Psychological Capital and Social Norms in Times of Uncertainty: Restructuring J2K4L8 Corp.

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The Dataset

This case study aims to consolidate key statistical concepts covered by Clarke and Lisi (2025) and demonstrate satisfactory programming and problem-solving skills to answer questions designed to assess key psychological capital factors (i.e., hope, resilience) in a company (J2K4L8 Corp.) undergoing financial pressures leading to a corporate restructuring plan. This case study is fictional, and the dataset was generated using simulation techniques in R.

With offices in 24 countries and 5 continents, J2K4L8 Corp. is a multinational corporation that has been struggling financially since the COVID-19 pandemic and is in need of a new organizational structure that is more competitive, flexible and less hierarchical. Considering that J2K4L8 Corp. operates in very different countries with diverse social norms and values, the CEO of the company is interested in assessing how these organizational changes will affect the resilience and hope of employees in three of the most successful offices, i.e., J2K4L8 Corp.'s branches in Mexico, Singapore and The Netherlands.

Consequently, J2K4L8 Corp. hired a team of competent organizational and cross-cultural psychologists to assess the impact of the restructuring plans on the Mexican, Singaporean, and Dutch branches. The team of psychologists collected data cross-sectionally across the company's three branches, focusing on the psychological constructs of `hope` (The State Hope Scale; Snyder et al., 1996), `resilience` (Brief Resilience Scale; Smith et al., 2008), `trust` (Organizational Trust; Huff & Kelley, 2003), `neuroticism` (Neuroticism Sub-scale, NEO-PI-R; Costa & McCrae, 2008), and `openness to experience` (Openness to Experience Sub-scale, NEO-PI-R; Costa & McCrae, 2008).

The psychologists also collected data on personal characteristics of the employees such as `biological sex` and `age`. In addition to the categorical variables of `branch` and `sex`, the cross-cultural psychologists have proposed the inclusion of a third grouping variable related to social norms (Gelfand, 2018). Some societies and cultural groups described as **tight cultures** have stronger norms, resulting in greater social control and more self-discipline, but also less ability to adapt and be creative. On the other hand, **loose cultures** have weaker norms that lead to more disorganization and problems with self-control, but are also open to change, more creative, and able to adapt in times of crisis.

Information on variable names, description, data type, and corresponding codes is available in the codebook included in the dataset Excel file (`J2K4L8Corp.xlsx`).

Organizing the R session

ACTIVITY 1A: Remove all R objects from the global environment to start a new session, set a randomization seed, the working directory, and load the packages **rio**, **tidyverse**, **psych**, **corrplot**, **effects**, and **performance**. If you need to install any of these packages, use the `install.packages()` function.

Importing and tidying the dataset

ACTIVITY 2A: Import the dataset using the function `import()` from the package **rio**. Remember to include the file extension and to use single or double quotes, as it is a string/text (i.e., `'J2K4L8Corp.xlsx'`). The dataset must be located in your working directory.

ACTIVITY 2B: Inspect the R object named `my.data` using base R functions such as `head()`, `str()`, `dim()`, or `names()`, but also try other functions available in other packages such as `headTail()` from the package **psych**.

ACTIVITY 2C: Transform the variables `sex`, `branch`, and `norms` into factors. You can use a base R approach that selects the variables with the `$` symbol and the function `factor()`. You can also use the **tidyverse** (specifically, the R package **dplyr**) with the function `mutate()` to complete the transformation, using the pipes (`%>%`) to cascade down operations.

Descriptive statistics

ACTIVITY 3A: Use a base R function to get a summary of your dataset.

ACTIVITY 3B: Have a look at the documentation for the R package **psych**. You can also get help from RStudio's `Help` tab. Check the arguments of the `describe()` function if needed. Be careful when using the `describe()` function, as it assumes that all variables are numeric vectors, ignoring the fact that some of the variables are actually factors.

Overall trends

ACTIVITY 4A: Estimate a correlation matrix of the five covariates (`hope`, `neuroticism`, `trust`, `brs`, and `openness`) using Pearson's correlation coefficient. Save your correlation matrix as an R object using the assignment operator (`<-`). Do not forget to use the function `na.omit()` to account for missing cases if your dataset has a few of them.

ACTIVITY 4B: Using the function `corrplot.mixed()` from the package **corrplot**, create a data visualization of the correlation matrix `my.cor`.

ACTIVITY 4C: Test whether Openness to Experience scores correlate with Resilience scores. Report and interpret results.

Individual differences in Resilience scores

ACTIVITY 5A: Test whether female and male employees differ in their resilience scores. You can compute a two-sample *t*-test with the function `t.test()`, but you can also use the function `lm()` since you are specifying a linear model with a continuous outcome variable and a categorical predictor with two levels: Female (0) versus Male (1). You can test with the function `var.test()` that we cannot conclude that the variances of both groups are different. Report and interpret the results.

ACTIVITY 5B: Generate a plot comparing both groups of employees using the package **ggplot2**.

ACTIVITY 5C: Are sex differences in resilience scores moderated by the international branch of the corporation? In other words, will these sex differences in resilience remain constant regardless of the cultural differences that employees in different branches have? First, get some descriptive statistics. Then estimate the model with the function `aov()` including an interaction term between the factors `sex` and `branch`.

ACTIVITY 5D: To visually appraise the previous results, generate a plot for your linear model with the ggplot2 package, using the `stat_summary()` function to estimate means and confidence intervals (95% CI) for each mean. You can also generate a data visualization of your model using the function `allEffects()` from the package **effects**.

Predicting Hope scores

ACTIVITY 6A: Fit a multiple linear regression with `hope` scores as the outcome variable and the following predictors: `norms`, `trust`, `neuroticism`, `brs`, and `openness`. Interpret the results.

ACTIVITY 6B: Fit a second multiple linear regression with `hope` scores as the outcome variable and the predictors that significantly contributed to the saturated model: `norms`, `trust`, and `brs`. Interpret the results.

ACTIVITY 6C: Relying on the package **performance**, check the model's diagnostics (e.g., normality, heteroscedasticity, collinearity, outliers).

ACTIVITY 6D: Generate a data visualization of the second linear model using a predictor effect plots with the function `predictorEffects` from the package **effects**.

References

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