"Signs, Signs, Everywhere There's Signs . . . and the Sign Says"[1]: You Got to Have a PRAXIS II Membership Card to Get Inside

By Jonathan R. Brown, Lisbeth J. Brown, & Courtney L. Brown

Teacher preparation programs have continued to see the ever-increasing control of teacher candidates by policymakers. To control means to regulate. The problem is that there are currently at least three regulating measurement and assessment obstacles faced by teacher candidates in teacher preparation programs.

The first obstacle is being admitted into a teacher preparation program. High school grades, standardized test data, letters of recommendation, and other information are used to regulate this process. The second obstacle is navigating a complex regulated curriculum that is intended to help insure that entering students will be successful classroom teachers. Universities establish general education curriculum content, specialized professional associations require specific curriculum content, state departments of education require specific curriculum content, and education departments require specific curriculum content that are used to regulate the teacher preparation process. However, despite how effective a teacher preparation program may be in selecting potential teacher candidates and programmatically

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guiding their teacher candidates, the teacher candidates are still faced with a third regulatory measurement and assessment obstacle. The third regulatory obstacle for teacher candidates is passing a legislatively mandated norm-referenced examination (i.e., PRAXIS II) before they are certified as teachers.

Therefore, the research question in this study was: Are measured test scores that teacher candidates demonstrate prior to and during their teacher preparation programs predictors of the legislatively mandated PRAXIS II test scores? To answer this question, forward regression analysis was used to estimate the fitted value of PRAXIS II (response variable) as a function of several predictor variables (previously earned test scores). The research hypothesis was that forward regression analysis would estimate the fitted value of PRAXIS II (response variable) as a function of several predictor variables.

High teacher quality is recommended to be at the core of educational reform (Brownell, Ross, Sindelar, & Vandiver, 1999; Bullough, Burbank, Gess-Newsome, Kauchak, & Kennedy, 1998; Darling-Hammond, 1997; Kent, 2005; Laine & Otto, 2000). According to Kent, teacher education programs are too frequently graduating candidates that fall into a category of failing teachers or teachers that leave the profession just as their careers are beginning. Because many programs currently admit students into teacher education programs with minimal qualifications, Kent recommended changing admission standards in order to help insure that high quality students are admitted to teacher education programs. Some suggestions for changes in admission criteria have included increasing field experience requirements, insuring that teacher candidates have the dispositions as well as the academic standards to become high quality teachers, and requiring the completion of a successful group interview (Farnsworth, Benson, Peterson, Shaha, & Hudson, 2003; Kent, 2005).

Some regulation of teacher preparation programs is warranted. However, how much regulation is too much regulation? For example, policymakers have begun to address the concern that some teachers are not successful by mandating that teacher candidates have legislated entry benchmark scores on PRAXIS I, minimum quality point averages for teacher candidates graduating from teacher preparation programs, and legislated minimum benchmark scores on high-stakes norm-referenced exit examinations like the PRAXIS II Series. Additionally, many states have adopted the National Council for Accreditation of Teacher Education (NCATE, 2000) as an external teacher program oversight reporting agency of university teacher education programs. In the eyes of an increasing number of policymakers, an unfavorable report by NCATE may spell the death-bell for a college/university teacher preparation program. Between legislated test score mandates for teacher candidates, specialty professional associations (SPAs) dictating each discipline's standards, and NCATE adding required standards to the SPA's standards, teacher education programs are experiencing fewer choices to guide their teacher candidates. Therefore, the regulatory "signs" are becoming arguably too numerous

with few research studies that have examined the empirical justification for these regulations!

No matter how effective teacher candidates are during their teacher preparation programs, they must meet a number of requirements legislatively mandated for teacher candidates to become a certified teacher in many states. Examples of legislatively mandated requirements include grade point average (GPA) for entry into and exit from teacher certification programs, successful completion of student teaching, criminal record and child abuse clearances, and passing scores on norm-referenced examinations. States including Arkansas, Connecticut, Delaware, Georgia, Idaho, Indiana, Kentucky, Maryland, Minnesota, Missouri, New Hampshire, North Carolina, Ohio, Pennsylvania, South Carolina, Tennessee, Virginia, and others now use a state regulated norm-referenced examination. The most popular norm-referenced examination currently being used to regulate teacher candidates is The Professional Assessments for Beginning Teachers or PRAXIS examination (PRAXIS I and PRAXIS II) Series administered through the Educational Testing Service (ETS, 2005). It is, therefore, the consummate legislatively regulated sign that must be followed before a teacher candidate may become a classroom teacher.

