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American Educational Research Association

2023: Graduate Student Research in Progress Roundtable Session

Paper Title: *Evaluating Inequality Using a Six-Factor Index of Advantage*

Evaluating educational inequality as a variable-level phenomenon has provided important insight into historic and systemic disparities. Group-level analysis comes at a price, however, including the reinforcement of stereotypes and deficit narratives, a failure to explain within-group heterogeneity, the omission of some groups in favor of others, and insufficient predictive validity to inform policy or intervention. The quantitative examination of inequality through an intersectional lens also comes with challenges limiting its application outside of research. In this study, I attempt to bridge the gap between categorical conceptions of inequality and intersectional methods by using six variables from students' demographic profiles to construct individual-level measures of advantage. Preliminary findings included that using the single continuous variable of advantage explained up to 47.5% of the variance in student performance on standardized tests, had greater than 85% predictive accuracy, and controlling for advantage eliminated differences in the probability of proficiency between Black or Latinx students and Asian or White students on a standardized test.

2022: Division L (Educational Policies and Politics)

Paper Title: *Evaluation of a Protocol for School Assignment Prioritizing Equity and Diversity*

Abstract: Recent polling shows strong support for policies that desegregate schools along racial and socioeconomic lines. This study tested a protocol for school assignment and compared the resulting demographic and academic distributions against the current assignment system. The new model showed an average 55.3% reduction in the variability of student body composition between schools along all demographics. In the current model, schools explained 19.4% ($p < .0001$) of the variance in achievement compared to 0.002% in the new model ($p = 0.54$). Pairwise-comparisons and effect sizes showed no differences between schools in the new model unlike in the current model. This protocol demonstrated potential as a policy solution for school assignment yielding undifferentiated schools that were demographically and academically representative of the overall school district.

2021: Division D (Measurement and Research Methodologies)

Paper Title: *An Examination of Intragroup Variation Using the Academic Support Index*

Abstract: The disaggregation of data has been critical to the identification and monitoring of progress on achievement gaps. This study evaluated the capacity of the Academic Support Index (ASI) to differentiate performance within groups identified by these gaps. In all seven models the ASI demarcated student scores along the index ($p < .001$) and reliably identified sub-populations of high-performing students. By using the ASI as a second dimension to within-group analysis, achievement gaps are reframed to include context regarding the influence of multiple demographic contributors to student performance. The capacity to better understand and predict performance both across and within groups has the potential to reframe how researchers identify, describe, and address the various gaps.

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2020: Division D (Measurement and Research Methodologies)

Paper Title: *Evidence for the Validity and Reliability of Performance Clusters within the Academic Support Index*

Abstract: Reliable predictors of student performance are critical to efficiently directing educational resources. This study provides evidence for the validity and reliability of two specific performance clusters within the Academic Support Index (ASI): one cluster where students are highly likely to meet or exceed standards and one cluster where students tend to fail to meet standards. Students identified within the latter group are those most likely to benefit from early support and intervention. In the analysis of four years of Smarter Balanced Assessments for two school districts across seven different grade levels I found a large average effect size between the clusters ($d = 1.22$). The ASI cluster of lower performing students identified up to 89% of those students who failed to meet standards. Because students' ASI can be calculated as early as their first day of school, using ASI clusters to identify students for higher levels of academic monitoring and/or additional supports can be an effective way to interrupt the predictability of student outcomes and help close achievement gaps.

2019: Division H (Research, Evaluation, and Assessment in Schools)

Paper Title: *Maximizing Assessment Performance of At-Risk Students Using the Academic Support Index to Engineer a Low Stress Testing Environment*

Abstract: The chronic underperformance on standardized assessments of students identified as at-risk is foundational to racial and socioeconomic achievement gaps (Reardon, 2011). Testing students in academically heterogeneous groups has the potential to raise testing anxiety for mid to low-performing students and negatively impact student performance (Cassady, 2002). Our study attempted to mitigate the impact of negative stereotypes students may have about themselves based on their academic status relative to their higher-achieving peers. We used the Academic Support Index (Stevens, 2015) to create academically homogeneous groups to engineer testing environments where concerns about comparisons should be lessened. We used a randomized controlled design to assign students to either the treatment or control groups. We confirmed homogeneity across groups for both historical academic performance (prior Smarter Balanced Assessment English Language Arts scores, 10th grade local assessment writing scores) and two psychosocial constructs (Academic Self-Perception and Motivation). The rate of students performing at grade level was higher for students randomly assigned to the treatment group (64%, $n = 28$) vs. the control group (28%, $n = 32$). Results were statistically significant ($p = 0.004$), and the effect size was substantial ($d = 0.74$). Post-assessment surveys provided further insight into how students experienced the testing environments. This study validated results from two prior experiments conducted in 2014 and 2015 (Stevens, 2015).

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2018: Division H (Research, Evaluation, and Assessment in Schools)

Session Title: *Building Your Own Academic Support Index for Research, Evaluation, and Intervention Design*

Session Description: Disaggregating data by demographic categories such as gender, race, and class ignores the fact that students exist in multiple categories simultaneously and that these categories are inherently interactive. The Academic Support Index (ASI) addresses this by accounting for the additive impact of students' characteristics. The ASI is a tool based on the statistical relationship between demographic fields and student academic performance. The ASI has strong correlation to outcomes including Smarter Balanced Assessments, grade point averages, and post-secondary degree attainment. This session will include an introduction to the background, development, and effective applications of the ASI as well as a practicum for researchers and educators to calculate the ASI of their students.

