

**Statistical Findings**

This document is for students who selected *gender identity* as their third variable.

Data were analyzed and prepared for students using Microsoft Excel. Pearson Correlations, ANOVA, and *t*-tests were performed, depending upon the variables being compared.

Table 1, below, simply gives the mean score, standard deviation, standard error, and range for each variable. These can be useful when describing the results.

**Table 1:** Descriptive statistics for correlational analyses

Descriptive statistics						
	Mean	Std Dev	Std Err	N	Minimum	Maximum
Self_Esteem	28.52	5.79	0.37	244	12	40
SleepDisturbance	35.66	10.13	0.65	244	8	58
Optimism	31.87	3.75	0.24	244	23	40
Resilience	19.82	4.79	0.31	244	6	30
Anxiety	13.03	5.00	0.32	244	7	28
Depression	12.29	5.04	0.32	244	7	28
Stress	14.35	4.63	0.30	244	7	28
Age	30.77	14.55	0.94	238	18	80

These values represent all participants in the study

Note: Six people did not give their age;

Correlational analyses using age only use those participants that gave an age.

**Table 2:** Inferential statistics for correlational analyses

Correlational analysis									
		Self_Esteem	SleepDisturbance	Optimism	Resilience	Anxiety	Depression	Stress	Age
Self_Esteem	Pearson Correl	1							
	p-value								
	N	244							
SleepDisturbance	Pearson Correl	-.359	1						
	p-value	< .001							
	N	244	244						
Optimism	Pearson Correl	.529	-.235	1					
	p-value	< .001	< .001						
	N	244	244	244					
Resilience	Pearson Correl	.620	-.236	.512	1				
	p-value	< .001	< .001	< .001					
	N	244	244	244	244				
Anxiety	Pearson Correl	-.564	.245	-.416	-.460	1			
	p-value	< .001	< .001	< .001	< .001				
	N	244	244	244	244	244			
Depression	Pearson Correl	-.709	.337	-.451	-.522	.761	1		
	p-value	< .001	< .001	< .001	< .001	< .001			
	N	244	244	244	244	244	244		
Stress	Pearson Correl	-.546	.281	-.511	-.436	.731	.748	1	
	p-value	< .001	< .001	< .001	< .001	< .001	< .001		
	N	244	244	244	244	244	244	244	
Age	Pearson Correl	.226	-.041	.093	.163	-.250	-.179	-.149	1
	p-value	.017	< .001	.244	< .001	< .001	< .001	< .001	
	N	238	238	238	238	238	238	238	238

Table 2, at the bottom of the previous page, contains **the data that applies to the hypothesis that compares the two behavioral variables**. The comparisons of the behavioral variables with *gender identity* will be covered later in this document.

The table is a grid, with the variable names across the top *and* along the left side. Where a column and a row intersect are the analysis results for that pair of variables.

Let us say that you were comparing *sleep-disturbance* to *depression*. Select *sleep disturbance* on the top of Table 2 and select *depression* on the left side. Find the box where the column and row meet.

- The first number in that box is the Pearson correlation coefficient (*r*) for those two variables: in the case of *sleep-disturbance* and *depression*, the value is **.337**.
- The *p*-value is also given: ***p* < .001**... if that value is less than .050 (obviously it *is* in this case), you have a statistically significant result... there IS a relationship!!
- The number of people assessed is also given (N). This number is the same for all comparisons except those involving the *age* variable since some participants did not fill in their age. Six people did not give their age.

To report the correlational findings for *sleep disturbance* and *self-esteem* you would present it thus:  $r(244) = .337, p < .001$ .

