

Statistical Analysis Portfolio

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Analysis Portfolio

Correlation Matrix

The correlation matrix below illustrates a positive relationship between shame and depression, and how a person's age can impact self-forgiveness. After using the provided dataset and using SPSS to run bivariate correlations using Pearson Correlation, the data indicated that there was a relationship with a significance of $p < .001$. Overall, age has a weak relationship with depression and shame, as well as with self-forgiveness (HFS-Total). Age and depression have a negative correlation, and age and shame are also negatively correlated. However, age and self-forgiveness are positively correlated. Depression and shame have a positive correlation, depression and self-forgiveness have a negative correlation, and shame and self-forgiveness have a negative correlation.

| <i>Correlations</i> | | What is your age? | DASS-Depression | TOSCA-Shame | HFS-Total |
|---------------------|---------------------|-------------------|-----------------|-------------|-----------|
| What is your age? | Pearson Correlation | 1 | -.173** | -.122** | .225** |
| | Sig. (2-tailed) | | <.001 | <.001 | <.001 |
| | N | 1285 | 1285 | 1285 | 1285 |
| DASS-Depression | Pearson Correlation | -.173** | 1 | .300** | -.486** |
| | Sig. (2-tailed) | <.001 | | <.001 | <.001 |
| | N | 1285 | 1285 | 1285 | 1285 |
| TOSCA-Shame | Pearson Correlation | -.122** | .300** | 1 | -.387** |
| | Sig. (2-tailed) | <.001 | <.001 | | <.001 |
| | N | 1285 | 1285 | 1285 | 1285 |
| HFS-Total | Pearson Correlation | .225** | -.486** | -.387** | 1 |
| | | | | | |

| | | | | |
|-----------------|-------|-------|-------|------|
| Sig. (2-tailed) | <.001 | <.001 | <.001 | |
| N | 1285 | 1285 | 1285 | 1285 |

**. Correlation is significant at the 0.01 level (2-tailed).

Independent Samples T-test

An independent-samples t-test was conducted to compare the impact of age when measuring levels of shame. The independent groups are age and age group 1 included ages 18-35, and age group 2 included ages 36-77. Our dependent variable is shame, measured by the TOSCA-shame. There was no significant differences in score for the two different age groups.

Group Statistics

| | AgeGroup | N | Mean | Std. Deviation | Std. Error Mean |
|--------|----------|-----|---------|----------------|-----------------|
| TOSCA- | 1.00 | 776 | 36.7629 | 8.19806 | .29429 |
| Shame | 2.00 | 509 | 35.1356 | 8.32694 | .36909 |

Independent Samples Test

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | | |
|--------|-----------------------------|---|------|------------------------------|----------|--------------|-------------|-----------------|-----------------------|---|---------|
| | | F | Sig. | t | df | Significance | | Mean Difference | Std. Error Difference | 95% Confidence Interval of the Difference | |
| | | | | | | One-Sided p | Two-Sided p | | | Lower | Upper |
| TOSCA- | Equal variances assumed | .662 | .416 | 3.459 | 1283 | <.001 | <.001 | 1.62733 | .47052 | .70425 | 2.55040 |
| Shame | Equal variances not assumed | | | 3.447 | 1074.578 | <.001 | <.001 | 1.62733 | .47205 | .70108 | 2.55357 |

Repeated Measures T-Test

A paired-samples t-test was conducted to show the significant difference between depression and shame scores. Depression scores tend to be higher than the shame scores, and the data shows that these scores are moderately correlated, where people with high depression scores also tend to have higher shame scores.

Paired Samples Correlations

| | | | | Significance | |
|--------|-------------------------------|-------------|------|--------------|-------------|
| | | | | One-Sided p | Two-Sided p |
| | N | Correlation | | | |
| Pair 1 | DASS-Depression & TOSCA-Shame | 1285 | .300 | <.001 | <.001 |

Paired Samples Test

| Paired Differences | | | | | | | | Significance | | |
|--------------------|-------------------|----------|------------|-----------|-----------|---------|------|--------------|---------|---------|
| 95% Confidence | | | | | | | | | | |
| Interval of the | | | | | | | | | | |
| Difference | | | | | | | | | | |
| | | Std. | Std. Error | | | | | One- | Two- | |
| | | Mean | Deviation | Mean | Lower | Upper | t | df | Sided p | Sided p |
| Pair | DASS-Depression - | 11.80386 | .32929 | -26.25845 | -24.96646 | -77.782 | 1284 | <.001 | <.001 | |
| 1 | - TOSCA-Shame | 25.6124 | | | | | | | | |
| 5 | | | | | | | | | | |