The PRAXIS Series tests are currently required for teacher licensure in 39 states and United States jurisdictions. These tests are also used by several hundred colleges and universities because they are mandated by many state and professional certification agencies. Because the PRAXIS Series tests are used to license teachers in many states, teacher candidates may test in one state and submit their scores for licensure in any other PRAXIS user state. The PRAXIS Series includes content-specific tests, pedagogical tests, and basic skills tests. According to the Educational Testing Service (ETS, 2005), the PRAXIS tests are developed to measure specific content and pedagogical skills and knowledge for beginning and practicing teachers. The PRAXIS Series assessments are designed to be comprehensive and inclusive but are limited to what may be covered in a finite number of questions and question types. PRAXIS I covers Academic Skills Assessments, and PRAXIS II covers Subject Assessments by featuring multiple-choice and essay questions that are reported to measure both breadth and depth of knowledge. Interestingly, skills related to an individual's disposition toward teaching or potential for success as a teacher are not covered by these licensure tests; however, policymakers are using these tests for this regulatory purpose (The PRAXIS Series, 2005).

Given field observations of how newly certified teachers perform in classrooms, educational researchers have been questioning the exclusive use of standardized tests like the PRAXIS Series as a benchmark to identify effective classroom teachers (Melnick & Pullin, 2002; Popham, J, 1999). Sudzina (2001) reported ways to "psych-out" the PRAXIS despite what teacher candidates need to know as classroom teachers. Vaughn and Everhart (2005) reported that specialty professional associations (SPAs) and state policymakers who mandate and publish the results of high-stakes testing in teacher preparation programs cause a disconnect between

philosophy and "best practice." As NCATE and other professional organizations are supporting performance assessment of teacher licensure candidates, teacher preparation programs find it increasingly necessary to reconcile the sometimes conflicting legislative and accreditation demands on accountability and performance of teacher licensure candidates within their programs. Despite the expanding mandates to use the PRAXIS Series, many educators purport the tests to be unfair and inadequate (not reliable and not valid) as a tool for culling teacher candidates to a more homogeneous group of classroom teachers capable of substantive and effective education improvement (Vaughn & Everhart, 2005).

In a case of fairness (validity), Jacobson (2004) reported that more than 20 years of legal battling has occurred over testing teacher candidates in Alabama, and this battling may continue if a federal judge decides to add new plaintiffs to the case. Just when the state was set to begin using the PRAXIS II series of exams to license teachers, three students from historically Black Alabama State University asked to join the lawsuit and are arguing that the interests of students like themselves are not being represented because the original plaintiffs are no longer active in the case. If U.S. district judge involved in this case decides to add the students, a recent settlement reached between the parties in *Allen v. Alabama State Board of Education* could fall apart, and the more than 6,000 new teachers who enter the profession every year in Alabama would still not be required to demonstrate their competence by way of PRAXIS II.

In another case of fairness, an incorrectly graded licensing exam for prospective teachers stalled hiring in some areas of the United States. The Educational Testing Service (ETS) sent school districts rummaging through employment records and spawned at least one lawsuit (Jacobson, 2004). The mistakes made by the Educational Testing Service led hundreds of teacher candidates to believe they failed the PRAXIS II test adding to the debate over how much reliance educators and policymakers should place on standardized exams to make high-stakes decisions. In 2004, two teachers who lost their jobs because of the Educational Testing Service's incorrect scoring of their PRAXIS II exams filed suit against the test-maker, claiming it is a monopoly that is abusing its powers and charging excessive fees. The lawyer who represents the two teachers believes it is the first lawsuit against the ETS that cites federal antitrust laws (Sack, 2004).

