**Assignment 1**

Rahul Dipak Patel

Department of Psychology, University of Guelph

PSYC 6380: Multivariate Statistics

Dr. Cassidy

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**Part 1**

**Questions**

***1***

Covariance between unstandardized pirate self-identification and social awkwardness: *COV*pirateawkward = .026.

Pearson correlation coefficient between pirate self-identification and social awkwardness, along with 95% confidence intervals: *r* = .02, 95% CI = [-.06, .11].

Interpretation: pirate self-identification and social awkwardness are unrelated, *p* = .591. The CI is small, indicating that the plausible range for this relation at the population level can range from slightly negative, including zero, to slightly positive.

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***2***

Covariance between unstandardized pirate self-identification and social extraness: *COV*pirateextra = .35.

Pearson correlation coefficient between pirate self-identification and social extraness, along with 95% confidence intervals: *r* = .32, 95% CI = [.23, .39].

Interpretation: pirate self-identification and social extraness are positively related, *p*  < .001. Moreover, this effect can be considered small-medium according to Cohen (1988). The CI is small, indicating that the plausible range for this relation at the population level can range from slightly to moderately positive.

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***3***

The results suggested that participant’s pirate self-identification positively predicted the   
their social extraness, *F*(1, 498) = 55.03, *p* < .001, *R2* = .10, 95% CI = [.06, .15], *β* = 0.32, 95% CI = [0.23, 0.40], see Table 1, Figure 1. Inspection of the 95% confidence intervals around the point estimate of the effect size suggested that pirate self-identification may plausibly (though not certainly) predict between 6 and 15 percent of the variance in an individual’s social extraness (population-level effects outside of this range are possible, but are relatively less probable; see Cumming & Finch, 2005). Further inspection of the regression equation that was produced by this analysis further suggested that, for every one standard deviation unit increase in pirate self-identification, participants could plausibly see a 0.23 to 0.40 standard deviation unit increase in their social extraness.

**Table 1**

*Regression Results using Extra as the Criterion*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Predictor | *b* | *b*  95% CI  [LL, UL] | *beta* | *beta*  95% CI  [LL, UL] | *sr2* | *sr2*  95% CI  [LL, UL] | *r* | Fit |
| (Intercept) | 3.58\*\* | [3.26, 3.89] |  |  |  |  |  |  |
| Pirate | 0.32\*\* | [0.24, 0.41] | 0.32 | [0.23, 0.40] | .10 | [.06, .15] | .32\*\* |  |
|  |  |  |  |  |  |  |  | *R2*  = .100\*\* |
|  |  |  |  |  |  |  |  | 95% CI[.06,.15] |
|  |  |  |  |  |  |  |  |  |

*Note.* A significant *b*-weight indicates the beta-weight and semi-partial correlation are also significant. *b* represents unstandardized regression weights. *beta* indicates the standardized regression weights. *sr2* represents the semi-partial correlation squared. *r* represents the zero-order correlation. *LL* and *UL* indicate the lower and upper limits of a confidence interval, respectively.  
\* indicates *p* < .05. \*\* indicates *p* < .01.

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***4***

**Figure 1**

*Pirate Self-Identification and Social Extraness*

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**References**

Cohen, J. (2013). *Statistical power analysis for the behavioral sciences*. Academic press.

Cumming, G., & Finch, S. (2005). Inference by eye: confidence intervals and how to read pictures of data. *American psychologist*, *60*(2), 170. <https://doi.org/10.1037/0003-066X.60.2.170>