

# A Study of the Relationship Between Students' Anxiety and Test Performance on State-Mandated Assessments

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This study examined whether relationships exist between Hispanic fourth-grade students' anxiety and test performance on a state-mandated writing assessment. Quantitative methodologies were employed by using test performance and survey data from 291 participants. While no significantly direct relationship exists between students' levels of anxiety and their performance on the TAKS (Texas Assessment of Knowledge and Skills) writing assessment, other findings indicate that greater time spent on the writing assessment, result in higher scores as well as greater levels of anxiety.

*Keywords:* test-anxiety, writing, performance-assessment

## Introduction

For the past two decades, the Texas Education Agency has collected data on students' learning and academic achievement for accountability ratings of districts and schools. This was a result of state adopted students' learning standards and statewide testing in grades three to 11 using the TAKS (Texas Assessment of Knowledge and Skills) test. The TAKS measures students' learning through complex, open-ended performance and multiple-choice testing. These tests are mostly multiple-choice in format while the writing test includes an open-ended question in which students must write a response.

These state-mandated tests have become increasingly important to make decisions that have important consequences on students and teachers. For students, test results are used for promotion, tracking and graduation. However, this focus on the TAKS also affects the daily behavior of teachers, especially the teachers who teach in tested grades. The assumption is that these state-mandated tests will indicate the quality of instruction received (Popham, 2001). So, if students score well on the state-mandated test, we will assume the students have been well taught. Conversely, if students score poorly, we will assume that they have been poorly taught.

Making schools transparent in this nature often places a tremendous amount of stress on the schools and the children since all achievement data are made available to the public and all its stakeholders.

## Assessment Practices

There has been much debate about state assessments as an instrument for measurement-driven reform. Proponents of measurement-driven reform feel that the recent development of performance-based assessment offers a technology for assessing higher-order skills and deeper understanding of contents (Vogler, 2002).

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Performance-based assessments test students' knowledge differently than multiple-choice and basic-skills tests. Multiple-choice tests only require students to choose an answer from ready-made responses and fill in an oval, while performance-based assessments require students to show their knowledge by constructing a response, such as writing an essay or showing how to solve a mathematical problem. Performance can be disaggregated by a number of criteria (i.e., ethnicity, socioeconomic status, dropout rate and attendance rate) to determine a performance rating for schools and school systems.

The TAKSs are multiple-choice in format for students in grades three to 11. The fourth grade and seventh grade TAKS, however, contains a writing section that includes an open-ended question to which students must write a response in an organized and essay composition format (Texas Education Agency, 2010). The written assessment portion of the TAKS is scored in a four-point scale with a minimum passing standard score of two.

Opposition to state testing has come from various stakeholders involved in public education during the past two decades. Valenzuela and McNeil (2000) emphasized that state tests do not insure a quality education. Popham (2001) claimed that because of unsound high-stakes testing programs, many students are receiving ineffective educational experiences. He went further to say that high-stakes testing, as used today, is causing serious educational harm to children. Other opponents of measurement-driven reform asserted that high-stakes assessment creates negative side effects, such as dumbing down the curriculum, de-skilling teachers, pushing students out of school and generally inciting fear and anxiety among both students and educators (Darling-Hammond, 2007). Furthermore, Valenzuela and McNeil (2000) believed that state testing is especially harmful to language minority students and that "the pressure to raise scores is greatest in our poorest, historically least well-funded schools" (p. 20).

### **Test Anxiety in Children**

Anxiety disorders, one of the most common mental disorders affecting children, can negatively affect attention and concentration, self-esteem, peer relationships and social behaviors (Costello, Mustillo, Erkanli, Keeler, & Angold, 2003). Research has focused on anxiety in children in areas of achievement attributes, achievement motivation, learned helplessness and motivational dynamics that negatively influence achievement (Hill & Wigfield, 1984). Even subclinical and undiagnosed levels of anxiety can impact the future academic achievement and developmental outcomes of children (Grover, Ginsburg, & Jalongo, 2007).