2018: Division H (Research, Evaluation, and Assessment in Schools)

Paper Title: *Revisiting the Academic Support Index: A Validation Study Using Data from Rural, Semi-Urban, and Urban School Districts*

Abstract: Previous studies have shown that the Academic Support Index (ASI) has strong correlations to academic outcomes and can be a valuable tool in educational research and practice. In this validation study, the ASI was evaluated against standardized test performance and grade point average in three school districts: rural, semi-urban (original district of study), and urban. The results validated the earlier findings that the ASI is a strong predictor of academic performance. The study also replicated the original ASI point assignment protocol creating local versions of the ASI and evaluated these against the same outcomes. Correlations for the locally developed ASI were not as strong as with the original ASI.

2017: Division H (Measurement and Research Methodologies)

Paper Title: *Using the Screening Tool for At-Risk Students Protocol for Identifying Students at Risk During the Transition to High School*

Abstract: There is a need in educational practice to reliably identify students who will struggle during the transition to high school. Students who do not transition smoothly experience long-lasting impacts on graduation progress and post-secondary options. Identifying students who will require additional support, both academic as well as socioemotional, is key for early intervention. The goal of this study was to develop a statistically valid tool that would identify these students while still in their eighth grade. The Screening Tool for At-Risk Students (STARS) protocol reliably identified and differentiated at-risk students by grade point average, credits earned, attendance rates, and discipline. The protocol also facilitated the transmission of specific actionable information to the receiving school.

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2015: State and Regional Educational Research Associations: Distinguished Paper

Paper Title: *Building and Utilizing an Academic Support Index to Identify and Support Students At-Risk for Academic Underachievement*

Paper Abstract: With greater access to student data, there is an opportunity for educators to develop more effective practices for identifying and supporting students at-risk for academic under-performance. When attempting to address and discuss gaps in student performance, traditional disaggregation categories such as race, ethnicity, and gender contribute unintentionally to stereotype threat and support a narrative that negatively impacts students. Additionally, waiting for summative student performance results in the secondary school setting can delay intervention to the point where students' post-secondary options can be severely impacted. There is a significant need to be able to identify in advance students who may need academic and other available supports to maximize student potential. Through an Academic Support Index (ASI) using a variety of widely available demographic and other data points, Berkeley High School has been able to score each student and reliably identify students at-risk for academic underperformance, particularly those transitioning from middle to high school, and prioritize them for appropriate interventions. Additionally, the ASI provides context for classroom, program, and intervention evaluation, assessment data, and promotes more precise data disaggregation allowing for apples-to-apples comparisons across programs.

California Educational Research Association Presentations

2021 Updating LCFF: A Cost-neutral Model for More Equitable School Funding

This session describes an alternative approach to identifying high-needs students and compares it to the current Local Control Funding Formula model. Using an intersectional framework and including all student groups for whom schools are held accountable via the California Schools Dashboard, the proposed model moves from a dichotomous classification of students as "high-needs" or "not high-needs" towards a multi-tiered model where the level of funding would increase commensurate with need. I used receiver operator characteristic curves and sample student data to compare the accuracy of both models. The proposed model was 82.7% accurate in predicting students' proficiency status on Smarter Balanced Assessments compared to 72.6% for the current model. Extrapolated statewide, the more precise specification would redirect over \$700 million based on the 2019 supplemental funding budget. This alignment of accountability with funding should be considered as a cost-neutral mechanism for directly addressing inequities of opportunities and outcomes.

2018: Paper: *Interrupting the Impact of Stereotype Threat in Testing Environments Using the Academic Support Index to Create Academically Homogeneous Testing Groups*

Paper Abstract: The impact of stereotype threat on student performance is a well-established phenomenon. The results of this study suggest that providing middle to low performing students (ASI 3+) with an academically homogeneous group for taking assessments can reduce the impact of stereotype threat and maximize student performance. We found significant differences between the intervention and control groups on proficiency rates, students' DFM, and the changes in students' DFM and proficiency levels between 8th and 11th grade. This more rigorous randomized controlled study validated the results of earlier applications of this

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intervention with CAHSEE in 2014 and 2015. Educators should consider adopting this low-cost intervention for all high stakes assessments.

2016: Paper: *A Comparison of the Local Control Funding Formula and the Academic Support Index in Predicting Academically Underperforming Students*

Paper Abstract: In this session LCAP “Unduplicated” and the Academic Support Index (ASI) are compared in their ability to effectively identify students in need of additional support and services. Data from two years of Smarter Balanced Assessments, high school grade point averages, and graduation progress were analyzed. This study demonstrates that the ASI is more effective than Unduplicated in identifying students who will academically underperform providing 50% fewer false negatives and 20% fewer false positives. This suggests that LCAP funds could be more efficiently spent using the ASI rather than the current method for identifying targeted students.

2016: Paper: *Math Placement Exam Gatekeeping: A Replication Study*

2015: Paper: *Identifying Students for Transition Support*

2015: Poster: *Boosting Test Performance for At-Risk Students*

2014: Paper: *Building and Utilizing an Academic Support Index to Identify and Support Students At-Risk for Academic Underachievement*