Honor thesis Study 1_ Qilin

Qilin Zhang

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```r
#Packages
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```r
library(ggplot2)
library(psych)
```

```
##
## Attaching package: 'psych'

## The following objects are masked from 'package:ggplot2':
##
##     %+%, alpha
```

```r
library(summarytools)
```

```
## Registered S3 method overwritten by 'pryr':
##   method      from
##   print.bytes Rcpp

## For best results, restart R session and update pander using devtools:: or remotes::install_github('ra
```

```r
library(car)
```

```
## Loading required package: carData

##
## Attaching package: 'car'
```

```
## The following object is masked from 'package:psych':
##
##     logit

## The following object is masked from 'package:dplyr':
##
##     recode
```

```
#Data Cleaning
##filtering unqualified data
HT_MC1 <- HT_MC1_Raw
HT_MC1$X500<- NULL
HT_MC1 <- HT_MC1[c(-1,-2),]
HT_MC1 <- subset(HT_MC1, as.numeric(HT_MC1$Progress)>=95)
HT_MC1 <- subset(HT_MC1, as.numeric(HT_MC1$`Q56_Page Submit`)>=200)

##Labeling condition
HT_MC1$Condition <- ifelse((is.na(HT_MC1$Self_S_reflect)== FALSE),"self",(ifelse(is.na(HT_MC1$Other_O_re

##Re-code Values
HT_MC1$Vol_Benefits_Bi_S <- as.numeric(factor((HT_MC1$Vol_Benefits_Bi_S),
levels=c("Strongly disagree","Disagree","Somewhat disagree","Neither agree nor disagree","Somewhat agree
labels=c("1","2","3","4","5","6","7")))

HT_MC1$Vol_Benefits_Bi_O <- as.numeric(factor((HT_MC1$Vol_Benefits_Bi_O),
levels=c("Strongly disagree","Disagree","Somewhat disagree","Neither agree nor disagree","Somewhat agree
labels=c("1","2","3","4","5","6","7")))

HT_MC1$Vol_Benefits_Uni <- as.numeric(as.character(factor((HT_MC1$Vol_Benefits_Uni),
levels=c("benefited the others extremely more than the volunteers themselves","benefited the others mode
labels=c("-3","-2","-1","0","1","2","3"))))

HT_MC1$Vol_Intent_S <- as.numeric(factor((HT_MC1$Vol_Intent_S),
levels=c("Strongly disagree","Disagree","Somewhat disagree","Neither agree nor disagree","Somewhat agree
labels=c("1","2","3","4","5","6","7")))

HT_MC1$Vol_Intent_O <- as.numeric(factor((HT_MC1$Vol_Intent_O),
levels=c("Strongly disagree","Disagree","Somewhat disagree","Neither agree nor disagree","Somewhat agree
labels=c("1","2","3","4","5","6","7")))
```

```
#Descriptive Analysis
##Participants' by condition
freq(HT_MC1$Condition)
```

```
## Frequencies
## HT_MC1$Condition
## Type: Character
##
##                   Freq   % Valid   % Valid Cum.   % Total   % Total Cum.
## ---------------- ------ --------- -------------- --------- --------------
##            other     24     33.80          33.80     33.80          33.80
##             self     24     33.80          67.61     33.80          67.61
##       self&other     23     32.39         100.00     32.39         100.00
```

```
##             <NA>      0                                0.00          100.00
##            Total     71     100.00          100.00     100.00          100.00
```

```r
##Volunteer benefit_self or others_Forced choice
freq(HT_MC1$Vol_Benefits_forced)
```

```
## Frequencies
## HT_MC1$Vol_Benefits_forced
## Type: Character
##
##                                    Freq   % Valid   % Valid Cum.   % Total   % Total Cum.
## ------------------------------- ------ --------- -------------- --------- --------------
##                      The others     34     47.89          47.89     47.89          47.89
##        The volunteers themselves     37     52.11         100.00     52.11         100.00
##                            <NA>      0                                0.00         100.00
##                           Total     71    100.00         100.00    100.00         100.00
```

