

Reassessing the Relationship between Psychology Course Grades and the Psychology
Department Comprehensive Examination 2010 to 2013

By

Tim W. Ficklin, Ph.D.
Chaminade University of Honolulu

Previous studies have examined the scoring trends of Chaminade University Psychology Department's Comprehensive Undergraduate Examination including its reliability and validity (Santee, 2013; 2009a; 2009b), as well as the relationship between scores on the examination and students' grade point averages (Santee, 2010a; 2010b). This study reassesses the specific relationship between Psychology Program Learning Outcome grade point averages and scores on the Comprehensive Examination controlling for test-taking ability or overall scholastic ability for the last four years, 2010 to 2013.

Multiple-choice examinations are the most common assessment method in educational and other settings (Ng & Chan, 2009). This is because of its ease of administration, scoring, objectivity, content sampling, etc. (Lau, Lau, Hong, & Usop, 2011). However, the method is not without criticism. The ability of the test-taker to recognize and select one correct answer from a selection of alternatives is not exactly the same as knowing the answer without having any possible answers from which to choose; nor does scoring one point for each correct answer account for the elimination of incorrect answers prior to answer selection (partial knowledge) or just plain guessing. Several researchers have proposed various scoring methods and techniques to limit the effects of these multiple-choice test-taking strategies (Lau, Lau, Hong, & Usop, 2011; Ng & Chan, 2009; Edwards, Arthur, & Bruce, 2012) and one even has developed a comprehensive scale to measure test-taking strategies of university students (Dodeen, 2008).

Individuals in higher education responsible for assessing the knowledge gained by program coursework to meet learning outcomes using traditionally scored, comprehensive, multiple-choice tests are left wondering how much of the scores are actually related to content specific knowledge gained and how much is related to test-taking ability or overall scholastic or cognitive ability. While test scores are related to many sociological and psychological factors which defy specific quantification (e.g., test anxiety, attitudes toward subject matter or toward testing in general, etc.), there is an instrument available which assesses a student's scholastic aptitude including test-taking ability.

The Scholastic Aptitude Test (SAT) is "the most widely used college admission test" according to the College Board's web page (sat.collegeboard.org). The primary reason for its use is to predict success in college. The majority of college-bound high school students take this test and it has literally hundreds of predictive validity studies demonstrating that it has significant predictive ability (Camara & Echternacht, 2000). It is intended to be a rather broad measure of

the potential student's capacity for future learning (Geiser & Studley, 2002). It is a measure of scholastic aptitude which in part, also measures test-taking strategies, as well as cognitive ability.

This author questioned whether or not the previous significant relationships found between student grade point averages in psychology courses and the psychology comprehensive examination score would continue for the most recent four years of data collection. And, would the correlations remain significant if it were possible to statistically control or hold constant the part of the comprehensive examination total score due to the students' scholastic aptitude and/or test-taking strategies as previously assessed (before admission) by the SAT.

Method

Participants

A total of 68 day undergraduate students completed the Psychology Department Comprehensive Examination in their PSY 490 Senior Seminar class from 2010 to 2013. Of those, 50 (73%) had reported SAT scores on their online Web Advisor page. These fifty students' SAT score composite (Critical Reading + Mathematics) was selected as the most indicative of scholastic aptitude including test-taking ability.

Design and Procedures

This study used an ex post facto data collection method to support a correlational and partial correlation statistical analysis. A partial correlation is a measure of the relationship between two variables while controlling the effect of a third variable by holding it constant (Gravetter & Wallnau, 2009).

The variables collected for this analysis included the SAT composite score (Critical Reading + Mathematics), the Psychology Department Comprehensive Examination total score (55 four-choice, multiple-choice questions, traditionally scored as one point for each correct response) and the students' grade point average in their program learning outcomes psychology classes, plus PSY 101 General Psychology.

The courses included in this grade point analysis calculation included General Psychology if it was taken at Chaminade University and the following courses, PSY 200, PSY 315, PSY 316, PSY 321, PSY 322, PSY 406, PSY 424, PSY 434, PSY 451 and PSY 464. Elective psychology classes were not included in the calculation with the exception of PSY 464 Evolutionary Psychology which was recently changed to a required class and had previously been offered as an elective class. Each of the included classes is represented by at least one question on the comprehensive exam. Since usually part of the grade in PSY 490 Senior Seminar is based upon the students' score on the comprehensive examination and the course is an overview of previous psychology coursework, a decision was made not to include that course grade in the calculation of the grade point average.

Results

The data were collected over a two week period in August 2013 and entered into the SPSS program. Frequencies, means and standard deviations of the variables by year and total can be seen in Table 1 below.

Table 1. Frequencies, Means and Standard Deviations by Year

Year		PSYGPA	PSYCOMP	SATCOMP
2010	n	8	8	8
	Mean	3.22	43.62	902.50
	SD	.61	3.02	91.92
2011	n	12	12	12
	Mean	3.11	39.50	910.83
	SD	.42	4.38	130.49
2012	n	16	16	16
	Mean	2.91	32.94	951.87
	SD	.53	5.68	145.75
2013	n	14	14	14
	Mean	3.13	36.57	954.28
	SD	.50	7.00	165.89
Total	N	50	50	50
	Mean	3.07	37.24	934.80
	SD	.51	6.53	139.09

The students exhibit relative consistent performance across the four years on the comprehensive examination score with a slight decrease in mean score in the 2012 cohort. This does correspond to a slightly lower grade point average that year. There does appear to be an increasing trend in SAT composite scores across the four years, but it is not known if this is unique to these Chaminade University psychology students or simply represents a national trend.

Next, Pearson product-moment correlational coefficients were calculated between all three variables across all four years. They were all statistically significant at the .01 level or better. The coefficient between psychology grade point average and the comprehensive examination score was .653. The coefficient between the grade point average and SAT score was .508. The coefficient between the comprehensive examination score and the SAT was .474. The direction and magnitude of the correlational coefficient between grade point average and comprehensive examination score were as expected and confirmed the results previously found using 2008 and 2009 data (Santee, 2010a; Santee, 2010b). The coefficients found between the SAT, the comprehensive examination and the grade point averages also supported the hypotheses of significant relationships.

Finally, a partial correlation was calculated between the psychology grade point average across all four years and the comprehensive examination score while controlling for the SAT variable. It was found to be significant at .001 with a calculated r value of .544.

Conclusion

The hypotheses that there would be significant relationships between all three of these variables were supported by these data and statistical analyses. The hypothesis that the relationship between psychology course grades and the psychology comprehensive examination score would remain significant even when the variable of scholastic aptitude and/or test-taking ability was held constant was also supported. The psychology comprehensive examination continues to be a valid and reliable measure of psychology course content knowledge across the major.

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