Psych 1420, Assignment 2

YOUR NAME HERE!

DATE OF SUBMISSION HERE!

Contents

0. How to use R Markdown documents

This file is an R Markdown file. This is a special file that lets you write R code and run it, while also writing descriptive text (like this) about the code and analyses you have in between.

Every time you see a special colored block, like the one below, **that's where you can write and run R code.** This is called an **R code chunk.** You can type normal R code in the box, with *one command per line,* and then run all the code in the box by pressing the green triangle (kind of looks like a play button) in the top right-hand corner of the chunk.

Try playing the code below to see what happens!

```
my_variable <- 2 + 2
```

You should see in your Environment pane (top right-hand of RStudio window) now that you have a variable called `my_variable`, just as if you had typed that code into the console (bottom left-hand of RStudio window, where you did Assignment 1 in Swirl) and pressed Enter to run it there.

You can also use chunks to print out outputs in your document. These outputs will be included when you export the document later, so your TA will be able to see the results of all your R code.

For example, run the following code below using the green play button and see what happens:

```
my_variable
```

```
## [1] 4
```

Now, the value assigned to `my_variable` appears in the document. Handy! You'll be using this later to show the output of correlations and t-tests, as well as graphs you'll be making.

For every question in this assignment, every time you see an *empty* code chunk, you will be expected to *type correct code into the chunk and run it.* We've already created code chunks for every question, so you can fill in the appropriate code in each section.

Every empty chunk you should fill in is marked with a **comment** that says "Code goes here". A comment is a special small note you can leave next to R code inside of a code chunk. You have to tell R that it's a comment, and not real code, by typing the pound/hashtag-sign # *before* anything in your comment.

```
# This will not run.
# If you press the green play button on this chunk, nothing should come out!
```

Any text after a # is not "seen" as code by R until the next line break. RStudio shows this kind of "comment text" in green (or another color, depending on your color scheme).

You can comment whole lines, if you want to type complete sentences in your notes. You can also add comments at the end of a line, if you want a comment to apply to a specific line of code.

```
# The code BEFORE the # runs, and the text AFTER the # doesn't run.
2 + 2 # This should still output 4 because 2 + 2 is before the comment sign
```

```
## [1] 4
```

We recommend only typing small "notes to self" in the comments inside code chunks. You can type anything longer than a couple sentences in the "normal text" part of your document, so that it will look like normal text when you export your document later.

Packages

While R can do a lot of amazing stuff on its own, some special types of analysis or graphing can be more easily (or stylishly) done using one of a (huge) number of "packages" that people have created specially for R. Think of R as your phone, and the packages as apps that each allow the phone to do something extra.

To use a package, you have to install it (once), and then load it (every time you re-open RStudio).

In this assignment, we'll need the assistance of two packages in particular:

- `ggplot2` is the package we'll use to make clean, attractive graphs
- `knitr` is the package we'll use to export this homework assignment to a format you can upload to Canvas

First, you can use the code below to install these packages if you haven't already.

```
# Only run this code if you HAVEN'T already installed these packages!
install.packages(c("ggplot2",
                   "knitr"))
```

Next, use the following code to *load,* or "turn on", these packages for the current RStudio window so you can actually access the functions inside. You need to do this every time you open a new RStudio window!

```
# We only need to "turn on" ggplot2
# knitr actually works behind the scenes already!
library(ggplot2)
```

Now, we're ready to get started.

1. Working directory

Check your working directory using `getwd()`. If you opened RStudio via the R project file in the same directory that contains your datafile (`class_survey2_spring2019.csv`) and your R scripts, you should be in that folder now.

```
# Code goes here
getwd()
```

```
## [1] "/Users/michellevantieghem2/Documents/Columbia/R_Stats/ExpMethodsTA/cu-psych-1420/assignment2"
```

2. Reading Data

Read in your data file using `read.csv("class_survey2_spring2019.csv")`, and assign it to the dataframe name `IntroSurvey`.

```
# Code goes here

IntroSurvey <- read.csv("class_survey2_spring2019.csv")
head(IntroSurvey)
```

```
##   id MS1 MS2 MS3 MS4 MS5 MS6 MS7 MS8 MS9 MS10 MS11 MS12 MS13 Gender Age
## 1  1   5   5   5   5   5   5   5   5   5    5    5    5    5 Female  29
## 2  2   3   3   7   4   4   5   2   5   3    2    3    3    2   Male  18
## 3  3   4   4   7   3   4   5   2   6   4    3    4    4    3   Male  20
## 4  4   3   5   6   3   4   5   2   7   5    4    4    5    4   Male  21
## 5  5   4   6   5   3   4   5   2   7   6    5    4    5    5 Female  22
## 6  6   5   7   4   3   4   5   3   7   7    6    4    5    6   Male  23
##        Major School     Year MTS1 MTS2 MTS3 MTS4 MTS5 MTS6 MTS7 MTS8 MTS9
## 1 psychology     GS Post-Bac    5    5    5    5    5    5    5    5    5
## 2 psychology     CC Freshman    2    5    3    3    3    5    5    5    5
## 3 psychology     CC   Junior    3    6    4    4    4    3    7    4    3
## 4 psychology     BC   Senior    4    7    5    4    5    4    7    3    4
## 5 psychology     CC   Senior    5    7    6    4    5    5    6    3    5
## 6 psychology     GS Post-Bac    6    7    7    4    5    6    5    3    6
##   courses_enrolled courses_shopped courses_considered course_choice
## 1                3               5                  3             3
## 2                5               5                  5             5
## 3                7               4                  7             7
## 4                7               3                  7             7
## 5                6               3                  6             6
## 6                5               3                  5             5
##   courses_time_deciding courses_title_impt courses_info courses_satisfied
## 1                     3                  3            3                 4
## 2                     5                  5            5                 3
## 3                     7                  7            7                 5
## 4                     7                  7            7                 7
## 5                     6                  6            6                 7
## 6                     5                  5            5                 6
##   courses_reviews courses_happy courses_best courses_previous_happy
## 1               3             3            3                      3
## 2               5             5            5                      5
## 3               7             7            7                      7
## 4               7             7            7                      7
```

```
## 5               6            6            6                     6
## 6               5            5            5                     5
##   courses_syllabi_review X
## 1                      3 3
## 2                      5 5
## 3                      7 7
## 4                      7 7
## 5                      6 6
## 6                      5 5
```

