10) | 0.05 (0.18) | -0.18 (0.12) | -0.14 (0.12) |
| Enrolment | 0.06 (0.10) | 0.29** (0.11) | 0.08 (0.15) | -0.02 (0.11) | -0.12 (0.10) |
| Elementary school | 4.22*** (0.69) | 2.73*** (0.72) | 5.00* (1.99) | 4.52*** (0.87) | 5.15*** (0.80) |
| Middle school | 0.00 (0.64) | -0.08 (0.65) | 1.08 (1.88) | -0.28 (0.83) | -0.02 (0.76) |
| High school | -1.67 (1.00) | -3.58** (1.11) | -2.16 (2.17) | -1.82 (1.12) | 0.07 (1.05) |
| Year 2012 | -1.56** (0.48) | -0.85 (0.50) | 2.93** (0.91) | -0.71 (0.58) | -1.32* (0.55) |
| Constant | 75.10*** (4.13) | 93.06*** (4.33) | 40.97*** (7.85) | 60.74*** (4.68) | 55.33*** (4.59) |
| N | 1,692 | | | | |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ for a two-tailed hypothesis test. OLS with standard errors calculated by simultaneous estimation in parentheses.

The results in table 6.C further confirm that the interaction terms in the Latino and low-income models are not statistically distinct from those of either the white or all student pass rate models. However, the interaction of social capital and diversity management on the black student pass rates is significantly different from that on either white or all student performance. Despite the insignificance of these coefficients, the estimated effects may yet have important implications. To more validly and accurately infer statistical significance and to understand these effects in substantive terms, we turn to a graphical interpretation of these estimated effects (Brambor *et al.* 2006).

Figures 1 through 3 show the predicted pass rates for each of the five student groups we have defined, produced using the interactive models reported in table 7. Each line in these graphs represents a predicted pass rate holding all else equal but the value of the independent variables reported along the horizontal axis and legend of each graph. Each

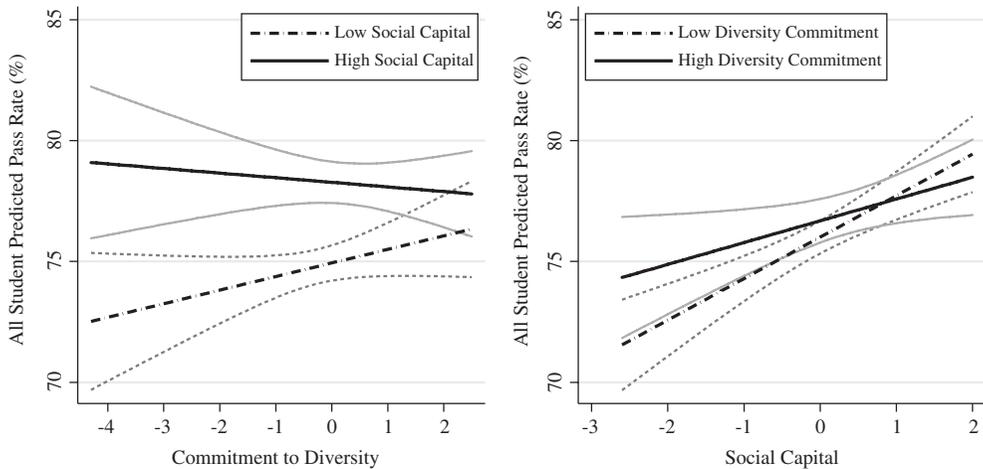


FIGURE 1 All student predicted pass rates

prediction is accompanied by 95 per cent confidence intervals, and we can infer statistical significance in two ways. First, where the confidence intervals for two lines overlap, the predicted pass rates are statistically indistinguishable between the conditions set for each line; this implies that the variable that distinguishes the conditions set for the two lines has no significant effect on performance. Second, looking across the horizontal axis, the predicted effects are statistically distinct from one another where the sets of high and low confidence intervals do not overlap. If the confidence intervals on a prediction line include the same vertical axis values for the entire spread of the horizontal axis, the variable shown along the horizontal axis has no significant effect on performance. This same method of interpretation applies to each of figures 1–3.

Looking first at figure 1, in which all student pass rate predictions are shown, two important findings are clear. First, the left side of this figure shows that low social capital schools are predicted to have significantly lower pass rates, on average, than high social capital schools. Only where an institutional commitment to diversity is very high does the effect of social capital become insignificant (the confidence intervals on each prediction line overlap). Social capital improves the overall student pass rate, but a strong institutional commitment to diversity can compensate for the lack of social capital in terms of improving test scores. Second, the right side of figure 1 shows, again, that social capital significantly improves average student performance in schools with a low commitment to diversity, but not in schools with a stronger commitment. We also see that the difference in performance between schools with varying levels of commitment to diversity is insignificant – diversity management makes no significant difference to average student performance. Although these results are not direct tests of our hypotheses, they suggest that while diversity management may have little direct effect on student performance, it does moderate the effect of social capital.