The rationale for this study was that validating the PRAXIS II (Fundamental Subjects: Content Knowledge) by correlating PRAXIS II scores with performance data earned by teacher candidates during their programs would help provide empirical evidence of the PRAXIS II's effectiveness as a culminating regulatory measuring instrument. The question to be answered was: Is an analysis of test data known prior to the teacher candidates completing the PRAXIS II a significant predictor of how students would perform on the PRAXIS II Fundamental Subjects: Content Knowledge? Therefore, teacher candidates who do not perform well in teacher candidate programs should score low on the PRAXIS II, and students who do well

in teacher candidate programs should score high on the PRAXIS II. Given the practical observations and legal arguments about the validity in measuring teacher candidate performance with the PRAXIS II examination, it was hypothesized that an analysis of test data known about teacher candidates prior to the teacher candidates completing the PRAXIS II examination would not significantly predict how students would perform on the PRAXIS II Fundamental Subjects: Content Knowledge. In summary, this study was designed to measure the criterion validity of the PRAXIS II Fundamental Subjects: Content Knowledge examination.

Methods

The procedures included identifying for analysis all the qualified records for teacher candidates from two conveniently located universities in the northeastern United States. Records that qualified included those of teacher candidates with PRAXIS II (Fundamental Subjects: Content Knowledge) scores equal to or higher than 150 and all of the following test score information: Scholastic Aptitude Test (SAT) scores, PRAXIS I scores, and a Quality Point Average (QPA). Additionally, students were required to have majored in one of the following academic education programs: early childhood, elementary, special education, secondary education social studies, secondary education biology, secondary education mathematics, secondary education English, secondary education chemistry, secondary education physics, or music education and who completed the PRAXIS II examination during the 2003 - 2005 academic years. Subsequently, the qualifying records of two hundred teacher candidates were identified for analysis.

The score of 150 was operationally used because the state in which this study was conducted used this benchmark score as a minimum teacher certification qualification score for the PRAXIS II examination. The principal investigators received test score data information directly from a university records administrator without the principal investigators having knowledge of the relationship between the teacher candidates' names and the data that was accessed for analysis.

The predictor variables used in this study complement Vaughn and Everhart's (2005) recommendation to sample within the assessment continuum by including multiple measures from entry, middle, and final development stages of a teacher candidate's education program. Examples of measurements of teacher candidate performance by Vaughn and Everhart included: SAT (Scholastic Aptitude Test) scores, PRAXIS scores, and grade point average. Therefore, the set of predictor variables (scores) included in this study were: Scholastic Aptitude Test (SAT) scores (Mathematics, Verbal, and Total), undergraduate Quality Point Average (QPA), and PRAXIS I (Reading, Writing, Mathematics) scores. The variable to be predicted was the PRAXIS II (Fundamental Subjects: Content Knowledge) scores the students earned. Therefore, the fitted value of the response variable (PRAXIS II) was estimated as a function of the values of the predictor variables (i.e. SAT, QPA, PRAXIS I).

Results

Table 1 lists descriptive statistics for SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math), Quality Point Average (QPA), PRAXIS II Content Knowledge (CONKN) measures for 200 teacher candidates.

Table 2 is an exploratory linear correlation matrix. The matrix is composed of: SAT Verbal, SAT Mathematics, and Total SAT scores. Scores from PRAXIS I include: Reading, Writing, and Mathematics. Quality Point Average is included. Additionally, PRAXIS II Fundamental Subjects: Content Knowledge (CONKN) is included. The matrix depicts fifteen significantly correlated variables with four of the fifteen correlations being greater than 0.75 (All correlation matrices should be interpreted with caution with respect to the increased risk of Type I errors.). Therefore, many of the variables share a high degree of covariance. Covariance is a measure of dependency (correlation) between variables. Variables with the highest correlations are: SAT Verbal scores with SAT Total scores (0.877), SAT Mathematics scores with SAT Total scores (0.869), PRAXIS I Reading with PRAXIS I Writing scores (0.997), and SAT Mathematics scores with PRAXIS I Mathematics scores (0.757).

The strongest correlation of a predictor variable with PRAXIS II Fundamental

Table 1.