So, what does that mean? You first must remember what the values on each assessment mean:

**Table 3:** Reference for the meaning of variable measures

Test	A <b>higher score</b> on the questionnaire means
<i>Self-esteem</i>	HIGHER, or better, self-esteem
<i>Sleep disturbance</i>	MORE disturbed sleep
<i>Optimism</i>	HIGHER levels of optimism
<i>Resilience</i>	GREATER resiliency
<i>Anxiety</i>	MORE anxiety
<i>Depression</i>	GREATER levels of depression
<i>Stress</i>	MORE stressed
<i>Age</i>	OLDER

If the Pearson coefficient in Table 2 is a **positive** number it means a *higher score on one variable predicts a higher score on the other and a lower score on one predicts a lower on the other*. If it's a **negative** number, that means that *if one variable has a higher value, the other variable is likely to have a lower value*.

So, referring to the earlier comparison of *sleep disturbance* and *depression*, a correlational result of  $r(244) = .337, p < .001$  means that there IS a relationship between the two groups. Because the value of *r* is positive, a higher score on *depression* predicts a higher score on *sleep disturbances*. So, the correlation is showing a strong relationship that says people with higher levels of depression also have more disturbed sleep.

See page 6 on how to write these up for the Results section.

**Commented [PWL1]:** The number in parentheses is the "degrees of freedom," which in the case of a Pearson correlation is N-2.

Degrees of freedom MUST be reported when one gives the value of the statistical test.

**Findings involving Gender Identity and the other variables**

Correlations only work for variables where scores are “higher” or “lower” than each other. Where the number 2 is greater than 1, 3 is greater than 2, and so on.

*Gender Identity* is a categorical variable where the categories don’t have any order to them... the groups are not “greater than” or “less than” the other groups. To analyze hypotheses using this variable we will use Analysis of Variance (ANOVA), which is designed to analyze categorical groups.

However, ANOVA will only tell us if there are any differences between ANY groups... we have three groups: *women, men, non-binary*. If the ANOVA is statistically significant, we will have to do something to figure out which groups are different from each other. I’ll get to that after talking about ANOVA.

Table 4 gives descriptive results: Mean, standard deviation, standard error & range. These can be used to describe the data once the analysis has been presented.

**Table 4:** Descriptive statistics for *Gender Identity* compared to the behavioral variables.

Descriptives - Gender identity x target variable							
	Identity	N	Mean	Std Dev	Std Err	Minimum	Maximum
Self_Esteem	Woman	148	28.22	5.78	0.48	12.00	40.00
	Man	80	29.83	5.73	0.64	17.00	40.00
	Non-binary	15	24.33	3.90	1.01	19.00	30.00
	Total	243	28.52	5.79	0.37	12.00	40.00
SleepDisturbance	Woman	148	35.68	10.10	0.83	13.00	58.00
	Man	80	35.84	10.60	1.19	8.00	56.00
	Non-binary	15	34.40	8.55	2.21	24.00	49.00
	Total	243	35.66	10.13	0.65	8.00	58.00
Optimism	Woman	148	31.65	3.72	0.31	23.00	40.00
	Man	80	32.81	3.65	0.41	24.00	40.00
	Non-binary	15	28.87	2.77	0.72	25.00	34.00
	Total	243	31.87	3.75	0.24	23.00	40.00
Resilience	Woman	148	19.41	5.01	0.41	6.00	30.00
	Man	80	20.81	4.40	0.49	11.00	30.00
	Non-binary	15	18.40	4.01	1.04	10.00	24.00
	Total	243	19.82	4.79	0.31	6.00	30.00
Anxiety	Woman	148	12.78	4.91	0.40	7.00	28.00
	Man	80	13.01	5.22	0.58	7.00	28.00
	Non-binary	15	15.47	4.53	1.17	9.00	23.00
	Total	243	13.03	5.00	0.32	7.00	28.00
Depression	Woman	148	11.68	4.63	0.38	7.00	28.00
	Man	80	13.03	5.85	0.65	7.00	28.00
	Non-binary	15	14.53	3.11	0.80	7.00	18.00
	Total	243	12.29	5.04	0.32	7.00	28.00
Stress	Woman	148	14.22	4.55	0.37	7.00	28.00
	Man	80	14.27	4.98	0.56	7.00	28.00
	Non-binary	15	16.13	3.38	0.87	9.00	23.00
	Total	243	14.35	4.63	0.30	7.00	28.00

Note: One respondent did not give their gender identity. That individual is not included in these analyses.