3. Exploring data

Use the following exploration functions to check that the dataframe `IntroSurvey` read in correctly:

`head()`

```
# Code goes here
head(IntroSurvey)
```

```
##   id MS1 MS2 MS3 MS4 MS5 MS6 MS7 MS8 MS9 MS10 MS11 MS12 MS13 Gender Age
## 1  1   5   5   5   5   5   5   5   5   5    5    5    5    5 Female  29
## 2  2   3   3   7   4   4   5   2   5   3    2    3    3    2   Male  18
## 3  3   4   4   7   3   4   5   2   6   4    3    4    4    3   Male  20
## 4  4   3   5   6   3   4   5   2   7   5    4    4    5    4   Male  21
## 5  5   4   6   5   3   4   5   2   7   6    5    4    5    5 Female  22
## 6  6   5   7   4   3   4   5   3   7   7    6    4    5    6   Male  23
##        Major School     Year MTS1 MTS2 MTS3 MTS4 MTS5 MTS6 MTS7 MTS8 MTS9
## 1 psychology     GS Post-Bac    5    5    5    5    5    5    5    5    5
## 2 psychology     CC Freshman    2    5    3    3    3    5    5    5    5
## 3 psychology     CC   Junior    3    6    4    4    4    3    7    4    3
## 4 psychology     BC   Senior    4    7    5    4    5    4    7    3    4
## 5 psychology     CC   Senior    5    7    6    4    5    5    6    3    5
## 6 psychology     GS Post-Bac    6    7    7    4    5    6    5    3    6
##   courses_enrolled courses_shopped courses_considered course_choice
## 1                3               5                  3             3
## 2                5               5                  5             5
## 3                7               4                  7             7
## 4                7               3                  7             7
## 5                6               3                  6             6
## 6                5               3                  5             5
##   courses_time_deciding courses_title_impt courses_info courses_satisfied
## 1                     3                  3            3                 4
## 2                     5                  5            5                 3
## 3                     7                  7            7                 5
## 4                     7                  7            7                 7
## 5                     6                  6            6                 7
## 6                     5                  5            5                 6
##   courses_reviews courses_happy courses_best courses_previous_happy
## 1               3             3            3                      3
## 2               5             5            5                      5
## 3               7             7            7                      7
## 4               7             7            7                      7
## 5               6             6            6                      6
## 6               5             5            5                      5
```

```
##   courses_syllabi_review X
## 1                      3 3
## 2                      5 5
## 3                      7 7
## 4                      7 7
## 5                      6 6
## 6                      5 5
```