One manifestation of anxiety is test anxiety, an important aspect of negative motivation that influences school performance. Many definitions of test anxiety exist in the literature. Dusek (1980) defined it as "an unpleasant feeling or emotional state that has physiological and behavioral concomitants, and that is experienced in formal testing or evaluation situations" (p. 88). Hancock (2001) posited that most prominent researchers view test anxiety as "a relatively stable personality trait that prompts an individual to react to threatening situations with sometimes debilitating psychological, physiological, and behavioral responses" (p. 284).

Some researchers found that test anxiety does not lead to low test scores while others find that test anxiety can have serious consequences to the academic performance of students (Grover et al., 2007). Yet, No Child Left Behind Act requires that states assess students from grades three to eight in reading and mathematics at least yearly. Students of all academic achievement levels can be affected by test anxiety and each child displays test anxiety differently to varying degrees. Some may become fearful in achievement situations or concerned about how their parents will react to their successes and, more specifically, to their perceived failures (Hill, 1980). As children move and progress through elementary school, they begin to experience more frequent

testing situations and test anxiety, even teachers recognize and express concern about the heightened anxiety in children as testing in schools increases (McDonald, 2001).

Children also encounter other factors that contribute to their test anxiety, such as pressure from their teachers and parents to be successful. Barksdale-Ladd and Thomas (2000) found that elementary students experience high levels of anxiety, concern and anguish about high-stakes testing. More recently, Triplett and Barksdale (2005) investigated students' perceptions of testing and concluded that elementary students were anxious and angry about aspects of the testing culture, including the length of the tests, extended testing periods and not being able to talk for long periods of time. Furthermore, the authors contend that anxiety increases when children sense that their teachers are also anxious or stressed about testing.

Children of dissimilar ethnic backgrounds may experience test anxiety differently. For example, research involving Hispanic or Latino children often examines relationships among anxiety, prejudice, discrimination, acculturative stress, stigmatization and other related fears and worries (Hovey & Magaña, 2002; Icard, Longres, & Spencer, 1999). In a comparison of white and Hispanic/Latino children who had been referred to an anxiety disorder specialty clinic, researchers found that diagnostic rates of anxiety disorders and self-rated levels of depression and anxiety were similar between the two groups (Ginsburg & Silverman, 1996).

The purpose of the current study was to examine factors associated with the writing portion of the TAKS and determine whether relationships exist among performance, the time it takes to complete the assessment and anxiety in a group of Hispanic fourth-grade students. The following research questions guided this study: (1) Is there a relationship between the amount of time a student takes to complete the writing portion of the TAKS and the score they received? (2) Is there a relationship between the amount of time a student takes to complete the writing portion of the TAKS and his/her level of anxiety about writing? (3) Is there a relationship between students' level of anxiety and the score received on the writing portion of the TAKS? (4) Does taking a break during the writing portion of the TAKS help or hinder student performance? and (5) Is there a relationship between taking a break during the writing portion of the TAKS and students' levels of anxiety?

## Methods

A sample of 291 Hispanic children, aged nine to ten, participated in this research. The target population in this study was fourth grade students who transitioned from bilingual to English-only classes in one of nine elementary schools in South Texas, a geographic area along the Texas-Mexico border. This area of Texas is labeled as the Region One ESC (Education Service Center), in which 97% of all students in the region are of Mexican-American/Hispanic/Latino decent and approximately 37% are labeled as limited English proficient (Region One Education Center, 2010). Once approval from district superintendants was acquired and the research procedures were described to principals and teachers at the elementary schools, data collection occurred.

### Data Collection and Measures

Between February and May of 2008, quantitative data were gathered and survey methodologies were employed. Quantitative data were collected using a form entitled Start/Stop Time during the TAKS fourth-grade writing assessment in February 2008. Teachers were asked to indicate the start and end time for all participants. The time it took students to complete the assessment was labeled as follows: 120 minutes or less, 121 minutes to 240 minutes, 241 minutes to 360 minutes, 361 minutes or more. Also noted on the Start/Stop Time form was whether students were given a break lasting more than 15 minutes. These data were then matched with results

from the TAKS writing assessment, which were available a few months later in May. Assessment scores ranged from zero to four, with four being the best score. All data were entered into SPSS (Statistical Package for the Social Sciences) 15.0 for analyses.