Table 5, next page, gives the results of the various ANOVAs. Look for the two *behavioral* variables that you selected and consider their results. The second to last column, labeled “*F*” is the analysis statistic (ANOVA is also called an “*F*-test”). The last column, *p*-value, shows the *significance level*, or “probability that the results occurred due to chance.”

Consider the last column. Is the significance level of the analysis of your behavioral variable less than or greater than .05? If the value is GREATER than .05, then you have “no significance.” This means that there is no *statistical* difference between the three gender identities in their scores on that particular variable. The averages of all three groups may differ a little bit from each other, but they are ALL so close to each other that they are considered “the same” as far as statistics are concerned.

**Table 5:** Inferential statistics for ANOVAs involving *Gender Identity* and selected behavioral variables.

**ANOVA - gender identity x target variable**

		Sum of Squares	df	Mean Square	F	p-value
Self_Esteem	Between Group	412.199	2	206.100	6.403	.002
	Within Groups	7724.525	240	32.186		
	Total	8136.724	242			
SleepDisturbanc	Between Group	26.401	2	13.201	0.127	.881
	Within Groups	24910.562	240	103.794		
	Total	24936.963	242			
Optimism	Between Group	213.592	2	106.796	8.026	< .001
	Within Groups	3193.651	240	13.307		
	Total	3407.243	242			
Resilience	Between Group	134.446	2	67.223	2.964	.054
	Within Groups	5443.463	240	22.681		
	Total	5577.909	242			
Anxiety	Between Group	98.05	2	49.025	1.968	.142
	Within Groups	5979.802	240	24.916		
	Total	6077.852	242			
Depression	Between Group	174.551	2	87.276	3.491	.032
	Within Groups	6000.116	240	25.000		
	Total	6174.667	242			
Stress	Between Group	50.745	2	25.373	1.181	.309
	Within Groups	5155.318	240	21.480		
	Total	5206.063	242			

Note: One respondent did not give their gender identity. That individual is not included in these analyses.

If the *p*-value is LESS than .05, then you have a “significant difference.” This means (conceptually) that the average scores of the gender identities are *so different* that there must be a REAL difference between at least two of the gender identities on this variable.

For example: the results for *Depression x Gender Identity* are:  $F(2, 240) = 3.491, p < .032$ . I’m sure we can all agree that the *p*-value is *less* than .05. So, there’s *definitely* a statistical difference between at least two of the gender identities on this metric. But...

... which pairings are different? Are *women* different from *men*? Different from those who identify as *non-binary*? Are *men* different from those who identify as *non-binary*? One, two, or all three of these pairings might be significant!

If we look at Table 4, we can see that it sure *looks* like people who identified as *non-binary* have a higher depression than both *women* and *men*, so those two comparisons (*non-binary* vs. *women* & *non-binary* vs. *men*) might be statistically different... **but we can’t be sure just by looking at**

**Commented [PWL2]:** Psst: Three of the ANOVA results are statistically significant: less than .05. This means that, for those three behavioral variables, at least one pair of the groups (*women, men, non-binary*) are different from each other, perhaps two pairs are, and perhaps all three!

We’ll go over figuring out which pairings are different in a moment.

**Commented [PWL3]:** These are the degrees of freedom for an ANOVA.

The first number is the number of categories in the target variable, minus 1. There are three categories for *gender identity*: *women, men, non-binary*; and so  $3 - 1 = 2$

The second number is the number of people in the study minus the number of categories in the independent variable. So, there are 243 people in this part of the study (1 person did not list a gender identity, so they are not included here), there are three categories (*men, women, nonbinary*):  $243 - 3 = 240$ .