summary()

```
# Code goes here
summary(IntroSurvey)
```

```
##        id            MS1             MS2             MS3
##  Min.   :1.0   Min.   :3.000   Min.   :3.000   Min.   :4.000
##  1st Qu.:2.5   1st Qu.:3.500   1st Qu.:4.500   1st Qu.:4.500
##  Median :4.0   Median :4.000   Median :5.000   Median :5.000
##  Mean   :4.0   Mean   :4.286   Mean   :5.286   Mean   :5.429
##  3rd Qu.:5.5   3rd Qu.:5.000   3rd Qu.:6.500   3rd Qu.:6.500
##  Max.   :7.0   Max.   :6.000   Max.   :7.000   Max.   :7.000
##  NA's   :1     NA's   :1       NA's   :1       NA's   :1
##       MS4             MS5             MS6             MS7
##  Min.   :3.000   Min.   :4.000   Min.   :4.000   Min.   :2.000
##  1st Qu.:3.000   1st Qu.:4.000   1st Qu.:5.000   1st Qu.:2.000
##  Median :3.000   Median :4.000   Median :5.000   Median :2.000
##  Mean   :3.429   Mean   :4.143   Mean   :4.857   Mean   :2.857
##  3rd Qu.:3.500   3rd Qu.:4.000   3rd Qu.:5.000   3rd Qu.:3.500
##  Max.   :5.000   Max.   :5.000   Max.   :5.000   Max.   :5.000
##  NA's   :1       NA's   :1       NA's   :1       NA's   :1
##       MS8             MS9             MS10            MS11
##  Min.   :5.000   Min.   :3.000   Min.   :2.000   Min.   :3.000
##  1st Qu.:5.500   1st Qu.:4.500   1st Qu.:3.500   1st Qu.:4.000
##  Median :7.000   Median :5.000   Median :5.000   Median :4.000
##  Mean   :6.286   Mean   :5.286   Mean   :4.571   Mean   :4.143
##  3rd Qu.:7.000   3rd Qu.:6.500   3rd Qu.:5.500   3rd Qu.:4.500
##  Max.   :7.000   Max.   :7.000   Max.   :7.000   Max.   :5.000
##  NA's   :1       NA's   :1       NA's   :1       NA's   :1
##       MS12            MS13          Gender       Age               Major
##  Min.   :3.000   Min.   :2.000         :1   Min.   :18.00             :1
##  1st Qu.:4.500   1st Qu.:3.500   Female:3   1st Qu.:20.50   psychology:7
##  Median :5.000   Median :5.000   Male  :4   Median :22.00
##  Mean   :4.571   Mean   :4.571              Mean   :22.43
##  3rd Qu.:5.000   3rd Qu.:5.500              3rd Qu.:23.50
##  Max.   :5.000   Max.   :7.000              Max.   :29.00
##  NA's   :1       NA's   :1                  NA's   :1
##  School       Year        MTS1        MTS2            MTS3
##    :1            :1   Min.   :2   Min.   :5.000   Min.   :3.000
##  BC:1   Freshman:1   1st Qu.:3   1st Qu.:5.500   1st Qu.:4.500
##  CC:3   Junior  :1   Median :4   Median :7.000   Median :5.000
##  GS:3   Post-Bac:3   Mean   :4   Mean   :6.286   Mean   :5.286
##         Senior  :2   3rd Qu.:5   3rd Qu.:7.000   3rd Qu.:6.500
##                      Max.   :6   Max.   :7.000   Max.   :7.000
##                      NA's   :1   NA's   :1       NA's   :1
##       MTS4            MTS5            MTS6            MTS7
##  Min.   :3.000   Min.   :3.000   Min.   :3.00   Min.   :4.000
```

```
##  1st Qu.:4.000   1st Qu.:4.500   1st Qu.:4.75   1st Qu.:4.750
##  Median :4.000   Median :5.000   Median :5.00   Median :5.000
##  Mean   :4.143   Mean   :4.571   Mean   :5.25   Mean   :5.375
##  3rd Qu.:4.500   3rd Qu.:5.000   3rd Qu.:6.25   3rd Qu.:6.250
##  Max.   :5.000   Max.   :5.000   Max.   :7.00   Max.   :7.000
##  NA's   :1       NA's   :1
##       MTS8            MTS9      courses_enrolled courses_shopped
##  Min.   :3.000   Min.   :3.00   Min.   :3.000    Min.   :3.000
##  1st Qu.:3.000   1st Qu.:4.75   1st Qu.:4.000    1st Qu.:3.000
##  Median :3.000   Median :5.00   Median :5.000    Median :3.000
##  Mean   :3.625   Mean   :5.25   Mean   :5.125    Mean   :3.625
##  3rd Qu.:4.250   3rd Qu.:6.25   3rd Qu.:6.250    3rd Qu.:4.250
##  Max.   :5.000   Max.   :7.00   Max.   :7.000    Max.   :5.000
##
##  courses_considered course_choice   courses_time_deciding
##  Min.   :3.000      Min.   :3.000   Min.   :3.000
##  1st Qu.:4.000      1st Qu.:4.000   1st Qu.:4.000
##  Median :5.000      Median :5.000   Median :5.000
##  Mean   :5.125      Mean   :5.125   Mean   :5.125
##  3rd Qu.:6.250      3rd Qu.:6.250   3rd Qu.:6.250
##  Max.   :7.000      Max.   :7.000   Max.   :7.000
##
##  courses_title_impt  courses_info   courses_satisfied courses_reviews
##  Min.   :3.000      Min.   :3.000   Min.   :3.000     Min.   :3.000
##  1st Qu.:4.000      1st Qu.:4.000   1st Qu.:4.000     1st Qu.:4.000
##  Median :5.000      Median :5.000   Median :5.000     Median :5.000
##  Mean   :5.125      Mean   :5.125   Mean   :5.125     Mean   :5.125
##  3rd Qu.:6.250      3rd Qu.:6.250   3rd Qu.:6.250     3rd Qu.:6.250
##  Max.   :7.000      Max.   :7.000   Max.   :7.000     Max.   :7.000
##
##  courses_happy    courses_best   courses_previous_happy
##  Min.   :3.000   Min.   :3.000   Min.   :3.000
##  1st Qu.:4.000   1st Qu.:4.000   1st Qu.:4.000
##  Median :5.000   Median :5.000   Median :5.000
##  Mean   :5.125   Mean   :5.125   Mean   :5.125
##  3rd Qu.:6.250   3rd Qu.:6.250   3rd Qu.:6.250
##  Max.   :7.000   Max.   :7.000   Max.   :7.000
##
##  courses_syllabi_review       X
##  Min.   :3.000          Min.   :3.000
##  1st Qu.:4.000          1st Qu.:4.000
##  Median :5.000          Median :5.000
##  Mean   :5.125          Mean   :5.125
##  3rd Qu.:6.250          3rd Qu.:6.250
##  Max.   :7.000          Max.   :7.000
##
```

