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State Test Results Are Predictable

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State Test Results Are Predictable

by Christopher H. Tienken
Academic Editor



Abstract

Out-of-school, community demographic and family-level variables have an important influence on student achievement as measured by large-scale standardized tests. Studies described here demonstrated that about half of the test score is accounted for by variables outside the control of teachers and school administrators. The results from these studies raise serious questions about the validity of state test results to judge student learning and the quality of teaching and leadership.

Key words: PARCC, SBAC, high-stakes testing

Education bureaucrats from a majority of the states volunteered their public school students, teachers, and school administrators to participate this coming January 2015 in one of two national testing programs: Smarter Balanced Assessment Consortium (SBAC) or the Partnership for Assessment of Readiness of College and Careers (PARCC). Clearly, data generated from these new national assessments will be used in a high-stakes manner to judge student, teacher, and school administrator performance in at least the nearly 40 states granted No Child Left Behind (NCLB, 2002) waivers by the United States Department of Education. Examples of the high-stakes decisions to be made in some states based on the test results include, but are not limited to, student promotion to the next grade level, eligibility to graduate high school, teacher tenure, teacher and school administrator merit or bonus pay, and school administrator effectiveness.

Problem

Life-changing decisions will be based on the results of these tests, even though the outcomes

of such high-stakes tests are highly predictable. My own work, as well as that of scholars such as Maylone (2002) and Jones (2008), has demonstrated that it is possible to predict the actual percentage of students in a district, at a specific grade level, that will score proficient or above on the current state tests in language arts and mathematics.

Accurate predictions have been made at the high school level in Michigan and New Jersey, and in Grades 3, 5, 6, and 7 in New Jersey, by knowing three to five community and family demographic variables (Tienken, Tramaglino, Turnamian, & Lynch, 2013; Turnamian & Tienken, 2013). Scholars are able to make accurate predictions without using school district data factors such as size, experience, or quality of the teaching staff; per pupil spending; or other similar school district variables. Colleagues are conducting similar studies in Connecticut, Iowa, North Carolina, and New York.

A problem exists when bureaucrats and educators use the results from high-stakes standardized assessments to measure the quality and success of school district personnel or students, especially when they fail to accurately control for the influences of family and community demographic variables on the test results.

What Is Known

It is already well known that out-of-school, community demographic and family-level variables, such as those easily found in the latest U.S. Census data, have a statistically significant influence on student achievement as measured by large-scale standardized tests (e.g., Bernstein, 1971; Coleman et al., 1966; Jencks, 1972). Factors such as median income of a community, parental education levels, percentage of lone parents in the community, percentage of high school dropouts in the community, and other related indicators can

account for more than half the achievement on state standardized tests (Sirin, 2005). That is settled law in the research community, and results from high-stakes tests should not trump data from multiple measures of student achievement (Hamilton, 2003).

What Is New

Those same family and community demographic variables that explain large portions of standardized test results also can be used to make accurate predictions about the actual percentage of students at the school district level that will score proficient or above on state tests. Researchers are able to go beyond the point of saying, for example, that 58% of the results from the Grade 7 New Jersey Assessment of Skills and Knowledge in Mathematics is accounted for by a group of 12 demographic variables. Rather, the research community now can predict the percentage of students scoring proficient or above at the district level, for entire states, using three to five specific demographic variables.

A general need exists nationally for more empirical, quantitative analyses to determine the predictive influence that out-of-school community demographic variables such as median home income, percentage of households in poverty, percentage of the community with advanced degrees, and similar community-level variables have on the state-mandated high-stakes tests. The conceptual framework for such research rests on the idea that if the results can be predicted with a level of accuracy by factors outside the control of students and school personnel, then the entire policy foundation of using the results from such tests as the sole or deciding factor to make important decisions about school personnel and students should be jettisoned. The growing influence of standardized test-based accountability policies requires further vetting via empirical measures.

