## Answer Key

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#### 1 General Instructions

Below you will find a list of tasks. Some tasks require you to provide a answer. In this case, please type your answer directly under the question and format your answer in **bold**. In other cases, you may be asked to write some code in a blank code chunk.

Some of the tasks will require you to pull code from the analysisTemplate repo. Find it here: https://github.com/dczhang1/analysisTemplates.git

- 1.1 1. Please change the title, author, and date of this rmd file to something reasonable
- 1.2 2. Run the following code chunk and explain what the purpose of this code chunk in a sentence or two.

```
source("01_load.R")
```

```
## -- Attaching packages ------ tidyverse 1.3.2 --
## v ggplot2 3.3.6
                     v purrr
                              0.3.4
## v tibble 3.1.8
                              1.0.9
                     v dplyr
          1.2.0
## v tidyr
                     v stringr 1.4.0
## v readr
          2.1.2
                     v forcats 0.5.1
## -- Conflicts ----- tidyverse conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()
                   masks stats::lag()
##
## Attaching package: 'psych'
##
##
##
  The following objects are masked from 'package:ggplot2':
##
##
      %+%, alpha
##
##
## This is lavaan 0.6-12
  lavaan is FREE software! Please report any bugs.
##
##
## Attaching package: 'lavaan'
##
##
## The following object is masked from 'package:psych':
##
      cor2cov
##
##
##
##
## Attaching package: 'jmv'
##
## The following object is masked from 'package:lavaan':
```

```
##
## cfa
##
##
##
## The following objects are masked from 'package:psych':
##
## pca, reliability
```

1.3 2. Write the script to import the dataset in the code chunk below. Name the dataframe as "df\_risk\_raw". Also explain words, where would this code go in a normal project? In other words, if not working on this worksheet, where would the code for importing data go?

```
df_risk_raw <- read_csv("Data/WorkplaceData_raw.csv")

## Rows: 497 Columns: 536

## -- Column specification ------

## Delimiter: ","

## chr (10): Filler, PROLIFIC_PID, AT2, OccTitle, OccCode, ETHNICITY_13_TEXT, ...

## dbl (523): EMPstatProlific, EMPstat2, EMPSTAT2, HH1, CS1, HH2, CS2, HH3, CS3...

## lgl (2): T2_TimeChange, T3_TimeChange

##

## i Use 'spec()' to retrieve the full column specification for this data.

## i Specify the column types or set 'show_col_types = FALSE' to quiet this message.</pre>
```