### **TAKS TAA (Assessment Anxiety)**

After the TAKS writing assessment, a survey titled TAKS Writing Test Survey was administered to 137 of the participants during regular class time to measure students' attitudes toward the TAKS writing assessment and their perceptions about taking the test. The main purpose of this survey was to measure students' level of anxiety as it relates to the TAKS writing assessment. The four-item subscale measuring TAKS TAA is comprised of four "yes/no" questions, ranging from zero to four, has a mean of 1.55, a standard deviation of 1.21 and a Chronbach's alpha of 0.56, indicating that there is adequate internal consistency among the four items. Sample questions include: Did you feel scared while taking the TAKS writing test and a reverse-coded item, did you feel confident about your writing skills before taking the TAKS writing test.

### **Results**

Prior to examining whether relationships exist among performance on the TAKS writing assessment, the time it takes to complete the assessment and anxiety associated with the assessment, descriptive statistics for the sample are provided. Ninety-two percent of the fourth-grade students met the minimum passing standards for the writing assessment, which is consistent with the geographic area—n Region One ESC, approximately 92-93% of the students passed the assessment each year (TEA, 2010). The current sample exhibited a mean of 2.35 ( $SD = 0.69$ ) on the TAKS writing assessment with an average time to complete the TAKS writing assessment of just under three hours, at 179.50 ( $SD = 109.03$ ) minutes. As mentioned earlier, students' average TAA score was 1.55 ( $SD = 1.21$ ), indicating that students typically exhibited mild levels of anxiety on the TAKS writing assessment since the midway point is 2.0 in the four-point scale.

To address the primary research question of this study, a correlation analysis was conducted to determine whether a relationship exists between students' levels of anxiety and their performance on the TAKS writing assessment. The correlation analysis yielded no significant relationship among these particular variables. However, as explained in the following sections, disaggregating the performance data by completion time and whether students received a break during the assessment yielded interesting, noteworthy findings with regard to performance and anxiety.

### **Completion Time**

To determine if there is a relationship among the amounts of time it takes a student to complete the writing portion of the TAKS and the score he/she receives, an ANOVA (Analysis of Variance) was conducted with time as the grouping variable. When students were grouped into categories based on the length of time it took them to complete the TAKS writing assessment, there was a significant difference in mean scores for the assessment (see Table 1). A Scheffe post hoc comparison and review of group means showed that students tended to receive a higher score if they spent more time on the writing assessment. Conversely, if they rushed through the assessment and spent less time on it, their score was lower.

To determine if there is a relationship among the amount of time it takes a student to complete the writing portion of the TAKS and his/her level of TAA, an ANOVA was conducted with time as the grouping variable.

When students were grouped into categories based on the time it took to complete the TAKS writing assessment, no significant difference in mean scores for TAA was found. However, it is worth noting that the level of anxiety is higher for students who took longer to complete the writing assessment (see Table 2).

Table 1  
ANOVA Results for TAKS Writing Assessment by Completion Time

Time to complete the TAKS writing assessment	N	Mean	Standard deviation	
120 minutes or less	102	2.22	0.73	
121 to 240 minutes	133	2.39	0.61	
241 to 360 minutes	32	2.44	0.62	
361 minutes or longer	24	2.63	0.88	
Source	Sum of squares	Degrees of freedom	Mean squares	F-ratio
Between groups	4.12	3	1.37	2.98*
Error	132.42	287	0.46	---

Note. \* $p < 0.05$ .