str()

```
# Code goes here
str(IntroSurvey)
```

```
## 'data.frame':    8 obs. of  42 variables:
##  $ id                    : int  1 2 3 4 5 6 7 NA
##  $ MS1                   : int  5 3 4 3 4 5 6 NA
```

```
##  $ MS2                   : int  5 3 4 5 6 7 7 NA
##  $ MS3                   : int  5 7 7 6 5 4 4 NA
##  $ MS4                   : int  5 4 3 3 3 3 3 NA
##  $ MS5                   : int  5 4 4 4 4 4 4 NA
##  $ MS6                   : int  5 5 5 5 5 5 4 NA
##  $ MS7                   : int  5 2 2 2 2 3 4 NA
##  $ MS8                   : int  5 5 6 7 7 7 7 NA
##  $ MS9                   : int  5 3 4 5 6 7 7 NA
##  $ MS10                  : int  5 2 3 4 5 6 7 NA
##  $ MS11                  : int  5 3 4 4 4 4 5 NA
##  $ MS12                  : int  5 3 4 5 5 5 5 NA
##  $ MS13                  : int  5 2 3 4 5 6 7 NA
##  $ Gender                : Factor w/ 3 levels "","Female","Male": 2 3 3 3 2 3 2 1
##  $ Age                   : int  29 18 20 21 22 23 24 NA
##  $ Major                 : Factor w/ 2 levels "","psychology": 2 2 2 2 2 2 2 1
##  $ School                : Factor w/ 4 levels "","BC","CC","GS": 4 3 3 2 3 4 4 1
##  $ Year                  : Factor w/ 5 levels "","Freshman",..: 4 2 3 5 5 4 4 1
##  $ MTS1                  : int  5 2 3 4 5 6 3 NA
##  $ MTS2                  : int  5 5 6 7 7 7 7 NA
##  $ MTS3                  : int  5 3 4 5 6 7 7 NA
##  $ MTS4                  : int  5 3 4 4 4 4 5 NA
##  $ MTS5                  : int  5 3 4 5 5 5 5 NA
##  $ MTS6                  : int  5 5 3 4 5 6 7 7
##  $ MTS7                  : int  5 5 7 7 6 5 4 4
##  $ MTS8                  : int  5 5 4 3 3 3 3 3
##  $ MTS9                  : int  5 5 3 4 5 6 7 7
##  $ courses_enrolled      : int  3 5 7 7 6 5 4 4
##  $ courses_shopped       : int  5 5 4 3 3 3 3 3
##  $ courses_considered    : int  3 5 7 7 6 5 4 4
##  $ course_choice         : int  3 5 7 7 6 5 4 4
##  $ courses_time_deciding : int  3 5 7 7 6 5 4 4
##  $ courses_title_impt    : int  3 5 7 7 6 5 4 4
##  $ courses_info          : int  3 5 7 7 6 5 4 4
##  $ courses_satisfied     : int  4 3 5 7 7 6 5 4
##  $ courses_reviews       : int  3 5 7 7 6 5 4 4
##  $ courses_happy         : int  3 5 7 7 6 5 4 4
##  $ courses_best          : int  3 5 7 7 6 5 4 4
##  $ courses_previous_happy: int  3 5 7 7 6 5 4 4
##  $ courses_syllabi_review: int  3 5 7 7 6 5 4 4
##  $ X                     : int  3 5 7 7 6 5 4 4
```

4. Calculating mean scores

Calculating variables from the two Maximization scales: In this dataset, we now have the original Maximizer Scale (Schwartz et al., 2002) consisting of 13 items that we used last week. We will call this 'MS'. We also have a Maximizing Tendency Scale consisting of 9 items (Iyengar et al., 2006) that you completed in Survey2. We will call this survey 'MTS'. Today we will look at both to compare them.

Run the code below to create a new variable for overall MS in the `IntroSurvey` dataframe called `MTS_total`. (This is the same thing that we calculated at the end of Assignment 1.)

```
IntroSurvey$MS_total <- rowMeans(cbind(IntroSurvey$MS1,IntroSurvey$MS2,
                                       IntroSurvey$MS3,IntroSurvey$MS4,
```

```
                                        IntroSurvey$MS5,IntroSurvey$MS6,
                                        IntroSurvey$MS7,IntroSurvey$MS8,
                                        IntroSurvey$MS9,IntroSurvey$MS10,
                                        IntroSurvey$MS11,IntroSurvey$MS12,
                                        IntroSurvey$MS13))
```

You'll take a similar approach to calculating an overall Maximizing Tendency Scale score from the 9 items of the MTS. They are called `MTS1`, `MTS2`, `MTS3`, etc.