- 1.4 3. Run the code above to make sure that the data is imported with no errors and is shown in your Enviornment
- 1.5 4. Look at the data object df\_risk\_raw. How many subjects and variables are in this dataframe?
- 1.6 5. Run the following chunk to see a list of variables

```
names(df_risk_raw)
##
     [1] "Filler"
                                 "PROLIFIC_PID"
                                                       "EMPstatProlific"
     [4] "EMPstat2"
                                 "EMPSTAT2"
                                                       "HH1"
##
##
     [7] "CS1"
                                 "HH2"
                                                       "CS2"
##
    [10] "HH3"
                                "CS3"
                                                       "HH4"
    [13] "CS4"
                                "HH5"
                                                       "CS5"
##
##
    [16] "HH6"
                                 "CS6"
                                                       "HH7"
    [19] "CS7"
                                "HH8"
##
                                                       "CS8"
    [22] "HH9"
                                "CS9"
                                                       "HH10"
##
    [25] "CS10"
##
                                 "HH11"
                                                       "CS11"
##
    [28] "HH12"
                                 "CS12"
                                                       "HH13"
##
    [31] "CS13"
                                "HH14"
                                                       "CS14"
   [34] "HH15"
                                "CS15"
                                                       "HH16"
   [37] "CS16"
                                "EX1"
                                                       "AG1"
##
```

```
[40] "NEG1"
##
                                "OM1"
                                                       "EX2"
##
    [43] "AG2"
                                "NEG2"
                                                       "0M2"
##
    [46] "EX3"
                                "AG3"
                                                       "NEG3"
    [49] "OM3"
                                "AT1"
                                                       "GRIP1"
##
##
    [52] "GRIP2"
                                "GRIP3"
                                                       "GRIP4"
    [55] "GRIP5"
                                "GRIP6"
                                                       "GRIP7"
##
    [58] "GRIP8"
                                "IUS1"
                                                       "IUS2"
##
    [61] "IUS3"
                                "IUS4"
                                                       "IUS5"
##
##
    [64] "IUS6"
                                "IUS7"
                                                       "IUS8"
    [67] "IUS9"
                                "IUS10"
                                                       "IUS11"
##
##
    [70] "IUS12"
                                "CW1"
                                                       "CW2"
    [73] "CW3"
                                "CW4"
                                                       "CW5"
##
    [76] "CW6"
                                "CW7"
##
                                                       "CW8"
    [79] "CW9"
                                "CW10"
                                                       "CW11"
##
##
    [82] "CW12"
                                "CW13"
                                                       "CW14"
##
    [85] "CW15"
                                "CW16"
                                                       "CW17"
##
    [88] "CW18"
                                "CW19"
                                                       "CW20"
                                                       "CWES2"
    [91] "AT2"
##
                                "CWES1"
    [94] "CWES3"
                                "CWES4"
                                                       "CWES5"
##
    [97] "CWES6"
##
                                "CWES7"
                                                       "CWES8"
                                "CWES10"
##
   [100] "CWES9"
                                                       "CWES11"
   [103] "CWES12"
                                "CWES13"
                                                       "CWES14"
## [106] "CWES15"
                                "CWES16"
                                                       "CWES17"
   [109] "CWES18"
                                "CWES19"
                                                       "CWES20"
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                                "MOB2"
                                                       "MOB3"
##
   [115] "MOB4"
                                "MOB5"
                                                       "MOB6"
                                                       "ID1"
   [118] "MOB7"
                                "MOB8"
##
   [121] "ID2"
                                "ID3"
                                                       "ID4"
##
##
                                "EFF1"
                                                       "EFF2"
  [124] "AT3"
## [127] "EFF3"
                                "EFF4"
                                                       "EFF5"
## [130] "EFF6"
                                "EFF7"
                                                       "EFF8"
##
   [133] "Ladder1"
                                "Ladder2"
                                                       "Ladder3"
                                "SM2"
                                                       "SM3"
   [136] "SM1"
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                                "SM5"
                                                       "SM6"
##
                                "SM8"
   [142] "SM7"
                                                       "SM9"
##
  [145] "SM10"
                                "SM11"
                                                       "SM12"
## [148] "SM13"
                                "AT4"
                                                       "OccTitle"
## [151] "OccCode"
                                "WorkTen"
                                                       "PosTen"
   [154] "AGE 1"
                                "GENDER"
                                                       "GENDER_6_TEXT"
##
  [157] "COUNTRY"
                                                       "CAN"
                                "USA"
   [160] "UK"
                                "PolOr"
                                                       "USAvote"
   [163] "CANvote"
                                "UKvote"
                                                       "ETHNICITY"
                                "LANG"
                                                       "LANG_4_TEXT"
   [166] "ETHNICITY_13_TEXT"
   [169] "EDU"
                                "MAJOR"
                                                       "MARITAL"
##
  [172] "CHILD"
                                "PERSINCcan"
                                                       "PERSINCusa"
## [175] "PERSINCuk"
                                "HHLDINCcan"
                                                       "HHLDINCusa"
   [178] "HHLDINCuk"
##
                                "SPAREINCcan"
                                                       "SPAREINCusa"
   [181] "SPAREINCuk"
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                                                       "T2_TimeChange"
   [184] "T2_EMPstatProlific"
                                "T2_EMPstat2"
                                                       "T2_Country"
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                                                       "T2_B02"
  [190] "T2_B03"
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                                                       "T2_B05"
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                                                       "T2_B08"
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                                                       "T2_B011"
## [199] "T2 B012"
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                                                       "T2_B014"
```