Descriptive Statistics: SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math), Quality Point Average (QPA), PRAXIS II Content Knowledge (CONKN) for 200 Teacher Candidates.

Variable	N	Mean	Median	TrMean	StDev	
SAT Verbal	200	492.00	490.00	492.08	72.19	
SAT Math	200	482.00	475.00	481.67	69.89	
SAT Total	200	974.0	970.0	974.7	124.0	
PRAXIS I Read	200	180.06	180.00	180.03	4.04	
PRAXIS I Write	200	176.77	176.00	176.66	3.07	
PRAXIS I Math	200	180.27	180.00	180.24	4.28	
QPA		200	3.5095	3.5300	3.5152	0.2851
PRAXIS II CONKN	200	167.04	169.00	166.80	11.76	

Variable	SE Mean	Minimum	Maximum		Q1	Q3
SAT Verbal	8.07	300.00	650.00	440.00	547.50	
SAT Math	7.81	330.00	640.00	440.00	530.00	
SAT Total	13.9	670.0	1260.0	882.5	1060.0	
PRAXIS I Read	0.44	170.00	196.00	177.00	183.00	
PRAXIS I Write	0.34	170.00	186.00	174.00	179.00	
PRAXIS I Math	0.47	172.00	189.00	177.00	184.00	
QPA		0.0288	2.82	4.00	3.2650	3.7550
PRAXIS II CONKN	1.28	150.00	194.00	156.00	177.00	

Table 2.

Pearson Correlations: SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math_1), Quality Point Average (QPA), PRAXIS II Content Knowledge (CONKN) for 200 Teacher Candidates.

	Verbal	Math	Total	Read	Write	Math_1	QPA
Math		0.524					
	0.000						
Total		0.877	0.869				
	0.000	0.000					
Read	-0.122	-0.124	-0.141				
	0.319	0.310	0.249				
Write	-0.128	-0.131	-0.148	0.997			
	0.300	0.286	0.228	0.000			
Math_1	0.278	0.757	0.591	0.407	0.144		
	0.023	0.000	0.000	0.000	0.198		
QPA		0.170	0.371	0.308	-0.155	-0.162	0.172
	0.133	0.001	0.005	0.161	0.146	0.126	
CONKN	0.519	0.486	0.579	-0.035	-0.058	0.418	0.337
	0.000	0.000	0.000	0.762	0.620	0.000	0.002

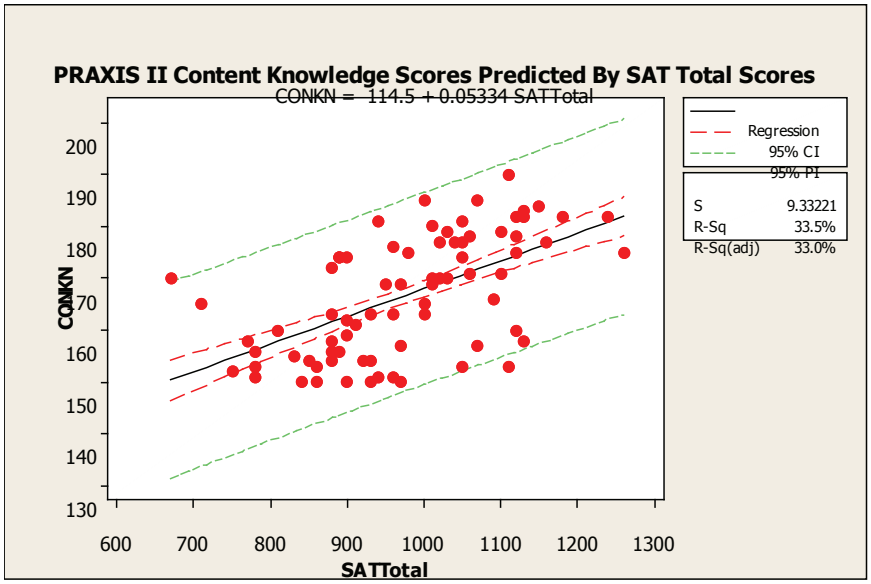
Cell Contents: Pearson correlation coefficient (top) Probability Value (bottom)

Subjects: Content Knowledge scores was SAT Total scores with a coefficient of $r = 0.579$ ($p = 0.000$). The coefficient of determination for this correlation was $r^2 = 0.34$. Therefore, the results of the exploratory linear correlation matrix indicated that the highest correlation between the scores of any one variable with the PRAXIS II scores was demonstrated by SAT Total score with 34% of the variance in the SAT Total scores shared with the variance in the PRAXIS II scores.