Table 2  
ANOVA Results for TAKS TAA by Completion Time

Time to complete the TAKS TAA	N	Mean	Standard deviation	
120 minutes or less	54	1.44	1.31	
121 to 240 minutes	52	1.58	1.16	
241 to 360 minutes	10	1.70	1.25	
361 minutes or longer	11	2.00	0.89	
Source	Sum of squares	Degrees of freedom	Mean squares	F-ratio
Between groups	3.06	3	1.02	0.69
Error	182.13	123	1.48	---

### Taking a Break During the Assessment

To determine whether taking a break during the writing portion of the TAKS helps or hinders a student's performance, a *t*-test and two ANOVAs were run. The *t*-test yielded no significant difference in means for the two groups—those who received a break and those who did not receive a break. An ANOVA was then conducted for each of these groups and revealed that students who did not receive a break while testing scored similarly to one another, regardless of how long they spent on the writing assessment. The ANOVA yielded no significant differences in group means when students were grouped by the amount of time it took to complete the assessment. However, students who did receive a break while testing exhibited significantly different means on the writing assessment when they were grouped based on the amount of time it took to complete the assessment (see Table 3). A review of group means and Scheffe post hoc comparisons show similar results to those found in Table 1 (the entire sample) that as students spend more time on the assessment, performance on the TAKS writing assessment goes up.

To determine whether a relationship exists between taking a break during the writing portion of the TAKS and students' level of anxiety, two correlation analyses were conducted: One for students who did not receive a break during testing and one for students who did receive a break. Students who did not receive a break during testing exhibited a significant negative correlation between TAA and their scores on the writing assessment ( $r = 0.259, p = 0.001$ ). Such a relationship did not exist for students who received a break during testing.

Table 3

*ANOVA Results for TAKS Writing Assessment by Completion Time*

Time to complete the TAKS writing assessment	<i>N</i>	Mean	Standard deviation	
120 minutes or less	52	2.19	0.74	
121 to 240 minutes	71	2.37	0.59	
241 to 360 minutes	30	2.43	0.63	
361 minutes or longer	20	2.80	0.83	
Source	Sum of squares	Degrees of freedom	Mean squares	<i>F</i> -ratio
Between groups	5.46	3	1.82	3.99*
Error	77.12	169	0.46	---

Note. \*  $p < 0.01$ .

### Conclusions

While high stakes testing has a place of note in our educational world, the reality of how standardized state tests added to student anxiety requires a commitment from all stakeholders to address and minimize children's emotional consequences. Results from the current study indicated that students exhibit mild levels of anxiety related to the TAKS writing assessment, but that anxiety is higher for students who take longer to complete the assessment. To address anxiety, counselors and teachers should coach students on how to de-stress by providing outlets for verbal or non-verbal expressions before and after the writing assessment. Creating opportunities for personal expressions can help students better process this and other stressful experiences and situations.

Though mean scores on the writing assessment tend to increase as students take longer to complete it, allowing more time will not necessarily result in a greater portion of students achieving beyond the minimum passing score of two. Most students in this study and in the Region One ESC geographic area are already passing the fourth-grade writing assessment which indicates that increased time simply allows students to improve their writing beyond the minimum passing requirements. However, more time on the assessment could help raise students' expectations so that they consider a rating of three or four as an attainable goal and do not accept the minimum score of two. Clearly aligned and defined writing expectations and curriculum by grade level would help students prepare for formal testing situations. It is recommended that such curriculum include the teaching of a writing process prior to the fourth grade so that students' writing habits can be refined during the testing year.

In addition to students' writing, stakeholders and policy-makers should further examine the testing procedures of state-mandated writing assessments. Students who received a break while testing exhibited significantly different means on the writing assessment when they were grouped based on the amount of time it takes to complete the assessment. In the current study, receiving a break while testing occurred very randomly, depending on that when the assessment was started and very inconsistent across schools and districts. While there were no significant differences in scores between students who received a break and those who did not, this was a limitation and possible confounding variable. Another limitation of the current study pertains to the sample size when data were disaggregated based on whether students had a break (or no break) while testing. A larger sample would allow for more accurate comparisons between these two groups. It is recommended that testing administrators schedule sufficient and consistent breaks for students while taking the writing portion of the test.

Ultimately, increased research examining anxiety in test situations and the role it plays on the psyche of school children would be useful for bringing awareness to the need for policy review at the state and national level. It might do more to help policymakers reassess the need to use such instruments in determining school's accountability. A call for public action is imperative for the youth of the future. Further review may lead to finding other ways to maintain the school's accountability while sheltering the children in the process.

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