Paired Samples Effect Sizes

| | | | Standardiz er ^a | Point Estimate | 95% Confidence Interval | |
|--------|-------------------|-----------------------|-------------------------------|-------------------|----------------------------|--------|
| | | | | | Lower | Upper |
| Pair 1 | DASS-Depression - | Cohen's d | 11.80386 | -2.170 | -2.270 | -2.070 |
| | TOSCA-Shame | Hedges' correction | 11.81076 | -2.169 | -2.269 | -2.068 |

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

One-way between-subjects ANOVA

A one-way between subjects analysis of variance was completed to consider the relationship between age and its impact on levels of depression in the DASS-Depression assessment. This analysis shows that while there is a statistically significant difference in depression scores between the two groups, the effect size (eta-squared) is small (.023), accounting for a small portion of the variability in depression scores.

*ANOVA***DASS-Depression**

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|------|-------------|--------|-------|
| Between Groups | 3790.927 | 1 | 3790.927 | 30.609 | <.001 |
| Within Groups | 158900.279 | 1283 | 123.851 | | |
| Total | 162691.206 | 1284 | | | |

ANOVA Effect Sizes^a

| | | Point Estimate | 95% Confidence Interval | |
|---------------------|---------------------------------|-------------------|----------------------------|-------|
| | | | Lower | Upper |
| DASS- Depression | Eta-squared | .023 | .010 | .042 |
| | Epsilon-squared | .023 | .009 | .041 |
| | Omega-squared Fixed- effect | .023 | .009 | .041 |
| | Omega-squared Random- effect | .023 | .009 | .041 |

a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.

Two-way Between Subjects ANOVA

A two-way between-groups analysis of variance was completed to examine the impact of age and shame on the dependent variable of depression. Subjects were divided into two groups according to their age (Group 1: Age 18-35, Group 2: Age 36-77). Depression is impacted by shame and age group independently, but age group and shame are not influenced by each other's effects.

Tests of Between-Subjects Effects

Dependent Variable: DASS-Depression

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|---------------------|-------------------------|------|-------------|---------|-------|
| Corrected Model | 25677.972 ^a | 82 | 313.146 | 2.747 | <.001 |
| Intercept | 37713.538 | 1 | 37713.538 | 330.856 | <.001 |
| AgeGroup | 600.992 | 1 | 600.992 | 5.272 | .022 |
| TOSCASHA | 16439.125 | 43 | 382.305 | 3.354 | <.001 |
| AgeGroup * TOSCASHA | 3796.178 | 38 | 99.899 | .876 | .685 |
| Error | 137013.234 | 1202 | 113.988 | | |
| Total | 304520.000 | 1285 | | | |
| Corrected Total | 162691.206 | 1284 | | | |

a. R Squared = .158 (Adjusted R Squared = .100)

ANCOVA (Analysis of Covariance)

A one-way between-groups evaluation was conducted to explore the influence of age and shame on measured levels of depression. Both age and shame impacted depression scores, with $p < .001$. Both the age group and the shame show a significant impact on depression. The R squared value shows that age and shame explain 13.4% of the differences in depression score, leaving room for other variables to impact depression.

Univariate Analysis of Variance

Tests of Between-Subjects Effects

Dependent Variable: DASS-Depression

| Source | Type III Sum of Squares | df | Mean Square | F | Sig. |
|-----------------|-------------------------|------|-------------|---------|-------|
| Corrected Model | 21881.795 ^a | 44 | 497.314 | 4.379 | <.001 |
| Intercept | 20166.786 | 1 | 20166.786 | 177.593 | <.001 |
| AgeGroup | 2255.492 | 1 | 2255.492 | 19.862 | <.001 |
| TOSCASHA | 18090.868 | 43 | 420.718 | 3.705 | <.001 |
| Error | 140809.412 | 1240 | 113.556 | | |
| Total | 304520.000 | 1285 | | | |
| Corrected Total | 162691.206 | 1284 | | | |

a. R Squared = .134 (Adjusted R Squared = .104)