



Raising the stakes: How students' motivation for mathematics associates with high- and low-stakes test achievement[☆]



Rahila M. Simzar^{*}, Marcela Martinez, Teomara Rutherford, Thurston Domina, AnneMarie M. Conley

School of Education, 3200 Education Building, University of California, Irvine, Irvine, CA 92697, United States

ARTICLE INFO

Article history:

Received 9 April 2014

Received in revised form 1 December 2014

Accepted 15 March 2015

Keywords:

Motivation

Achievement goal theory

Expectancy value theory

High-stakes testing

Quantile regression

ABSTRACT

This study uses data from an urban school district to examine the relation between students' motivational beliefs about mathematics and high- versus low-stakes math test performance. We use ordinary least squares and quantile regression analyses and find that the association between students' motivation and test performance differs based on the stakes of the exam. Students' math self-efficacy and performance avoidance goal orientation were the strongest predictors for both exams; however, students' math self-efficacy was more strongly related to achievement on the low-stakes exam. Students' motivational beliefs had a stronger association at the low-stakes exam proficiency cutoff than they did at the high-stakes passing cutoff. Lastly, the negative association between performance avoidance goals and high-stakes performance showed a decreasing trend across the achievement distribution, suggesting that performance avoidance goals are more detrimental for lower achieving students. These findings help parse out the ways motivation influences achievement under different stakes.

© 2015 Elsevier Inc. All rights reserved.

1. Introduction

The No Child Left Behind (NCLB, 2002) legislation spurred an era of accountability motivating an upsurge in standardized testing. Like many states across the nation, California engaged in the development and usage of these standardized tests. Specifically, California sought to enhance student achievement by adopting academic content standards, measuring student progress toward these standards using the California Standards Test (CST), and attaching school- and district-level sanctions and incentives to these test scores (California Department of Education, 2006). This accountability system is predicated on the assumption that exams such as the CST accurately represent students' abilities. However, this assumption is unlikely to hold if students are not motivated to perform highly on these exams (Ryan, Ryan, Arbuthnot, & Samuels, 2007). Although the CST has consequences for schools and districts within California, there are few personal consequences for individual students. As such they may not elicit maximum effort from all students. Studies suggest that students who take exams that have little personal consequence, but still require effort, may experience resentment and

decreased effort in performance (Braun, Kirsch, & Yamamoto, 2011; Duvall, 1994; Warren, 1998).

California students must also take the California High School Exit Exam (CAHSEE), which was created in 1999 as a high-stakes exam, the passing of which was required for students to earn a high school diploma (California Department of Education, 2013a,b). In contrast to the CSTs, the CAHSEE is high-stakes for students, because they must score above a minimum threshold on the test in order to graduate and receive their diploma. In this paper, we investigate the extent to which externally-imposed stakes moderate the relation between student motivation and standardized test score achievement. We hypothesize that external stakes provide an additional source of student motivation and thus may reduce the predictive power of individual differences in motivational beliefs in predicting test score achievement. Accordingly, we expect to see a stronger relationship between course-based motivational beliefs and student achievement on low-stakes tests than on high stakes tests. We test this hypothesis in two ways: First, we compare the association between students' motivational beliefs about their current math course with their mathematics scores on the low-stakes CST and the higher-stakes CAHSEE. Second, we take a closer look at the association between motivational beliefs and achievement for students who score close to the passing threshold on these two tests. Because the CAHSEE is a uniquely high-stakes exam for students who score near the passing threshold, we expect the association between motivational beliefs and achievement to be attenuated for these students. Third, we examine if the associations between students'

[☆] This material is based upon work supported by the National Science Foundation graduate research fellowship under grant no. DGE-0808392.

^{*} Corresponding author at: School of Education, University of California, Irvine, Irvine, CA 92697-5500, United States.

E-mail addresses: rmunshi@uci.edu (R.M. Simzar), marcelm@uci.edu (M. Martinez), teomara@uci.edu (T. Rutherford), tdomina@uci.edu (T. Domina), ampm@uci.edu (A.M. Conley).

motivational beliefs and math outcomes vary across the achievement distribution and if the differences vary by type of exam.

1.1. High- versus low-stakes tests, test-motivation, and effort

Prior research suggests that attaching significant consequences to test performance prompts students to work harder and learn more (Angrist & Lavy, 2009; Bishop, 1997; Braun et al., 2011; Roderick & Engel, 2001). Bishop (1997) provided evidence that the implementation of high-stakes exit exams increased students' math scores, which he attributed to increases in students' efforts and support from parents, teachers, and school administrators. In Roderick and Engel (2001), students, on average, reported an increase in their work effort, attention to classwork, and studying outside of school when the Iowa Tests of Basic Skills (ITBS) high-stakes assessment became a mandated requirement for grade promotion in Illinois. Positive effects from increased stakes may be limited to the incentivized tests themselves, but there may be detrimental outcomes that extend beyond the incentivized test, particularly among at-risk student populations and students who exhibit low academic performance (see e.g., Bishop & Mane, 2001; Dee & Jacob, 2007). Studies of these tests have found increases in dropout rates, superficial learning, and loss of interest in the subject matter (Bishop & Mane, 2001; Dee & Jacob, 2007; Harlen & Crick, 2003; McNeil, Coppola, Radigan, & Heilig, 2008; Sheldon & Biddle, 1998). In short, high stakes tests can lead students to increase their effort and achievement on incentivized tests, but these positive outcomes may not hold for extremely low-performing students or those otherwise at risk.