What We Have Found Thus Far

Through a series of cross-sectional and longitudinal studies completed in New Jersey

since 2011, my colleagues and I have begun the process of demonstrating the predictive accuracy of family and community demographic variables in Grades 3, 5–7, and high school in New Jersey. A similar study has been completed in Grades 3–8 in Connecticut and will be published by 2016. I present some grade-level results from New Jersey as an example of how powerful out-of-school variables are in predicting the percentage of students achieving proficiency on state tests.

Grades 3, 5, 6, and 7

Our best model predicted the percentage of students scoring proficient or above on the New Jersey Grade 3 language arts test for 52% of the 438 school districts in our sample, using only three demographic factors from the communities served by each district: (a) percentage of lone-parent households, (b) percentage of bachelor's degrees in a community, and (c) percentage of economically disadvantaged families in a community. We predicted the percentage of students scoring proficient or above on the mathematics section for 60% of the districts in our sample using the same three out-of-school variables (Turnamian & Tienken, 2013).

Our results for Grade 6 were even more precise. We accurately predicted the percentage of students scoring proficient and above in 70% of the districts for the language arts portion of the test and in 67% of the districts for the math portion in our sample of 389 school districts (Tienken et al., 2013). We achieved similar results in Grade 7 by making accurate predictions in 77% of the districts for language arts and 66% of the districts in math for our statewide sample of 388 school districts.

A longitudinal study of three years of Grade 5 results in math and language arts in New Jersey demonstrated even higher levels of predictive power (Tienken & Wolfe, 2014). Our models accurately predicted the percentage of students who scored proficient and above in 64% and 78% of school districts on the language arts and math tests, respectively, in 2010; 78% and 84%



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in 2011; and 81% and 84% of the school districts in our state sample of 438 districts in 2012. As with Grade 3, a combination of variables such as the percentage of lone-parent households in a community, percentage of people with a high school diploma, and the percentage of families with incomes exceeding \$200,000 were used in the predictive models.

Policy and Practice Implications

Factors outside the control of students' and educators' influence can be used to predict student performance on statewide standardized tests as well as other standardized measures of academic achievement such as the SAT (Berliner, 2009; Harwell, Maeda, & Lee, 2004; Sirin, 2005). The use of the results from statewide standardized tests and other standardized tests whose results are influenced heavily by family and community demographic factors should not be used as an important aspect of school reform or accountability policy. The results are not an accurate enough reflection of student learning, teaching, or leadership.

Policymakers must rethink their cult-like reliance on test results to monitor, reward, and punish students and educators. In my opinion, the continued use of standardized test results by policymakers to shape the education futures of the approximately 50 million children who attend public school—in light of the research results that refute such practices—is institutional abuse. The voluntary use of results from statewide tests by school administrators as the sole or deciding factor in making important decisions about children is education malpractice.

What Can Be Done?

Educators at all levels have a role to play. Professors of education and leadership can ensure that their candidates understand the limitations and dangers of using results from standardized tests to make important decisions. Likewise, they can provide their candidates with training on how to use multiple measures, both quantitative and qualitative, to inform education, not to make judgments or to punish. Assessment should be used to inform versus to judge and hand down educational sentences that favor some and punish others for factors beyond their control.

Practicing K–12 educators can act in evidence-based ways to limit the frequency and use of high-stakes testing. There is no need to voluntarily use statewide test results or results from other standardized tests beyond those legally mandated by education bureaucrats. Take some lessons from education's rich history on appropriate assessment practices, such as those detailed in the Eight-Year Study (Aikin, 1942), and develop a more progressive, informative internal assessment system. Educators need to help stop the abuse and malpractice, not contribute to it.

Educators at all levels can form, join, and support statewide groups aimed at influencing their state's legislation. Organizations such as Save Our Schools New Jersey and the New Jersey Education Law Center are such examples that can be and have been replicated in other states. Get involved. Lawmakers will not make changes until more people advocate for evidence-informed policies and apply the pressure necessary to move state legislators to act on behalf of children. ■

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