Figure 2 offers a visual test of our third hypothesis by comparing how social capital influences the performance of different student groups at differing levels of institutional commitment to diversity. Three findings are of note in this figure. First, the pass rates of white, Latino and low-income students are significantly improved by social capital, although this effect diminishes at very high and very low commitment to diversity values.

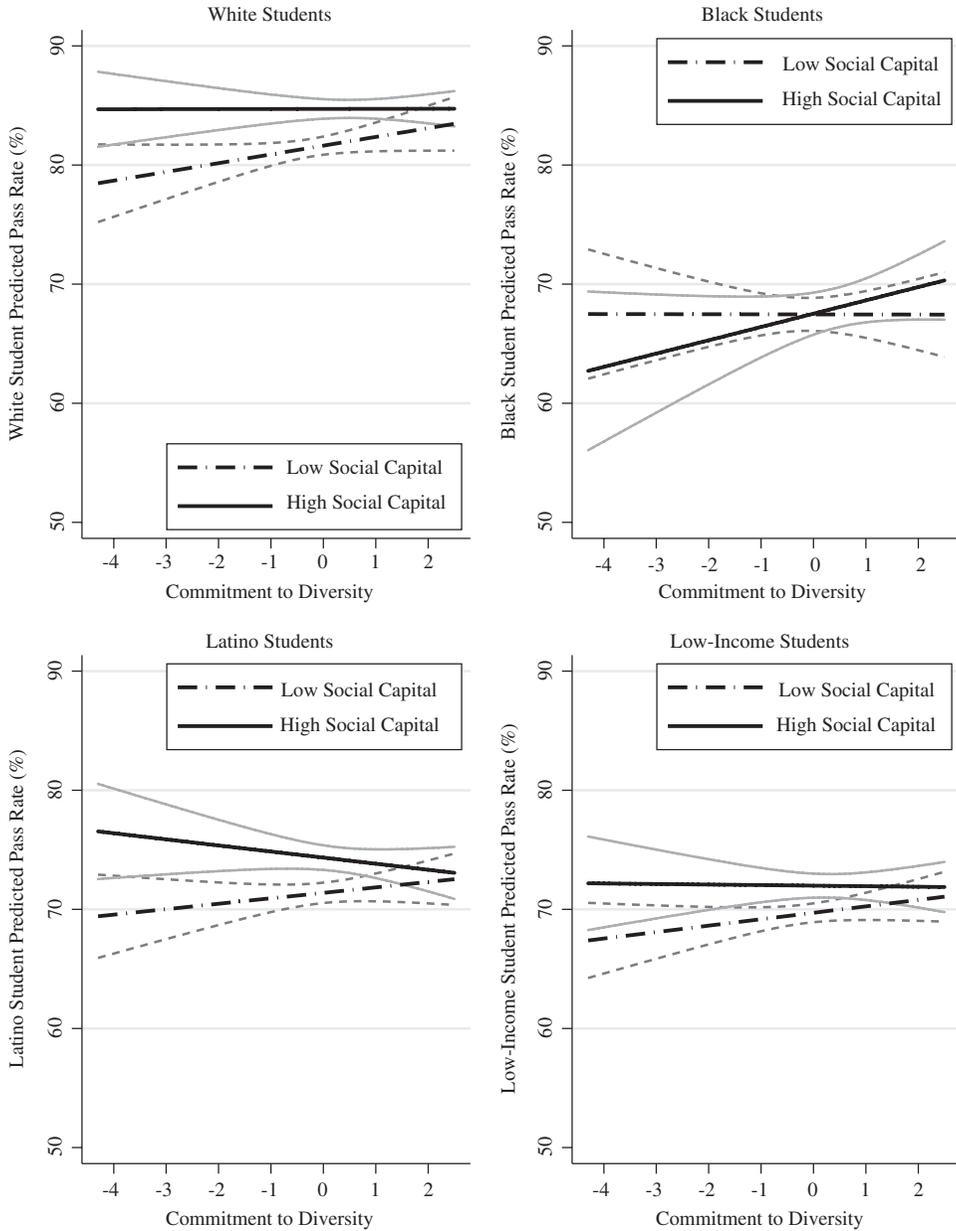


FIGURE 2 Predicted pass rates and social capital levels

The effect for low-income students is both smaller in magnitude and less consistent in significance than it is for either white or Latino students. The effect of social capital is not, however, significant for black student performance. Second, the pattern of effects of both social capital and commitment to diversity look very similar for white and Latino students, although the average predicted pass rate for Latino students is significantly less than that of white students. Lastly, the insignificance of social capital in black student predicted pass