If you look at Table 5, you will see a column that is labeled “df” which displays these numbers!

Degrees of freedom MUST be reported when one gives the value of the statistical test

the numbers. And the scores for *women* and *men* are a little different... is the difference enough to say that *women* and *men* differ in their depression, or isn't it?

We need to do additional analyses to figure this out (more maths... I know!).

A post-hoc test of each pair to see if they are statistically different needs to be done. For this project I have done a *t*-test for each pair (*women* vs. *men*; *women* vs. *non-binary*; *men* vs. *non-binary*) for all three of the statistically significant ANOVAs. I have displayed all of the necessary *t*-tests on pages 9 and 10 of this document (Table 6). I will display the *t*-test results for *Depression x Gender Identity* below, to make it easier to discuss.

If you look at the three *t*-tests in the excerpt of Table 6, below, you can see that the *t*-test comparing the *women* and *men* groups has a *p*-value of .058, which is above .050 by just a bit. This is telling us that *women* and *men* are not statistically different from each other with respect to depression. The same can be said when comparing men and non-binary individuals: the *p*-value is higher than .050, and so the two groups are not statistically different. On the other hand, the comparison of the *non-binary* group to *women* is well below .050, and so the *non-binary* group does, indeed, differ from *women*.

Table 6f: *Depression X Gender Identity*

**Depression x Gender Identity**

Women & Men	$t(226) = 1.909, p = .058$
Women & NB	$t(161) = 2.332, p = .021$
Men & NB	$t(93) = 0.969, p = .335$

**What does this mean?**

The mean of the *Non-Binary* group differs from the mean of *Women* enough to conclude that they are really different from each other. However, people who identify as *men* do NOT differ from people who identify as *women* or *non-binary*.

**What to do?**

Indicate that there is a statistical difference between women and the non-binary group and indicate which has a higher depression. You should also note that there is no difference between *men* and either other group on this measure. This could be done all at once: "Gender ID A has a higher depression than Gender ID B. Gender ID C have a mean between the other two groups but do not differ statistically from either."

**How do we describe these results?** This is where all three of Tables 4, 5, and 6 come into play. Using the *depression* analysis from Table 5, we find that  $F(2, 240) = 3.49, p = .032$ ; at least two of these groups are different from each other.

- From Table 4 we can see that the mean *depression* score for the *non-binary* group is  $M = 14.53$  with a standard deviation of  $SD = 5.11$ ;
- which is higher than
- the mean *depression* score for the *women* group, which is  $M = 11.68$ , with a standard deviation of  $SD = 4.63$ .

**Commented [PWL4]:** The term "post-hoc" essentially means "after the event." In this case "the event" is the main test, the ANOVA.

Basically, it means we've found *something* with the ANOVA and now we have to do a little more analysis to determine what that something is.

- the mean *depression* score for the *men* group is  $M = 13.03$  with a standard deviation of  $SD = 5.85$ , which is between the other two groups.
- Are they all statistically different? Table 6 tells us: the *non-binary* group has higher depression than *women*, but *men* are effectively the same as both *women* and *non-binary* individuals.
- *Men* do score slightly differently than the other two groups, but not enough to say that they are “different” in their levels of depression

I know... it's a lot to wade through. Reread it slowly, step by step, until it gels.

### How to write these up

Some examples follow of write-ups of significant and non-significant results. These should be used as guides for the *Results* section's contents in your projects.

A variable that was NOT used in the class project, chocolate consumption, is used in these examples.

#### This is an example of a write up of a *significant correlation* using *chocolate consumption* and *optimism*:

It was hypothesized that chocolate consumption and optimism would have a direct relationship: that increased chocolate consumption would predict more optimism. The results of a Pearson correlation analysis showed a significant relationship between optimism ( $M = 16.54$ ,  $SD = 2.33$ ) and chocolate consumption ( $M = 22.32$ ,  $SD = 2.17$ ); with a Pearson correlation coefficient of  $r(742) = .361$ ,  $p = .007$ . This supports the hypothesis that a higher level of optimism can predict greater chocolate consumption and that greater consumption of chocolate can predict greater optimism.