```r
##Volunteer benefits and intentions
###Volunteer benefits_others
descr(as.numeric(HT_MC1$Vol_Benefits_Bi_O))
```

```
## Warning: `funs()` is deprecated as of dplyr 0.8.0.
## Please use a list of either functions or lambdas:
##
##   # Simple named list:
##   list(mean = mean, median = median)
##
##   # Auto named with `tibble::lst()`:
##   tibble::lst(mean, median)
##
##   # Using lambdas
##   list(~ mean(., trim = .2), ~ median(., na.rm = TRUE))
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_warnings()` to see where this warning was generated.
```

```
## Descriptive Statistics
## value
## N: 71
##
##                       value
## ----------------- --------
##              Mean     6.48
##           Std.Dev     0.75
##               Min     4.00
##                Q1     6.00
##            Median     7.00
##                Q3     7.00
##               Max     7.00
##               MAD     0.00
##               IQR     1.00
##                CV     0.12
##          Skewness    -1.41
```

```
##       SE.Skewness     0.28
##          Kurtosis     1.54
##           N.Valid    71.00
##         Pct.Valid   100.00
```

```r
###Volunteer benefits_self
descr(as.numeric(HT_MC1$Vol_Benefits_Bi_S))
```

```
## Descriptive Statistics
## value
## N: 71
##
##                         value
## ----------------- --------
##              Mean     6.45
##           Std.Dev     0.73
##               Min     4.00
##                Q1     6.00
##            Median     7.00
##                Q3     7.00
##               Max     7.00
##               MAD     0.00
##               IQR     1.00
##                CV     0.11
##          Skewness    -1.34
##       SE.Skewness     0.28
##          Kurtosis     1.62
##           N.Valid    71.00
##         Pct.Valid   100.00
```

```r
###Volunteer Intention_benefiting self
descr(as.numeric(HT_MC1$Vol_Intent_S))
```

```
## Descriptive Statistics
## value
## N: 71
##
##                         value
## ----------------- --------
##              Mean     4.25
##           Std.Dev     1.63
##               Min     1.00
##                Q1     3.00
##            Median     5.00
##                Q3     5.00
##               Max     7.00
##               MAD     1.48
##               IQR     2.00
##                CV     0.38
##          Skewness    -0.29
##       SE.Skewness     0.28
##          Kurtosis    -1.09
##           N.Valid    71.00
##         Pct.Valid   100.00
```

```r
###Volunteer Intention_benefiting others
descr(as.numeric(HT_MC1$Vol_Intent_O))
```

```
## Descriptive Statistics
## value
## N: 71
##
##                        value
## ----------------- --------
##              Mean     6.25
##           Std.Dev     0.69
##               Min     4.00
##                Q1     6.00
##            Median     6.00
##                Q3     7.00
##               Max     7.00
##               MAD     0.00
##               IQR     1.00
##                CV     0.11
##          Skewness    -0.62
##       SE.Skewness     0.28
##          Kurtosis     0.19
##           N.Valid    71.00
##         Pct.Valid   100.00
```

```r
###Volunteer benefit_self or others
descr(HT_MC1$Vol_Benefits_Uni)
```

```
## Descriptive Statistics
## HT_MC1$Vol_Benefits_Uni
## N: 71
##
##                      Vol_Benefits_Uni
## ----------------- ------------------
##              Mean              -0.62
##           Std.Dev               1.59
##               Min              -3.00
##                Q1              -2.00
##            Median               0.00
##                Q3               0.00
##               Max               3.00
##               MAD               1.48
##               IQR               2.00
##                CV              -2.56
##          Skewness               0.26
##       SE.Skewness               0.28
##          Kurtosis              -0.74
##           N.Valid              71.00
##         Pct.Valid             100.00
```

```r
##Demographics
###Age
descr(as.numeric(HT_MC1$Dem_Age))
```

```
## Descriptive Statistics
## value
## N: 71
##
##                        value
## ----------------- --------
##              Mean    20.20
##           Std.Dev     4.60
##               Min    18.00
##                Q1    18.00
##            Median    19.00
##                Q3    20.00
##               Max    54.00
##               MAD     1.48
##               IQR     2.00
##                CV     0.23
##          Skewness     5.81
##       SE.Skewness     0.28
##          Kurtosis    38.70
##           N.Valid    71.00
##         Pct.Valid   100.00
```

