Writing Up Nonparametric Dependent Samples t Test*

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1 Writing Up Your Nonparametric Dependent Samples t

About the Authors

John R. Slate is a Professor at Sam Houston State University where he teaches Basic and Advanced Statistics courses, as well as professional writing, to doctoral students in Educational Leadership and Counseling. His research interests lie in the use of educational databases, both state and national, to reform school practices. To date, he has chaired and/or served over 100 doctoral student dissertation committees. Recently, Dr. Slate created a website, Writing and Statistical Help[1] to assist students and faculty with both statistical assistance and in editing/writing their dissertations/theses and manuscripts.

Ana Rojas-LeBouef is a Literacy Specialist at the Reading Center at Sam Houston State University where she teaches developmental reading courses. She recently completed her doctoral degree in Reading, where she conducted a 16-year analysis of Texas statewide data regarding the achievement gap. Her research interests lie in examining the inequities in achievement among ethnic groups. Dr. Rojas-LeBouef also assists students and faculty in their writing and statistical needs on the Writing and Statistical website, Writing and Statistical Help[2]

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[1]http://cnx.org/content/m37683/latest/www.writingandstatisticalhelp.com
[2]http://cnx.org/content/m37683/latest/www.writingandstatisticalhelp.com

The following is an example of how to write up (in manuscript text) your Nonparametric Dependent Samples t test statistics. This module is used with a larger Collection (Book) authored by John R. Slate and Ana Rojas-LeBouef from Sam Houston State University and available at: *Calculating Basic Statistical Procedures in SPSS: A Self-Help and Practical Guide to Preparing Theses, Dissertations, and Manuscripts*[3]

College-Readiness Differences in Reading and Math for Asian Students in Texas

2 Research Question

The following research question was addressed in this study:

What is the difference in the college-readiness rates in reading and in math for Asian high school students in Texas?

3 Results

An examination of the standardized skewness coefficients (i.e., the skewness value divided by its standard error) and the standardized kurtosis coefficients (i.e., the kurtosis value divided by its standard error) revealed large deviations from normality. All four standardized coefficients were outside the bounds of normality of +/-3 (Onwuegbuzie & Daniel, 2002). Readers are referred to Table 1 for the specific values for these coefficients.

Because the data for both the college-readiness rates in reading and in math were not normally distributed, a nonparametric statistical procedure had to be utilized. Accordingly, a nonparametric Wilcoxon's dependent samples t-test (Huck, 2007) was utilized to address the research question. The Wilcoxon's dependent samples t-test yielded a statistically significant difference between Asian students' college-readiness rates in reading and in math, z = -13.92, $p < .001$. The effect size associated with this difference, Cohen's d, was 0.42, small (Cohen, 1988). Asian students demonstrated statistically significantly higher college-readiness rates in math than in reading, 5.99% higher. Depicted in Table 2 are the means and standard deviations for Asian students' college-readiness rates in reading and in math.

4 References

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

Huck, S. W. (2007). *Reading statistics and research* (5th ed.). New York, NY: Addison Wesley

Onwuegbuzie, A. J., & Daniel, L. G. (2002). Uses and misuses of the correlation coefficient. *Research in the Schools, 9*(1), 73-90.

NOTE: To be compliant with APA 6th edition, students and faculty are to be aware that Table titles are placed "above" the table entry. Titles here are placed below the tables because of special formatting templates and for conciseness of visual presentation.

Standardized Skewness Coefficients and Standardized Kurtosis Coefficients for College-Readiness Rates in Reading and in Math for Texas Asian High School Students

Variable	Standardized Skewness Coefficient	Standardized Kurtosis Coefficient
Reading Readiness Rates	-4.91	4.22
Math Readiness Rates	-6.37	3.36

[3] http://my.qoop.com/store/NCPEA-Publications-1781472103076212/Calculating-Basic-Statistical-Procedures-in-SPSS–A-Self-Help-and-Practical-Guide-to-Preparing-These-78215421822840/

Table 1

Means and Standard Deviations for Texas Asian High School Students' College-Readiness Rates in Reading and in Math

Variable	M	SD
Reading Readiness Rates	68.60	15.44
Math Readiness Rates	74.59	13.32

Table 2

NOTE: Figures 1 and 2 below came directly from SPSS output. As such, they are not compliant with APA 6th edition and should not be used in theses, dissertations, or manuscripts. Only Table 1 and 2 above the Output from SPSS are compliant with APA format.

Figure 1. Statistics

Statistics

		Campus 2008 College Ready: Asian/Pacific Islander Math %	Campus 2008 College Ready: Asian/Pacific Islander Reading %
N	Valid	268	268
	Missing	1700	1690
Mean		74.59	68.60
Std. Deviation		13.321	15.445
Skewness		-.968	-.732
Std. Error of Skewness		.152	.149
Kurtosis		1.015	1.252
Std. Error of Kurtosis		.302	.297

[4]

Figure 2. Test Statistics

Test Statistics[b]

	CPCRM08R -- Campus 2008 College Ready: Asian/Pacific Islander Math % Read - CAMPUS
Z	-13.924[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

[5]

[4] http://cnx.org/content/m37683/latest/figure8.1.png/image
[5] http://cnx.org/content/m37683/latest/figure8.2.png/image