Figure 1 is a fitted line plot of SAT Total scores used to predict PRAXIS II Fundamental Subjects: Content Knowledge. A regression equation and confidence interval in the figure provides a process for using SAT Total scores to predict PRAXIS II scores.

The research question in this study was: Are measured test scores that teacher candidates demonstrate prior to and during their teacher preparation programs predictors of the legislatively mandated PRAXIS II test scores? To answer the research question in this study, a forward (multiple) regression model was used. Forward regression analysis works to establish a set of the statistically significant independent variables to explain the highest proportion of the variance in a dependent variable (coefficient of determination in multiple regression = R^2). The forward entry method is a simple model-building procedure. At each Step after Step

Figure 1.
PRAXIS II Content Knowledge (CONKN) Scores Predicted by SAT Total (SAT-Total) Scores for 200 Teacher Candidates.



0, the entry statistic is computed for each effect eligible for entry in the model. If no effect has a value on the entry statistic that exceeds the specified critical value for model entry, then stepping is terminated. Otherwise, the effect with the largest value on the entry statistic is entered into the model. Stepping is also terminated if the maximum number of specified steps is reached.

One purpose of forward regression is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable. Forward regression is frequently used to measure criterion validity. Criterion validity is the extent to which measurements (predictor scores) correlate with the phenomenon under study (PRAXIS II scores). Sometimes, as in the case with the data in this study using forward regression, not all predictor variables will correlate highly with the variable to be predicted (PRAXIS II Fundamental Subjects: Content Knowledge, CONKN). The message here is that a variable may not be a useful predictor of the dependent variable for two possible reasons. One, the predictor variable has a low correlation with the dependent variable. Two, the predictor variable has a significant correlation with the dependent variable; however, this predictor variable is also highly correlated with one or more other predictor variables (covariance of the predictor variables).

Because the exploratory analysis demonstrated that many of the variables were themselves significantly correlated with each other, it was hypothesized that

many of the variables would not be needed and, therefore, would be removed in the forward regression procedure resulting in fewer variables needed to predict PRAXIS II Fundamental Subjects: Content Knowledge scores.

Table 3 is a summary of two models generated from the forward regression analysis. The R Square value indicates that 32.2% (Model 1) of the variance in PRAXIS II Fundamental Subjects: Content Knowledge was explained by one predictor variable. For Model 2, 40.0% of the variance in PRAXIS II Fundamental Subjects: Content Knowledge was explained by using two predictor variables.

Table 4 lists the results of an analysis of variance (ANOVA) for predicting PRAXIS II scores. The scores of two variables (Model 1 and 2) were determined to be statistically significant predictors of PRAXIS II scores.

Table 5 lists the predictor elements that were statistically significant and included in the models for predicting PRAXIS II scores. The Beta value for Model 1 indicates that Total SAT had the greatest influence (0.568) on predicting PRAXIS II scores. Model 2 indicates that Total SAT had an influence of 0.486, and QPA

Table 3.

Model Summary To Predict PRAXIS II: Regression Using a Forward Analysis Method with Probability of F To Enter ≤ 0.050, Dependent Variable PRAXIS II Content Knowledge and Predictors: SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math_I), Quality Point Average (QPA) for 200 Teacher Candidates.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1.	0.568	0.322	0.311	9.47534	
2.	0.633	0.400	0.381	8.98434	1.737

Table 4.

Analysis of Variance (ANOVA) To Predict PRAXIS II: Regression Using a Forward Analysis Method with Probability of F To Enter ≤ 0.050, Dependent Variable PRAXIS II Content Knowledge and Predictors: SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math_I), Quality Point Average (QPA) for 200 Teacher Candidates.

