

San Jose State University
School of Social Work
ScWk 242
Spring 2008

Lab #2: Dependent t test (AKA Paired Samples t test)

Answer Key

Research Scenario

You work in a Vocational Training Program for adults with Developmental Disabilities. The program has received a grant from the State to implement a new training program. The primary goal of the training program is to improve clients' work skills so that they can move from a sheltered work environment to a job in a community setting. A requirement of the grant is to submit a 6-month progress report that assesses the effectiveness of the intervention in improving client's work skills.

The first 40 clients who qualify for services through the grant are enrolled in the training program. In order to measure client's work skills, a staff member will ask the client to complete a series of tasks that are common in many community job settings that employ adults with Developmental Disabilities (e.g. bagging groceries, washing dishes, etc...). Each task will receive a score and these scores will be summed to generate an overall assessment of client work skills. The scores can range from 0 (very poor work skills) to 40 (excellent work skills). Each client is assessed before and after the intervention.

Using an 8-Step Process for Hypothesis Testing

Once you have your output, use the 8-step process for hypothesis testing to describe and interpret your findings. Please refer to the research scenario and your SPSS output to answer the questions.

1. Identify the independent variable and level of measurement

The independent variable is the new training program and the level of measurement is categorical, nominal.

***Note: even though this is a one-group pretest, posttest design, the *t*-test calculation treats the pretest group and the posttest group as separate but related (or paired) groups of subjects. So, even though technically the variable “training program” doesn’t vary (all subjects are assigned to the treatment group), for the purposes of the dependent *t*-test we will continue to use this as the IV.

2. Identify the dependent variable and level of measurement

The dependent variable is client work skills (measured with an assessment tool) and the level of measurement is continuous or ratio.

3. State the null hypothesis

The null hypothesis is that there is no relationship between the training program and client work skills, specifically there is no difference between the mean pre-test work skills score and the mean post-test work skills score among the clients participating in the program.

4. State the alternative hypothesis

The alternative hypothesis is that there is a relationship between the training program and client work skills, specifically there is a difference between the mean pre-test work skills score and the mean post-test work skills score among the clients participating in the program.

5. Identify the **appropriate statistical test and alpha level.**

The appropriate statistical test is the dependent groups t test and the alpha level is .05

6. Present **table of results (SPSS Output)**

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test Work Skills Score	12.7250	40	4.65192	.73553
	Post-Test Work Skills Score	17.5750	40	6.53546	1.03335

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-Test Work Skills Score & Post-Test Work Skills Score	40	.780	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre-Test Work Skills Score - Post-Test Work Skills Score	-4.85000	4.11096	.65000	-6.16475	-3.53525	-7.462	39	.000

7. Describe **results and decision to accept or reject the null hypothesis**

$t(39) = -7.462, p < .001$

Since the p value of $< .001$ is less than the alpha of $.05$, we will reject the null hypothesis and conclude that there is a relationship between the training program and client's work skills (specifically, there is a difference between the mean pre-test work skills score and the mean post-test work skills score among the clients in the program). An examination of the difference between posttest means shows that the program resulted in improved work skills scores.

8. Provide a **discussion of these results**.

Results of the dependent t test indicated a statistically significant difference between the mean pre-test work skills score and the mean post-test work skills score among the clients participating in the program. Specifically, the mean pre-test work skills score was 12.73 ($SD = 4.65$), and the mean post-test work skills score was 17.58 ($SD = 6.54$), indicating that client's work skills improved after 6 months of participation in the training program.

These results indicate the potential effectiveness of the training program for DD clients and suggest that the training program should be continued and perhaps expanded to other agency sites. Limitations of this study include the lack of a comparison or control group, which reduces the internal validity of the study.

Future evaluations should assess the degree to which clients participating in the training program are able to move from a sheltered work environment to a job in a community setting—since this is a stated program goal. For clients who remain in the training program, a re-assessment of their work skills should be performed after 12 months of participation in the program to determine if there is additional improvement in client work skills.