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                                                      "T2 JS7"
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                                                      "T2_JS10"
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                                                      "T2 BM9"
## [256] "T2_BM10"
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                                                      "T2 MHI2"
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                                                      "T2 UNC3"
## [265] "T2 UNC4"
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## [268] "T2_BORE2"
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##
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                                                      "T3 JS6"
##
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                                                      "T3_PDI11"
##
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                                                      "T3 UNC2"
   [442] "T3_UNC3"
                                "T3_UNC4"
                                                      "T3_AT2"
##
  [445] "T3_BORE1"
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                                                      "T3_BORE3"
## [448] "T3_BORE4"
                                "T3_BORE5"
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## [451] "T3_BORE7"
                                "T3_0CB1"
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                                                      "T3_0CB5"
##
   [457] "T3_0CB6"
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                                "T3_0CB10"
                                                      "T3_0CB11"
   [463] "T3_OCB12"
                                                      "T3_0CB14"
                                "T3_0CB13"
   [466] "T3 OCB15"
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                                                      "T3 OCB17"
##
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## [472] "T3 PRB1"
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                                                      "T3 PRB3"
## [475] "T3_PRB4"
                                "T3_PRB5"
                                                      "T3_PRB6"
## [478] "T3 PRB7"
                                "T3 PRB8"
                                                      "T3 PRB9"
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                                "T3_PRB11"
                                                      "T3_PRB12"
##
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                                                      "T3 CWB1"
   [487] "T3 CWB2"
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                                                      "T3 CWB4"
##
   [490] "T3 CWB5"
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##
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   [514] "T3_CWB29"
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                                "T3_CWB30"
##
## [517] "T3_CWB32"
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                                                      "T3_TI2"
## [520] "T3_TI3"
                                "T3_T20_Click Count"
                                                      "T3_SV1"
## [523] "T3 SV2"
                                "T3 SV3"
                                                      "T3 SV4"
```

```
## [526] "T3_SV5" "T3_SV6" "T3_SV7"

## [529] "T3_CV1" "T3_CV2" "T3_CV3"

## [532] "T3_WD1" "T3_WD2" "T3_WD3"

## [535] "T3_WD4" "T3_AT4"
```

- 1.7 6. Find the "Reference" folder in the file directory and open the codebook word document to answer the following questions:
- 1.7.1 6.1) What is variable HH6?
- 1.7.2 6.2) What is variable CW15?
- 1.7.3 6.3) Which items are part of the "Genearl Risk Propensity Scale"?
- 1.7.4 6.4) How many items are in the Perceived Disadvantage Index?
- 1.8 7. Write the script for creating a dataframe that contains *only* the items for the General Risk Propensity Scale

```
select(df_risk_raw, GRIP1:GRIP8)
## # A tibble: 497 x 8
     GRIP1 GRIP2 GRIP3 GRIP4 GRIP5 GRIP6 GRIP7 GRIP8
##
     <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <dbl> <
##
                              1
##
  1
         2
              1
                    1
                         1
                                    1
##
   2
         1
              1
                    1
                         1
                               1
                                    1
                    2
                         2
                               2
                                    2
##
  3
         4
              2
                                               2
##
         2
             2
                    2
## 5
        4
             1
                   1
                         1
                               2
        5
              5
                   5
                         5
                               5
                                    5
##
  6
                                          5
                                               5
             2 2
##
  7
        4
                        1
                             2
                                   2
                                               4
        4
             3
                   3
              2
                    2
                               2
         4
                         3
                                    2
                                               2
## 9
         4
                    3
                                               2
## 10
              1
## # ... with 487 more rows
```

## # i Use 'print(n = ...)' to see more rows

1.9 8. Write the script for creating a dataframe with participants between ages 18 and 24

```
filter(df_risk_raw, AGE_1 < 24, AGE_1 > 18)
## # A tibble: 134 x 536
                                        Filler PROLIFIC~1 EMPst~2 EMPst~3 EMPST~4
                                                                                                                                                                                                                                                                                                                                                         HH1
                                                                                                                                                                                                                                                                                                                                                                                                   CS1
                                                                                                                                                                                                                                                                                                                                                                                                                                             HH2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CS2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ннз
                                         <chr> <chr> <chr> <dbl> <
##
                  1.
                                                                           60feeaff1~
                                                                                                                                                                                    2
                                                                                                                                                                                                                                                1
                                                                                                                                                                                                                                                                                                              1
                                                                                                                                                                                                                                                                                                                                                4
                                                                                                                                                                                                                                                                                                                                                                                                               2
                                                                                                                                                                                                                                                                                                                                                                                                                                                          2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            3
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
## 2 .
                                                                             6101b2bd7~
                                                                                                                                                                                                  1
                                                                                                                                                                                                                                                                                                                           4
                                                                                                                                                                                                                                                                                                                                                                      3
                                                                                                                                                                                                                                                                                                                                                                                                                2
                                                                                                                                                                                                                                                                                                                                                                                                                                                          4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       5
                                                                                                                                                                                                                                                                  1
                                                                                   60fef0a1f~
                                                                                                                                                                                                  1
                                                                                                                                                                                                                                                                     1
                                                                                                                                                                                                                                                                                                                            2
                                                                                                                                                                                                                                                                                                                                                                      4
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4
```