Model		Sum of Squares	Mean Square	F	Significance
1.	Regression	2687.947	2687.947	29.939	0.000
	Residual	5656.269	89.782		
	Total	8344.215			
2.	Regression	3339.682	1669.841	20.687	0.000
	Residual	50004.533	80.718		
	Total				

Table 5.
Elements To Be Included To Predict PRAXIS II: Regression Using a Forward Analysis Method with Probability of F To Enter ≤ 0.050, Dependent Variable PRAXIS II Content Knowledge and Predictors: SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math_1), Quality Point Average (QPA) for 200 Teacher Candidates.

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Significance
1.	(Constant)	117.412	9.233		12.716	0.000
	Total SAT	0.051	0.009	0.568	5.472	0.000
2.	(Constant)	81.621	15.340		5.321	0.000
	Total SAT	0.044	0.009	0.486	4.747	0.000
	QPA	12.259	4.314	0.291	2.842	0.006

had an influence of 0.291 when both Total SAT and QPA were modeled together to predict PRAXIS II scores. Table 6 lists the predictor elements that were not statistically significant and, therefore, excluded from both Model 1 and Model 2 for use in predicting PRAXIS II scores.

As determined by the forward regression analysis, the only statistically significant variable (t = 5.472 with p = 0.000) needed to predict PRAXIS II scores was the SAT Total scores. Therefore, none of the other predictor variables used in the

Table 6.
Elements To Be Excluded To Predict PRAXIS II: Regression Using a Forward Analysis Method with Probability of F To Enter ≤ 0.050, Dependent Variable PRAXIS II Content Knowledge and Predictors: SAT Verbal (Verbal), SAT Mathematics (Math), SAT Total (Total), PRAXIS I Reading (Read), PRAXIS I Writing (Write), PRAXIS I Mathematics (Math_1), Quality Point Average (QPA) for 200 Teacher Candidates.

Model	Beta In	t	Significance	Partial Correlation	Collinearity Tolerance
1. Verbal	-0.042	-0.195	0.846	-0.025	0.232
Math	0.043	0.195	0.846	0.025	0.226
Read0.260	2.266	0.027		0.277	0.768
Write	0.084	0.739	0.462	0.093	0.849
Math_1	0.066	0.490	0.626	0.062	0.599
QPA	0.291	2.842	0.006	0.339	0.922
2. Verbal	0.084	0.399	0.691	0.051	0.222
Math	-0.85	-0.399	0.691	-0.051	0.216
Read0.195	1.717	0.091		0.215	0.725
Write	0.058	0.536	0.594	0.068	0.843
Math_1	-0.010	-0.078	0.938	-0.010	0.573

confirmatory analysis added significantly to explaining the variance of PRAXIS II Fundamental Subjects: Content Knowledge scores.

In conclusion, the research question in this study was: Are measured test scores that teacher candidates demonstrate prior to and during their teacher preparation programs predictors of the legislatively mandated PRAXIS II test scores? To answer this question, forward regression analysis was used to estimate the fitted value of PRAXIS II (response variable) as a function of several predictor variables (previously earned test scores). The research hypothesis was that forward regression analysis would estimate the fitted value of PRAXIS II (response variable) as a function of one or more predictor variables. Therefore, the answer to the research question was yes! Forward regression analysis did estimate the fitted value of PRAXIS II (response variable) as a function of several predictor variables. Interestingly, the one statistically significant predictor was the high school Scholastic Aptitude Test (SAT) scores the teacher candidates earned prior to entering higher education.

Discussion

The purpose of this study was to explore predicting PRAXIS II Fundamental Subjects: Content Knowledge scores required for licensing teacher candidates in many states. The procedures included using paired scores for two hundred (200) teacher candidates who met or exceeded a score of 150 (qualifying score in some states) on the Fundamental Subjects: Content Knowledge examination during the 2003 - 2005 academic years at two universities. The paired scores used for prediction included: Scholastic Aptitude Test scores, undergraduate Quality Point Average, and scores from the PRAXIS I. The scores to be predicted were earned by the same students from completion of the PRAXIS II (Fundamental Subjects: Content Knowledge) examination. The results were that significant regression information for predicting PRAXIS II scores existed. The best predictor of the PRAXIS II Fundamental Subjects: Content Knowledge (CONKN) was the Total score for the SAT.