First, assign a new variable called `MTS_total` that is the average of all nine `MTS` scores.

```
# Code goes here

IntroSurvey$MTS_total <- rowMeans(cbind(IntroSurvey$MTS1,IntroSurvey$MTS2,
                                        IntroSurvey$MTS3,IntroSurvey$MTS4,
                                        IntroSurvey$MTS5,IntroSurvey$MTS6,
                                        IntroSurvey$MTS7,IntroSurvey$MTS8,
                                        IntroSurvey$MTS9))
```

Use `head()` to check that the following new variables are present in `IntroSurvey`:

- `MS_total`
- `MTS_total`

```
# Code goes here
head(IntroSurvey$MS_total)
```

```
## [1] 5.000000 3.538462 4.076923 4.384615 4.692308 5.076923
```

```
head(IntroSurvey$MTS_total)
```

```
## [1] 5.000000 4.000000 4.222222 4.777778 5.111111 5.444444
```

6. Descriptive statistics

Now we can start doing some real data analysis! For the purposes of getting practice in a variety of inferential statistics in R, we'll be running more exploratory tests than would normally be considered wise for a real study. We'll talk more about why this is a problem later in the semester, but hopefully in your stats class you talked about the dangers of running too many tests–i.e., alpha-inflation.

Let's start with some simple descriptive statistics on our new variables. Use `mean()` and `sd()` to find the mean and standard deviations for:

MS_total

```
# Code goes here
mean(IntroSurvey$MS_total)
```

```
## [1] NA
```

```
sd(IntroSurvey$MS_total)
```

```
## [1] NA
```

MTS_total

```
# Code goes here
mean(IntroSurvey$MTS_total)
```

```
## [1] NA
```

```
sd(IntroSurvey$MTS_total)
```

```
## [1] NA
```

courses_happy

```
# Code goes here
mean(IntroSurvey$courses_happy)
```

```
## [1] 5.125
```

```
sd(IntroSurvey$courses_happy)
```

```
## [1] 1.457738
```

courses_satisfied

```
# Code goes here
mean(IntroSurvey$courses_satisfied)
```

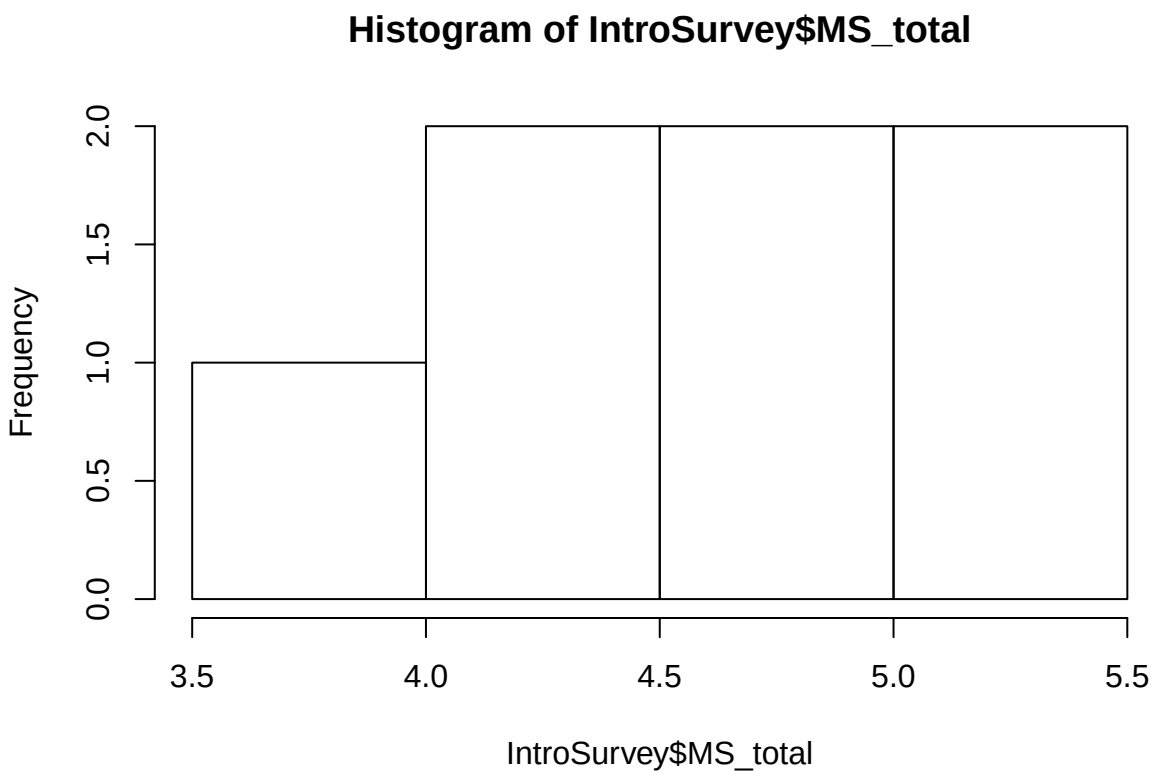
```
## [1] 5.125
```

```
sd(IntroSurvey$courses_satisfied)
```