{Professor's note: Notice that I did not say one *causes* the other, just that one can be predicted from the other, and made that clear by looking at the possibility of prediction in both directions: A predicts B OR B predicts A. It's a correlation, we **can't** make cause-and-effect statements.}

{Also note that I kept the statistics that relate to a particular variable together: I reported the mean and standard deviation for optimism together, and then the mean and standard deviation for chocolate consumption together.}

#### This is an example of a write up of a *non-significant correlation* using *chocolate consumption* and *age*:

It was hypothesized that chocolate consumption would increase as age increases. However, this hypothesis was not supported. The results of a Pearson correlation analysis showed a non-significant relationship between age and chocolate consumption  $r(701) = -0.03$ ,  $p = .248$ . Forty-one participants did not report their age, their data was not included in this analysis.

{Professor's note: Notice that I did not include the means. If the results are not significant, these are typically not reported for *correlational* analyses.}

{Also note that I explained that a number of participants did not give their age and so their data was not part of the analysis. This is helpful in explaining why the degrees of freedom reported for the *chocolate consumption* vs. *optimism* analysis is different from that of the *chocolate consumption* vs. *age* analysis.}

**This is an example of a write up of a *significant difference* between means using an *ANOVA* and post-hoc *t*-tests, assessing *chocolate consumption* and *gender identity*.**

A one-way analysis of variance (ANOVA) was conducted to test the hypothesis that people who identify as *men* would have higher chocolate consumption compared to those who identify as *women* or as *non-binary*. Five participants did not give their gender identity; those individuals were excluded from this analysis. The results of the analysis,  $F(2, 737) = 4.72$ ,  $p = .030$ , indicated that there was a statistical difference between at least two of the three groups. Post hoc *t*-tests supported the hypothesis in showing that self-identified *men* scored higher ( $M = 23.55$ ,  $SD = 2.287$ ) than both self-identified *women* ( $M = 21.39$ ,  $SD = 1.935$ ):  $t(708) = 4.877$ ,  $p = .011$ ; and self-identified *non-binary* ( $M = 21.57$ ,  $SD = 1.835$ ):  $t(338) = 3.572$ ,  $p = .018$  on the chocolate consumption scale. Those who identified as *women* did not differ from those who identified as *non-binary*:  $t(428) = 0.877$ ,  $p = .691$ .

**This is an example of a write up of a *non-significant difference* between means using an *ANOVA*, assessing *candy corn consumption* and *gender identity*.**

A one-way analysis of variance (ANOVA) was conducted to test the hypothesis that people who identify as *men* would have higher chocolate consumption compared to those who identify as *women* or as *non-binary*. Five participants did not give their gender identity; those individuals were excluded from this analysis. The results of the analysis,  $F(2, 737) = 1.31$ ,  $p = .217$ , did not support the hypothesis. While self-identified *women* scored differently ( $M = 22.55$ ,  $SD = 2.287$ ) on the candy corn consumption scale compared to self-identified *men* ( $M = 22.39$ ,  $SD = 1.935$ ) and self-identified *non-binary* ( $M = 22.44$ ,  $SD = 2.935$ ), the differences were too small to conclude that the three groups differed.

{Professor's note: In the case of ANOVA, even if the analysis is *not* statistically significant it is traditional to include the means and standard deviations. Note that the post-hoc tests were not described... since they would have simply indicated that there was no statistical significance between the three gender identities.}

Commented [PW1.5]: There is A LOT in the following paragraph!

Read it slowly and it will all make sense:

We describe the test (ANOVA) and later describe the post-hoc test (*t*-test).

We describe that some people from the data set were not included and why.

We describe the results of the main test, the ANOVA.