Relative to high-stakes tests, low-stakes tests do not engage student motivation in the same way and therefore may not accurately reflect students' knowledge (Cole & Osterlind, 2008; Napoli & Raymond, 2004; O'Neil, Sugrue, & Baker, 1995; Wise & DeMars, 2005). In low-stakes situations, students must value the non-consequential test (i.e., have high test motivation) to expend effort. Cole, Bergin, and Whittaker (2008) demonstrated that college students' value beliefs regarding low-stakes exams such as perceptions of usefulness and importance influenced their effort, which, in turn, predicted their scores on low-stakes tests. Essentially, if students do not perceive importance or usefulness of an exam, their effort suffers, and consequentially, so does their test score. Further, Sundre and Kitsantas (2004) compared the relation between students' test-motivation and achievement outcomes by comparing students' graded (consequential) and ungraded (non-consequential) class exams. Neither college students' reports of how hard they tried nor their reports of the value they attached to a given test predicted their final test scores for graded, high-stakes exams, but both of these reports did predict their tests scores for low-stakes, non-consequential exams. Essentially, stronger relations between students' motivational beliefs and test outcomes were present in low-stakes testing cases. Thus, we expect greater variance in students' effort when they take low-stakes exams as compared to high-stakes exams.

1.2. To what extent do students' motivational beliefs predicts low- and high-stakes tests

Empirical studies show that various subject-matter-specific motivational beliefs predict students' course grades and performance on low-stakes mathematics standardized test achievement (Fast et al., 2010; Kenney-Benson, Pomerantz, Ryan, & Patrick, 2006; Keys, Conley, Duncan, & Domina, 2012). For example, in Keys et al.' (2012) study of middle school students' math-class-related achievement goals and mathematics CST scores, endorsing a mastery goal orientation toward one's performance predicted both higher grades and better CST scores when controlling for a full set of prior achievement and demographic controls. Similarly, in Kenney-Benson et al. (2006), study of 5th and 7th grade students, both students' mastery goals and mathematics self-efficacy predicted their standardized test achievement scores

(mastery goals indirectly through their impact on learning strategies and self-efficacy directly). Taken together, these studies suggest that one way to increase scores on low-stakes standardized tests is to increase students' math-course-specific mastery goals and self-efficacy.

However, very little research has actually focused on the link between students' math-course-specific motivation-related beliefs (such as their achievement goals for their current math course, their confidence in their ability to do well in their math course and the value they attach to doing well in that course) and their performance on high-stakes math tests. Instead, researchers interested in predicting high-stakes performance have focused on students' test-taking motivational beliefs (e.g., Cole et al., 2008; Sundre & Kitsantas, 2004). In one of the few studies that did focus on the association between course-based motivational beliefs and in-class high-stakes exam performance, Malpass, O'Neil, and Hocesvar (1999) found that gifted students' course-based math self-efficacy, but not their course-based achievement mastery goal orientations, predicted their performance on the high-stakes Advanced Placement exam taken at the end of their Advanced Placement Calculus course.

1.3. The current study

This study examines the relation between students' motivational processes and their performance on high-stakes and low-stakes mathematics exams. Our main research question is: Are students' motivational beliefs about their current math course associated differently with their mathematics scores on tests that have either high or low stakes for students? Further, we examine the extent to which this association differs across the test score distribution. We hypothesize that externally imposed stakes can urge even academically unmotivated students to put forward effort on standardized tests. As a result, we expect the association between course-specific motivational beliefs and achievement on the high-stakes CAHSEE to be lower than the association between these motivational beliefs and achievement on the low-stakes CST. Further, we expect that the association between motivational beliefs and achievement will be particularly weak for students who are at risk of failing the CAHSEE (and thus not earning a high school diploma).

The rest of the paper is organized as follows: the remainder of Section 1 situates our work within the theoretical frameworks in the motivation literature; in Section 2, we discuss the method used in our analysis; in Section 3, we present our results; and in Sections 4 and 5, we discuss our findings and provide our conclusion.

1.4. Theoretical framework

Motivational beliefs are one psychological mechanism that influences students' motivation to exert effort on learning tasks (Wigfield & Cambria, 2010; Wigfield & Eccles, 2000). We draw on two widely used frameworks for studying motivational beliefs and academic achievement—expectancy-value theory and achievement goal theory—to operationalize motivational beliefs in order to provide a more complete picture of student motivation (see Wigfield & Cambria, 2010; Wigfield, Byrnes, & Eccles, 2006). These two frameworks were designed to explain complementary but different phenomena: expectancy-value theory is initially designed to explain and predict which activities individuals choose to engage (Wigfield & Eccles, 2000); achievement goal theory was designed to explain why a learner engages in specific achievement-related behaviors (Kaplan, Middleton, Urdan, & Midgley, 2002).

1.4.1. Expectancy and value

According to expectancy-value theory, “individuals' choice, persistence, and performance can be explained by their beliefs about how well they will do on the activity and the extent to which they value the activity” (Wigfield & Eccles, 2000, p. 68). Research grounded in both Eccles et al.'s expectancy-value theory (Eccles, Adler, Futterman,

Download English Version:

<https://daneshyari.com/en/article/364540>

Download Persian Version:

<https://daneshyari.com/article/364540>

[Daneshyari.com](https://daneshyari.com)