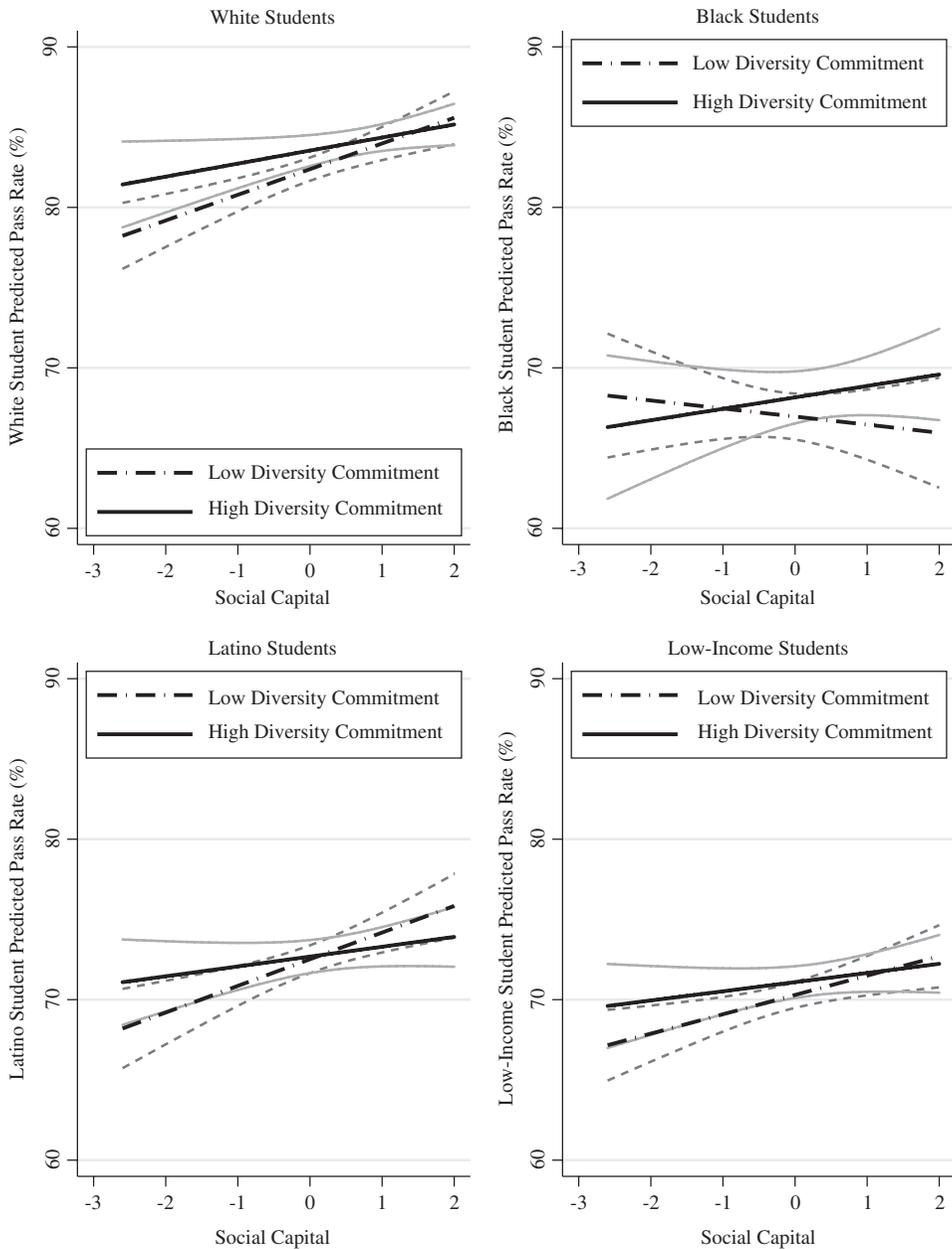


FIGURE 3 Predicted pass rates and institutional commitment to diversity

rates reiterates the discussion above: neither social capital nor commitment to diversity helps black student performance, and their effects are significantly less for these students than for any other group we consider here.