Since it is statistically significant, we then describe the pairwise comparisons of the three variables (women x men; women x non-binary; men x non-binary) using the *t*-tests, and identify which ones are statistically significant and what that means.

Here is a checklist for your **Results** section: it will basically consist of three paragraphs (use the examples above as templates, if you wish):

- Restate your first hypothesis
  - Then describe what test was conducted to test the first hypothesis (a Pearson correlation).
  - Report and *interpret* the findings (see examples, below).
  - Include the statistical results: *M*, *SD*, *r*, *t*, and *p*-value.
- Restate your second hypothesis
  - Then describe what test was conducted to test the second hypothesis (a Pearson correlation).
  - Report and *interpret* the findings.
  - Include the statistical results: *M*, *SD*, *r*, *t*, and *p*-value.
- Restate your third hypothesis
  - Then describe what test was conducted to test the third hypothesis.
  - Report and *interpret* the findings.
  - Include the statistical results: *M*, *SD*, *r*, *t*, and *p*-value.
- **Format:**
  - The format of the paper should be APA style as far as margins, line spacing, font, etc.
  - *M*, *SD*, *r*, *F*, *t*, and *p* are all italicized (but the values are not, look at the examples!).
  - Write in third person. Instead of using “I,” use *the researcher*, *the author*, etc.
  - Instead of *look at* or *see*, use *conduct*, *examine*, *study*, *assess*, *measure*, etc.
  - Use *because* instead of *since*. Use *since* only when referring to time (meaning “after”).
- When reporting the results. Do not merely state if the results were significant or not; provide *interpretations*.
  - For example (were I researching a relationship between chocolate consumption & optimism)...
    - An **inadequate report** would be: “...chocolate consumption was significantly related to optimism, ...”
      - this doesn’t interpret anything... is the relationship strong, weak, positive, negative?:
    - a **better way to report** this finding would be: “... results showed that higher optimism levels predicted greater chocolate consumption.”
      - This statement describes, or interprets, the relationship!
    - **Another good example:** “results showed that there was a significant positive correlation between optimism and chocolate consumption; people with higher levels of optimism appear to consume more chocolate.”
      - Note that neither of the above examples implies a cause and effect relationship.

**Table 6:** Post-hoc *t*-tests of *Gender Identity* compared to seven different behavioral variables.

**Table 6a: Self-esteem X Gender Identity**

**Self Esteem x Gender Identity**

Women & Men	$t(226) = 2.003, p = .046$
Women & NB	$t(161) = 2.543, p = .012$
Men & NB	$t(93) = 3.553, p < .001$

**What does this mean?**

The *differences* between the means of all three groups are large enough that we can conclude that self-esteem differs between all three categories of gender identity.

**What to do?**

You should compare each pair of means and describe which identity in each pairing has a higher self-esteem. This could be done all at once: "Gender ID A has a higher self-esteem than Gender ID B, who in turn has a higher self-esteem than Gender ID C"

**Table 6b: Sleep Disturbance X Gender Identity**

No post-hoc analyses were necessary for this variable because the ANOVA indicated that there were no significant differences between the three groups.

You should still give the ANOVA results (*F*, *p*) and the means and standard deviations, but you don't need the post-hoc *t*-tests. You would indicate that the three groups do not differ significantly, that men, women, and non-binary individuals have about the same quality of sleep.

**Table 6c: Optimism X Gender Identity**

**Optimism x Gender Identity**

Women & Men	$t(226) = 2.270, p = .024$
Women & NB	$t(161) = 2.814, p = .006$
Men & NB	$t(93) = 3.974, p < .001$

**What does this mean?**

The *differences* between the means of all three groups are large enough that we can conclude that optimism differs between all three categories of gender identity.

**What to do?**

has a higher optimism. This could be done all at once: "Gender ID A has a higher optimism than Gender ID B, who in turn has a higher optimism than Gender ID C"

**Table 6d: Resilience X Gender Identity**

No post-hoc analyses were necessary for this variable because the ANOVA indicated that there were no significant differences between the three groups.