```
##
             60fee1505~
                                      1
                                               3
##
   5.
             5bfac2001~
                              1
                                      1
                                               2
                                                                 5
                                                                              2
                                                                                    5
                                                     4
                                                                              3
##
             6085e8076~
                              1
                                      1
                                               2
                                                                 2
                                                                                    4
                                               3
                                                                              3
                                                                                    5
##
   7.
             60febf1c4~
                              1
                                      1
                                                     4
                                                                 2
                                                                       3
                                                                              2
##
             60ff10b94~
                                      1
                                               3
                                                     3
                                                           3
                                                                 2
                                                                       3
                                                                                    5
  9.
             60fef1bee~
                                      1
                                               3
                                                     4
                                                                 5
                                                                              2
                                                                                    2
##
                              1
             60fcec383~
                                       1
                                               2
                                                     4
                              1
## # ... with 124 more rows, 525 more variables: HH4 <dbl>, CS4 <dbl>, HH5 <dbl>,
       CS5 <dbl>, HH6 <dbl>, CS6 <dbl>, HH7 <dbl>, CS7 <dbl>, HH8 <dbl>,
       CS8 <dbl>, HH9 <dbl>, CS9 <dbl>, HH10 <dbl>, CS10 <dbl>, HH11 <dbl>,
       CS11 <dbl>, HH12 <dbl>, CS12 <dbl>, HH13 <dbl>, CS13 <dbl>, HH14 <dbl>,
       CS14 <dbl>, HH15 <dbl>, CS15 <dbl>, HH16 <dbl>, CS16 <dbl>, EX1 <dbl>,
## #
       AG1 <dbl>, NEG1 <dbl>, OM1 <dbl>, EX2 <dbl>, AG2 <dbl>, NEG2 <dbl>,
       OM2 <dbl>, EX3 <dbl>, AG3 <dbl>, NEG3 <dbl>, OM3 <dbl>, AT1 <dbl>, ...
## # i Use 'print(n = ...)' to see more rows, and 'colnames()' to see all variable names
```

1.10 9. Create a new variable in the data frame "Mean\_GRIPS" based on the average of all of the items in the General Risk Propensity Scale using the rowMeans function (find script in the 02\_clean.R file in the analysisTemplate repo)

1.11 10. Repeat step 9 using the scoreItem function provided in the same file. For this situation, all the items are positively coded. Name this new variable "Mean GRIPS 2"

We will now perform some very basic descriptive statistics on our dataset.

1.12 11. We will first calculate the mean, standard deviation, and variance of the Mean\_GRIPS variable. Just run the following script.

```
mean(df_risk_raw$Mean_GRIPS)

## [1] 2.69668

sd(df_risk_raw$Mean_GRIPS)
```

## [1] 0.9004362

var(df\_risk\_raw\$Mean\_GRIPS)

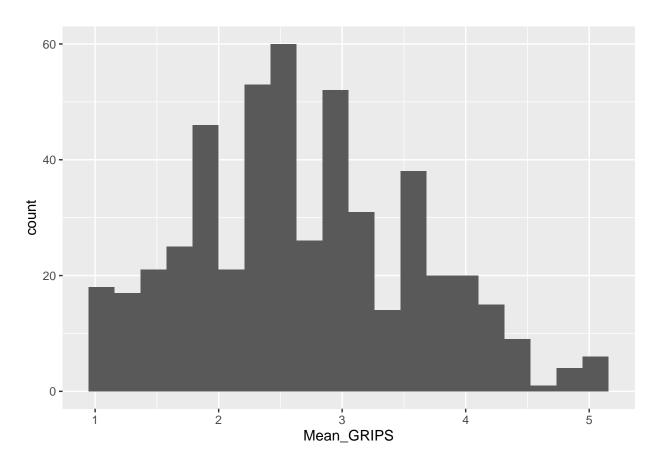
## [1] 0.8107853

# 1.13 12. Now use the describe function on the Mean\_GRIPS variable to create a more thorough summary

