

Task 10.1

After performing a paired-sample t-test, the following charts were populated by IMB SPSS. Table 1 depicts the correlation between the two samples. Table 2 depicts the t-test calculations. Since  $p=0.031$  is smaller than 0.05 and  $t(11) = -2.473$  is smaller than -2.201 (this critical value was determined by looking at the t statistics chart in the back of the textbook), we reject the null hypothesis. Thus, exposure to the real spider does cause more anxiety than a picture of one.

Table 1. Paired samples correlation.

		N	Correlation	Significance	
				One-Sided p	Two-Sided p
Pair 1	Picture of spider & Real spider	12	.545	.033	.067

Table 2. T-test calculations.

	Paired Differences			95% Confidence Interval of the Difference		t	df	Significance		
	Mean	Std. Deviation	Std. Error	Lower	Upper			One-Sided p	Two-Sided p	
Pair 1	Picture of spider - Real spider	-7.000	9.807	2.831	-13.231	-.769	-2.473	11	.015	.031

Task 10.5

An independent t-test was conducted to examine whether life satisfaction depends upon the type of pet a pet owner has. Table 3 depicts the results of a t-test with life satisfaction as the tested variable against the type of pet an individual has. Since  $p < 0.05$ , the test is statistically significant and the type of pet an owner has does impact life satisfaction.

Table 3. Independent sample t-test results.

		F	Sig.	t	df	Significance		Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						One-Sided p	Two-Sided p			Lower	Upper
Life satisfaction (%)	Equal variances assumed	1.407	.251	-3.446	18	.001	.003	-21.958	6.372	-35.346	-8.570

Equal variances not assumed			-3.688	17.843	<.001	.002	-21.958	5.954		-34.475	-9.441
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Task 12.1

An analysis of variance (ANOVA) was completed to examine the difference in exam scores based on reward/punishment treatment on a sample of students. Table 4 shows the descriptive analysis of the results and table 5 depicts the ANOVA calculations. Interestingly, table 4 shows that those who receive a reward got a higher exam grade on average. Those who received a punishment did not receive a high grade on average. In table 5,  $p < 0.05$  then the data is statistically significant and teachers should reward their students to help them earn a higher grade on their exam.

Table 4. Descriptive analysis of exam marks based on reward/punishment treatments.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Punish	10	50.00	4.137	1.308	47.04	52.96	45	57
Indifferent	10	56.00	7.102	2.246	50.92	61.08	46	67
Reward	10	65.40	4.300	1.360	62.32	68.48	58	71
Total	30	57.13	8.262	1.508	54.05	60.22	45	71

Table 5. ANOVA analysis of exam marks based on reward/punishment treatments.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1205.067	2	602.533	21.008	<.001
Within Groups	774.400	27	28.681		
Total	1979.467	29			

Task 12.3

An analysis of variance (ANOVA) was completed to determine the difference in injury severity based upon the type of superhero costume a child decided to wear. Table 6 depicts the descriptive data, table 7 shows the ANOVA calculations, and table 8 shows the specific comparisons between superhero costumes that can “fly” versus ones that cannot. The data suggests that children who wear costumes that can “fly” experience more severe injuries than children who do not. Specifically, the children who wear the superman costume seem to injure themselves much more which is proven in table 8 because  $p < 0.05$  and statically significant against the other costumes worn.

Table 6. Descriptive data regarding costume worn and severity of injury.

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Superman	6	60.33	17.851	7.288	41.60	79.07	32	85

Spiderman	8	41.63	12.212	4.317	31.42	51.83	20	58
Hulk	8	35.38	13.384	4.732	24.19	46.56	10	53
Ninja Turtle	8	26.25	8.155	2.883	19.43	33.07	18	41
Total	30	39.60	17.158	3.133	33.19	46.01	10	85

Table 7. ANOVA calculates based upon the type of costume worn and severity of injury.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4180.617	3	1393.539	8.317	<.001
Within Groups	4356.583	26	167.561		
Total	8537.200	29			

Table 8. Comparisons between the type of costume worn and severity of injury.

(I) Type of superhero costume	(J) Type of superhero costume	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound Upper Bound	
Superman	Spiderman	18.708	6.991	.058	-.47	37.89
	Hulk	24.958*	6.991	.007	5.78	44.14
	Ninja Turtle	34.083*	6.991	<.001	14.91	53.26
Spiderman	Superman	-18.708	6.991	.058	-37.89	.47
	Hulk	6.250	6.472	.770	-11.51	24.01
	Ninja Turtle	15.375	6.472	.107	-2.38	33.13
Hulk	Superman	-24.958*	6.991	.007	-44.14	-5.78
	Spiderman	-6.250	6.472	.770	-24.01	11.51
	Ninja Turtle	9.125	6.472	.505	-8.63	26.88
Ninja Turtle	Superman	-34.083*	6.991	<.001	-53.26	-14.91
	Spiderman	-15.375	6.472	.107	-33.13	2.38
	Hulk	-9.125	6.472	.505	-26.88	8.63

\*. The mean difference is significant at the 0.05 level.