Figure 3 shows predicted pass rates across varying levels of social capital, at two different levels of diversity commitment. The findings from these graphs make the findings

discussed above clear. A stronger institutional commitment to diversity can compensate for a lack of social capital – diversity management makes social capital irrelevant to all student groups. We also see continued evidence that there is heterogeneity within our classification of disadvantaged students. Latino student performance is similar to white student performance in how it is affected by both diversity management and social capital, but the performance of African American students is unresponsive to either influence. Lastly, low-income students are only slightly benefited by social capital and remain unaffected by diversity management. Because low-income status cross-cuts race and ethnicity, the insignificance of these factors may reflect the mixed findings we see with respect to black students, Latino students, and white students.

DISCUSSION AND CONCLUSION

Our findings contribute to the literature on organizations as open systems and the role that management can play in dealing with environmental resources and constraints (Thompson 1967; Lynn *et al.* 2000; Rainey 2009; O'Toole and Meier 2011). Social capital is an environmental resource, but our findings support the growing consensus that social capital generates unequal benefits across diverse client groups. Social capital has a less positive influence on student performance among minority and disadvantaged students while its largest effect is seen among white students. Although Latino and low-income students see some benefit, black students remain unaffected by social capital (hypothesis 1). The disparate influence of social capital supports the broader policy arguments of Hero (2003, 2007) on the potential problems generated by the development of social capital. Similar disparities may be likely in policy areas relying heavily on client co-production to generate policy outcomes, such as education (see Ostrom 1990; Bovaird 2007). This specific case is especially of concern given the test score and other racial education gaps that occur for racial minorities in the United States and other countries with heterogeneous populations or influxes of immigrants (Jencks and Phillips 2011).

Next, these findings offer little support for our second hypothesis, that minority and disadvantaged students benefit more than others from diversity management when the overall quality of personnel is considered. Rather, it appears that no student group performance is significantly affected by these specific managerial strategies. Theory and prior evidence suggest that disadvantaged student performance should be improved where management explicitly emphasizes strategies that should disproportionately benefit them (see Pitts 2005, 2009; Sabharwal 2014), yet we see no evidence of that here. The performance of these groups rather seems to be driven more by the quality of organizational personnel than any emphasis on diversity management. This may suggest that managerial intentions (strategies) have less impact than the quality or skill of personnel, at least in regard to student performance.

Our contribution to the diversity management literature, in contrast, is the implication that managerial strategies operate in conjunction with social capital. We have argued that diversity management can mitigate differences in social capital's effect on student performance across groups. Diversity management strategies signal an organizational atmosphere that recognizes the need for specific policies to assist students facing disadvantages in their academic success. Managers can identify the deficit of social capital among some student groups, and can put in place mechanisms to compensate for this disparity. Alternatively, managers may identify and limit any preferential effects of social capital. We see support for our argument. In schools with less commitment to diversity, social capital positively influences the performance of white, Latino and low-income

students, but not black students, and thus creates larger racial gaps in performance. In schools with a stronger commitment to diversity, social capital does not disproportionately benefit any student group.

These findings suggest two important conclusions. First, social capital may serve some clients but not others. Benefits accrue to both white and Latino student groups, suggesting differences in social capital that do not diverge strictly by ethnicity or income status. The comparable results for white and Latino students might result from their relative size. They are the two largest groups in Texas schools, with Latinos now more numerous than whites. In many school districts Latinos are a majority of the total population. In that case the social capital measure may actually be a measure of Latino social capital.

Second, an institutional commitment to diversity mitigates the effects of social capital. In schools that practise diversity management, social capital is not associated with increased/decreased performance gaps among groups of students. We interpret this as evidence for a role of management in identifying and managing the distribution of benefits from social capital. Within this specific case of education, a commitment to diversity is successful in managing away the disparate effects of social capital.

Public organizations are exposed to environmental influences, but managers do not sit idly by while community resources such as social capital foster disparities in performance. Management can identify whether some clients are (dis)advantaged and implement strategies to compensate for this disparity. Social capital may influence any public organization, but this influence should be greatest where managers are more reliant on co-production with community members – where clients, managers, and other actors are jointly involved in the administration of public programmes. Education offers a critical test of our theory, and our findings have the strongest implications for management of policy areas including healthcare, public assistance, or environmental policy, all of which can involve community members in their administration. Unsurprisingly, management does matter. What we offer here is new evidence that management matters in the distribution of benefits from social capital by eliminating the distributional influence of social capital on organizational performance. This finding calls into question the common conceptualization of social capital as a ‘resource’ to organizations.

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