```
describe(df_risk_raw$Mean_GRIPS)

## vars n mean sd median trimmed mad min max range skew kurtosis se
## X1 1 497 2.7 0.9 2.62 2.67 0.93 1 5 4 0.28 -0.41 0.04
```

# 1.14 13. Create a histogram of the variable Mean\_GRIPS (hint: See script in 3\_describe.R)



#### 1.15 14. Create a frequency table of education attainment within the sample

```
table(df_risk_raw$EDU)

##

## 1 2 3 4 5

## 2 142 254 85 14
```

# 1.16 15. Create a subset of the dataframe with variables: Age, Gender, and the Mean\_GRIPS variable

```
select(df_risk_raw, AGE_1, GENDER, Mean_GRIPS)
```

```
## # A tibble: 497 x 3
      AGE_1 GENDER Mean_GRIPS
##
##
      <dbl>
              <dbl>
                          <dbl>
         22
                  2
                           1.5
##
    1
##
    2
         22
                  2
                           1.12
##
    3
         21
                  2
                           2.5
##
    4
         34
                  2
                           2.38
##
    5
         18
                  2
##
    6
         25
                  2
                           5
##
    7
         20
                  2
                           2.62
##
    8
         35
                  2
                           3.25
##
    9
         34
                  2
                           2.62
## 10
         31
                           2.75
                  1
## # ... with 487 more rows
## # i Use 'print(n = ...)' to see more rows
```

#16. We will make a simple correlation table using the apa.cor.table function in the package apaTables. First, type ?apa.cor.table into the console for a brief documentation.

#17. Now, make a correlation table with Age, Gender, and Mean\_GRIPS. (Find this script in the 3\_descriptive.R from the template.)

```
apa.cor.table(select(df_risk_raw, AGE_1, GENDER, Mean_GRIPS))
```

```
##
##
## Means, standard deviations, and correlations with confidence intervals
##
##
##
     Variable
                   М
                          SD
                                             2
     1. AGE_1
                   30.00 10.33
##
##
##
     2. GENDER
                   1.78 0.58 -.26**
##
                                [-.34, -.18]
##
##
     3. Mean_GRIPS 2.70 0.90 -.08
                                             -.17**
```

```
## [-.17, .00] [-.26, -.08] ## ## ## Note. M and SD are used to represent mean and standard deviation, respectively. ## Values in square brackets indicate the 95% confidence interval. ## The confidence interval is a plausible range of population correlations ## that could have caused the sample correlation (Cumming, 2014). ## * indicates p < .05. ** indicates p < .01.
```

#18. Produce descriptive statistics for Age, Gender, and Mean\_GRIPS using the **describe** function (hint: you should be able to do this in one line of code)

```
describe(select(df_risk_raw, AGE_1, GENDER, Mean_GRIPS))
```

```
##
                                 sd median trimmed mad min max range skew kurtosis
              vars
                      n mean
## AGE 1
                  1 497 30.00 10.33
                                     27.00
                                              28.54 8.90
                                                           18
                                                               72
                                                                     54 1.26
                                                                                  1.33
## GENDER
                  2 497
                         1.78
                               0.58
                                       2.00
                                               1.79 0.00
                                                            1
                                                                5
                                                                      4 1.56
                                                                                  9.71
## Mean GRIPS
                  3 497
                         2.70 0.90
                                       2.62
                                               2.67 0.93
                                                                5
                                                                      4 0.28
                                                                                 -0.41
##
                se
## AGE_1
              0.46
## GENDER
              0.03
## Mean_GRIPS 0.04
```

Your done! Now, go back to the top and make sure every chunk still works. Press the "Knit to HTML" button to turn all of this into a html document. If there are errors, please review the error message. Send the output HTML file to Don.

#19. Bonus: Make your HTML pretty with the prettydoc package: https://prettydoc.statr.me/ Follow instructions here to produce a beautified version of the document.

Final remarks: we will be using rmarkdown notebooks like this for sharing reports/results. You may perform your analysis in rmd notebooks like for your own work. However, you may use R Script files to keep your actual code, if you wish.