Previous research used state mandated testing results to predict classroom effectiveness and teacher retention. For example, Goodison (1986) reported that there was no empirical relationship between basic competency test scores and actual job performance. Flippo (1986) reported that rising test scores on certification tests were a direct result of the availability of test questions and content; therefore, high stakes screening tests were less effective the more frequently the tests were administered. Dybdahl, Shaw, and Edwards (1997) reported a poor correlation between effectiveness in the classroom and state-mandated certification test scores. Most recently, Greiner and Smith (2006) demonstrated that state mandated standardized test scores and teacher retention were not significantly correlated. However, this study used teacher candidate variables (predictor variables = QPA, PRAXIS I, etc.) to attempt to predict how well or how poorly teacher candidates would perform on a state mandated test (criterion variable). While there were no significant correlations

in previous studies between state mandated testing (predictor variable) and criterion variables such as classroom effectiveness and teacher retention, there were also no significant findings in this study between the predictor variables demonstrated by teacher candidates during their teacher education programs (SAT scores are prior to teacher education) and their performance on a state mandated test.

The implication of the study was that at-risk teacher candidates for poor performance on the PRAXIS II may be identified prior to teacher candidates completing PRAXIS II Fundamental Subjects: Content Knowledge examination. Based upon the results of this study, SAT Total scores were the single most important variable for predicting PRAXIS II scores. SAT Total scores were a better predictor of how teacher candidates performed on PRAXIS II than QPA. Figure 1 provided a regression equation for predicting PRAXIS II scores given SAT Total scores to help identify at-risk teacher candidates. Therefore, a teacher preparation program may identify at-risk students during the program's application screening process. Additionally, Kent's (2005) recommendation to make admission standards more stringent by teacher education programs appeared to have merit with the implication from this study that admitting teacher candidates with higher SAT Total scores might help insure higher teacher certification rates. In fact, some colleges and universities already require minimum scores on college entrance exams such as the SAT and ACT (Farnsworth et al., 2003). Using minimum scores on tests such as the SAT for admission criteria to teacher certification programs may only insure corresponding scores on PRAXIS II but may not help insure more effective teachers.

A limitation of the study was that no information existed in the teacher candidates' files that provided evidence indicating the number of attempts a teacher candidate made to successfully pass the PRAXIS II Fundamental Subjects: Content Knowledge examination series prior to earning a score of 150. Knowing the number of times teacher candidates attempted to earn a passing score may provide some additional insight. For example, some teacher candidates may be recognized as outstanding student teachers with excellent QPAs and yet do not pass PRAXIS II after several attempts.

Several areas for further research are suggested by this study. These recommendations are listed below:

1. Future research should use the number of times students attempt the PRAXIS II examination prior to earning a passing score as a covariate in the analysis process.

2. Further investigation should be conducted into why the strong correlation between SAT and PRAXIS II scores exists. For example, (a) is the correlation the result of test taking ability, (b) is the correlation the result of similar item content on both measures, or (c) is the correlation predicated on the fact that both the SAT and PRAXIS II require unique problem solving strategies designed by the same publisher?

3. Additional research should examine other variables such as SAT scores, PRAXIS II scores, and performance in student teaching to determine if there are any correlations or predictors.

4. Duplication of the study is recommended at other colleges or universities that offer teacher education programs to compare results.

Note

[1]"Signs, signs, everywhere there's signs; blocking out the scenery, breaking up my mind; do this, don't do that, can't you read the sign?" These words are some of the lyrics from a song made famous by the Five Man Electric Band in 1971. In the song, "signs" was a symbol used to express authority. The song was written to describe a changing world from one of freedoms and free space to one of restrictions and confinement. The song marked the experiences of people being controlled by a growing trend toward increasingly more governmental regulation. Now, almost thirty-five years later, teacher preparation programs have continued to see the ever increasing control of teacher candidates and teachers by policymakers.

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