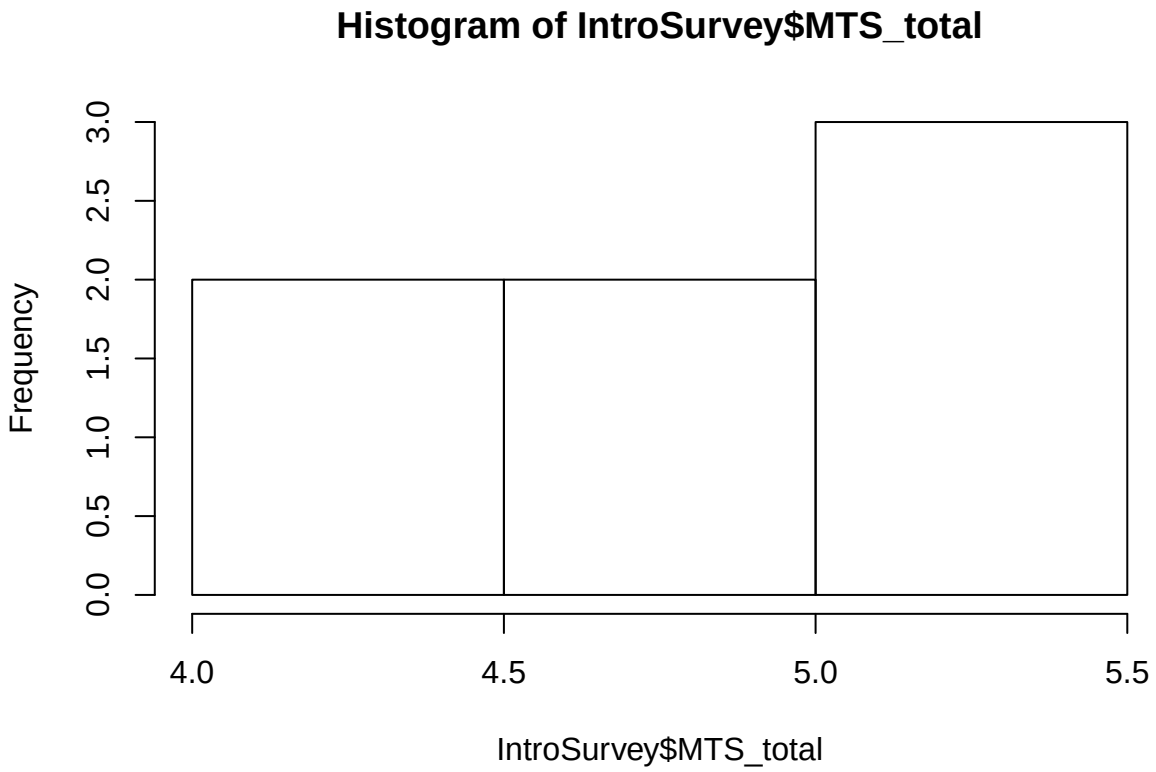
```
## [1] 1.457738
```

Use `hist()` to visualize the range of scores for each of the variables above.

```
# Code goes here
hist(IntroSurvey$MS_total)
```




```
# Code goes here
hist(IntroSurvey$MTS_total)
```



Use `summary()` to get a summary of some of our *categorical* variables (variables that are not numeric, but rather can take on one of a few specified categories):

Year

```
# Code goes here
summary(IntroSurvey$Year)
```

```
##          Freshman   Junior Post-Bac   Senior
##        1        1        1        3        2
```

School

```
# Code goes here
summary(IntroSurvey$School)
```

```
##    BC CC GS
##  1  1  3  3
```

Gender

```
# Code goes here
summary(IntroSurvey$Gender)
```

```
##        Female   Male
##      1      3      4
```

Explore at least **5** other variables that you think might have a relationship with maximizing and/or regret. If the variable is *numeric* or *interval* (i.e., if its responses are numbers), compute the mean and sd, and produce a histogram. If the variable is *categorical*, produce a summary.

```
# Code goes here
```

```
# Code goes here
```

```
# Code goes here
```

```
# Code goes here
```

```
# Code goes here
```

7. Correlations

Now that you have a sense for what the data show, let's look at how some of the variables relate to each other. First, some correlations.

a. Maximizer scales

Let's see if the two maximizing scales are correlated. The function `cor.test()` allows us to put in two variables, see what their correlation is, and return a p-value for that correlation.

`cor.test()` allows you to run a Pearson, Kendall, or Spearman correlation, depending on what you tell it to do using the argument `method`. This time, since we just want to do a Pearson correlation, we'll use `method = "pearson"`.

First, we'll save the contents of our correlation test into the variable `cor_MS_MTS` so we can access its contents later. Then, we'll print `cor_MS_MTS` to the console, so we can visually inspect the results of the correlation test.

```
# Code goes here
cor_MS_MTS <- cor.test(IntroSurvey$MS_total, IntroSurvey$MTS_total)
cor_MS_MTS
```

```
##
##  Pearson's product-moment correlation
##
## data:  IntroSurvey$MS_total and IntroSurvey$MTS_total
## t = 6.6324, df = 5, p-value = 0.001174
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.6792362 0.9924481
## sample estimates:
##       cor
## 0.9475952
```

Above, you can see the r-value, p-value, and several other pieces of info about the correlation test. These statistics are actually saved as variables *inside of* the correlation test object. To extract these statistics and report them, we can use the dollar sign `$` to index these statistics, similar to indexing columns in a dataframe.