You should still give the ANOVA results (F, p) and the means and standard deviations, but you don't need the post-hoc t-tests. You would indicate that the three groups do not differ significantly, that men, women, and non-binary individuals have about the same levels of resilience.

**Table 6e: Anxiety X Gender Identity**

No post-hoc analyses were necessary for this variable because the ANOVA indicated that there were no significant differences between the three groups.

You should still give the ANOVA results (F, p) and the means and standard deviations, but you don't need the post-hoc t-tests. You would indicate that the three groups do not differ significantly, that men, women, and non-binary individuals have about the same levels of anxiety.

**Table 6f: Depression X Gender Identity**

**Depression x Gender Identity**

Women & Men	t (226) = 1.909, p = .058
Women & NB	t (161) = 2.332, p = .021
Men & NB	t (93) = 0.969, p = .335

**What does this mean?**

The mean of the *Non-Binary* group differs from the mean of *Women* enough to conclude that they are really different from each other. However, people who identify as *men* do NOT differ from people who identify as *women* or *non-binary*.

**What to do?**

Indicate that there is a statistical difference between women and the non-binary group and indicate which has a higher depression. You should also note that there is no difference between *men* and either other group on this measure. This could be done all at once: "Gender ID A has a higher depression than Gender ID B. Gender ID C have a mean between the other two groups but do not differ statistically from either."

**Table 6g: Stress X Gender Identity**

No post-hoc analyses were necessary for this variable because the ANOVA indicated that there were no significant differences between the three groups.

You should still give the ANOVA results (F, p) and the means and standard deviations, but you don't need the post-hoc t-tests. You would indicate that the three groups do not differ significantly, that men, women, and non-binary individuals have about the same levels of stress.

**The tests and the terms used -**

Analysis of Variance (ANOVA, or *F*-test): compares the means (averages) from multiple levels of one or more variables. Very useful, but it doesn't tell you WHICH means are different if there are more than two groups being compared! Represented by the letter *F* when being reported.

Post hoc *t*-test: If one finds statistical significance with an ANOVA that involves three or more groups (such as gender identity: *woman, man, nonbinary*), one does "post-hoc" *t*-tests to compare each pair of groups to determine which ones are different. A *t*-test compares two sets of data (two means) to determine if the means are similar or different. Represented by the letter *t* when being reported.

Pearson Correlation: compares paired values (two variables) occurring in the same people or setting (height & weight; depression & anxiety; daily ice cream sales and daily shark attacks etc.). It identifies the direction and strength of the relationship between the variables, if one exists. Represented by the letter *r* when being reported.

*p*-value: This is, basically, the probability that the results are what they are due to random chance. If the probability that the analysis results are due to chance is too high, it means we cannot conclude that the results show mean differences (ANOVA, *t*-tests) or a relationship (correlation). A *p*-value can run from very close to 1 all the way down to very close to zero.

In our project, and a lot of research, if the *p*-value is equal to or less than .05 we will conclude that the results are statistically significant. If the value is over .05, we will conclude that the results are *not* statistically significant.

Statistical significance:

For ANOVAs & *t*-tests this is when the analysis indicates that two or more group averages are "really" different; that the observed differences are not due to random chance but due a real difference between the groups.

For correlations this means that the scores of two variables vary systematically with respect to each other... either they both tend to be high or both low, or when one is high the other tends to be low and vice versa. That is: if we know one score, we have a good chance of predicting the other to some extent.

Not statistically significant:

For ANOVAs & *t*-tests this is when the analysis indicates that none of the averages being compared are likely to be different; that the observed differences are probably due to random chance and that the groups are not really different on that measure.

For correlations this means that the scores of two variables do NOT vary systematically with respect to each other... the value of one score gives no idea what the other score might be.