To index the Pearson's r for this test, we can look for the sub-variable called `estimate`:

```
# Code goes here
cor_MS_MTS$Estimates
```

```
## NULL
```

And to index the p-value, we can call the sub-variable `p.value`:

```
# Code goes here
cor_MS_MTS$p.value
```

```
## [1] 0.001173757
```

Now, we can use these variable names to refer to the Pearson's r and p-value of this correlation test. You don't have to look at the numbers and copy them over!

PS: In RStudio, if you want to know all the sub-variables inside of an object, if you just type the name of the object with a `$` after it, an auto-complete menu should pop up and you can use the up and down arrow keys to look through all the possible sub-variables.

b. Maximizing and course selection

Let's see if maximizing correlates with various measures of course-selection behavior. Calculate the correlation and report the Pearson's r between `MS_total` and each of the following variables:

`courses_enrolled`

```
# Code goes here
```

`courses_shopped`

```
# Code goes here
```

`courses_considered`

```
# Code goes here
```

c. Maximizing and satisfaction

Does maximizing correlate with self-reported satisfaction with courses? Pick one of the maximizer scales (MTS or MS) and test this question with cor.test().

`courses_satisfied`

```
# Code goes here
```

What about self-reported happiness with past courses? Pick one of the maximizer scales and test this question with cor.test()

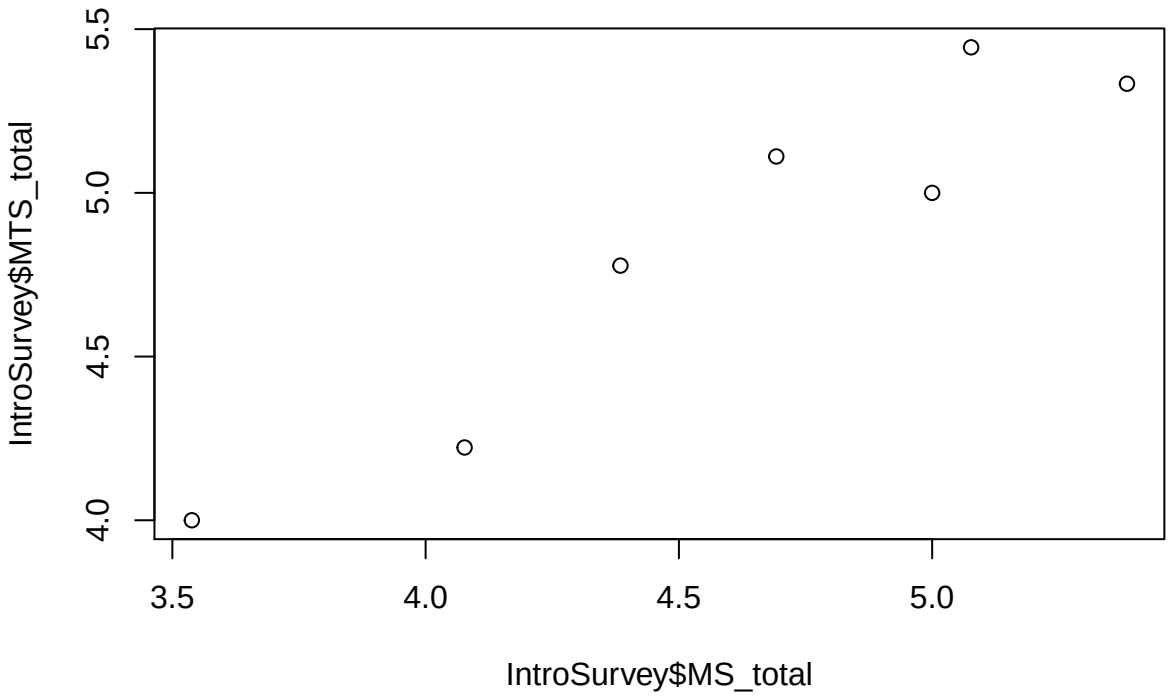
`courses_previous_happy`

```
# Code goes here
```

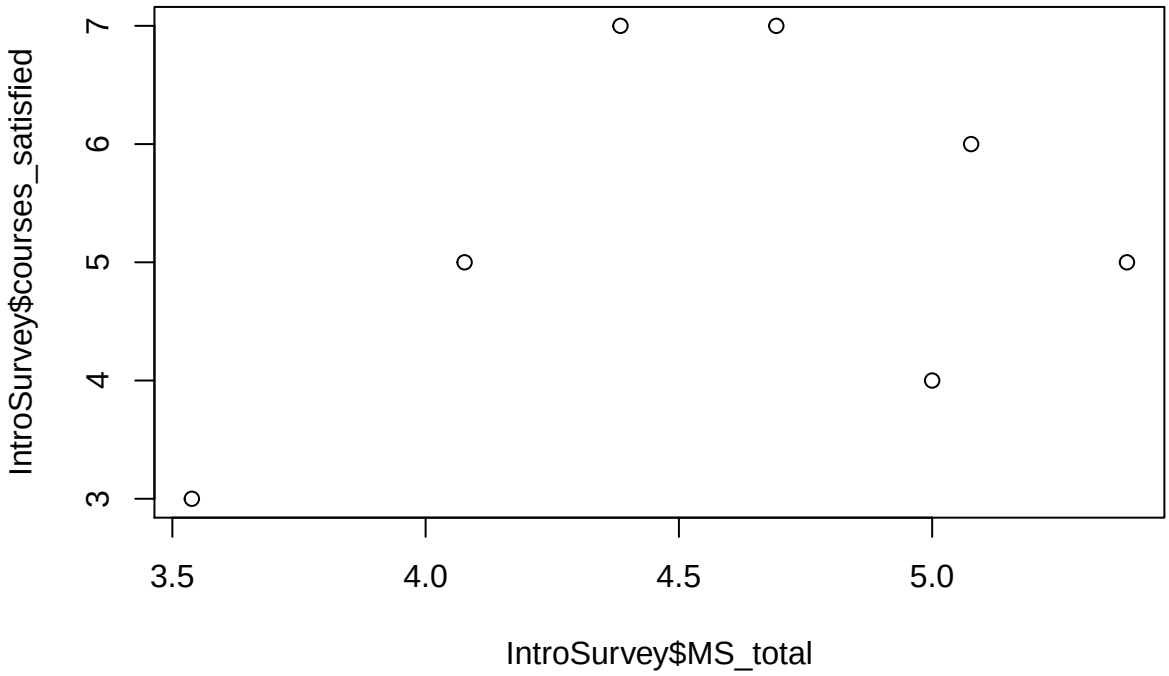
d.Plotting correlations

We can use plot(var1, var2) to visualize the correlation between 2 variables. Use plot() to visualize any 3 of the prior correlations you tested above.

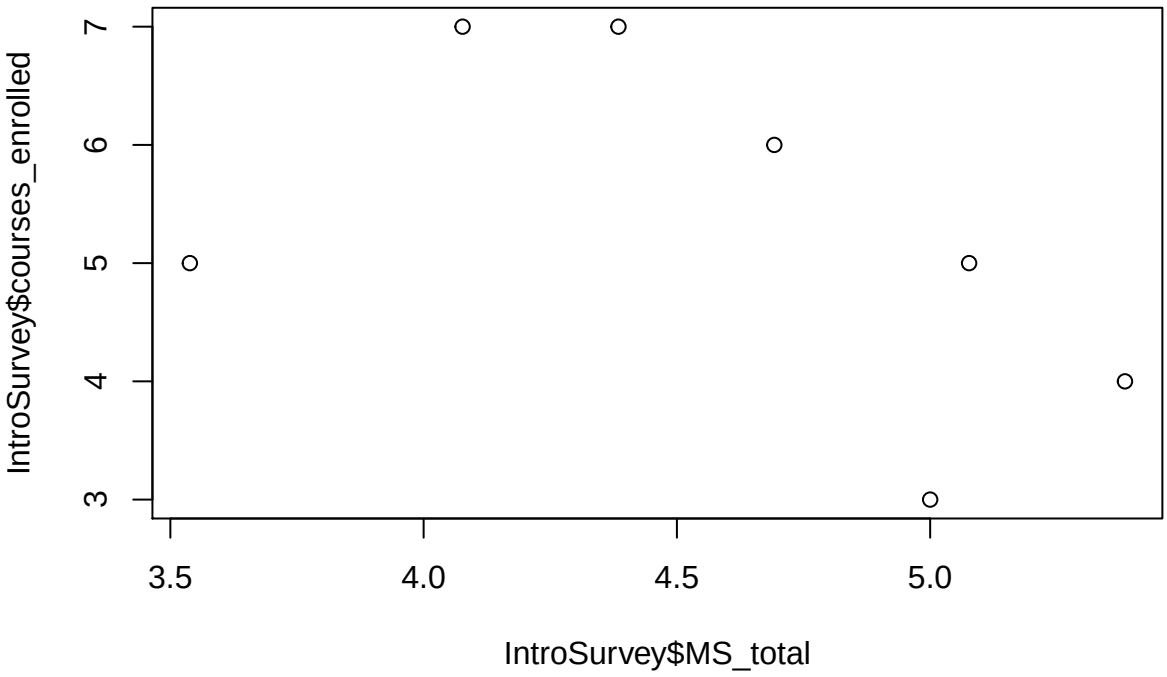
```
plot(IntroSurvey$MS_total, IntroSurvey$MTS_total)
```




```
plot(IntroSurvey$MS_total, IntroSurvey$courses_satisfied)
```




```
plot(IntroSurvey$MS_total, IntroSurvey$courses_enrolled)
```


IntroSurvey$courses_enrolled
3
4
5
6
7
3.5
4.0
4.5
5.0
IntroSurvey$MS_total