```
###Sex
freq(HT_MC1$Dem_Bio_Sex)
```

```
## Frequencies
## HT_MC1$Dem_Bio_Sex
## Type: Character
##
##                Freq   % Valid   % Valid Cum.   % Total   % Total Cum.
## ------------ ------ --------- -------------- --------- --------------
##       Female     56     78.87          78.87     78.87          78.87
##         Male     15     21.13         100.00     21.13         100.00
##         <NA>      0                               0.00         100.00
##        Total     71    100.00         100.00    100.00         100.00
```

```
###Gender
freq(HT_MC1$Dem_Gen_ID)
```

```
## Frequencies
## HT_MC1$Dem_Gen_ID
## Type: Character
##
##                Freq   % Valid   % Valid Cum.   % Total   % Total Cum.
## ------------ ------ --------- -------------- --------- --------------
##       Female     56     78.87          78.87     78.87          78.87
##         Male     15     21.13         100.00     21.13         100.00
##         <NA>      0                               0.00         100.00
##        Total     71    100.00         100.00    100.00         100.00
```

```
###Education_father figure
freq(HT_MC1$Dem_Edu_father)
```

```
## Frequencies
## HT_MC1$Dem_Edu_father
## Type: Character
##
##                                               Freq   % Valid   % Valid Cum.   % Total   % Total Cu
## ---------------------------------------------- ------ --------- -------------- --------- ----------
##             Associate degree (junior college)     13     18.31          18.31     18.31          18
##                             Bachelor's degree     17     23.94          42.25     23.94          42
##                                     Doctorate      1      1.41          43.66      1.41          43
##        High school diploma or equivalency (GED)   21     29.58          73.24     29.58          73
##                               Master's degree     10     14.08          87.32     14.08          87
##                                         Other      2      2.82          90.14      2.82          90
##              Professional (MD, JD, DDS, etc.)      5      7.04          97.18      7.04          97
##                              Some High School      2      2.82         100.00      2.82         100
##                                          <NA>      0                               0.00         100
##                                         Total     71    100.00         100.00    100.00         100
```

```r
###Education_mother figure
freq(HT_MC1$Dem_Edu_mother)
```

```
## Frequencies
## HT_MC1$Dem_Edu_mother
## Type: Character
##
##                                               Freq   % Valid   % Valid Cum.   % Total   % Total Cu
## ---------------------------------------------- ------ --------- -------------- --------- ----------
##             Associate degree (junior college)     11     15.49          15.49     15.49          15
##                             Bachelor's degree     23     32.39          47.89     32.39          47
##                                     Doctorate      3      4.23          52.11      4.23          52
##        High school diploma or equivalency (GED)   14     19.72          71.83     19.72          71
##                               Master's degree      9     12.68          84.51     12.68          84
##                                         Other      5      7.04          91.55      7.04          91
##              Professional (MD, JD, DDS, etc.)      2      2.82          94.37      2.82          94
##                              Some High School      4      5.63         100.00      5.63         100
##                                          <NA>      0                               0.00         100
##                                         Total     71    100.00         100.00    100.00         100
```

```r
###Nationality
freq(HT_MC1$Dem_Nationality)
```

```
## Frequencies
## HT_MC1$Dem_Nationality
## Type: Character
##
##                                     Freq   % Valid   % Valid Cum.   % Total   % Total Cum.
## ----------------------------------- ------ --------- -------------- --------- --------------
##           I am a domestic student     60     85.71          85.71     84.51          84.51
##      I am an international Student      8     11.43          97.14     11.27          95.77
##              Prefer not to answer      2      2.86         100.00      2.82          98.59
##                              <NA>      1                               1.41         100.00
##                             Total     71    100.00         100.00    100.00         100.00
```

```r
freq(HT_MC1$Dem_Nationality_text)
```

```
## Frequencies
## HT_MC1$Dem_Nationality_text
## Type: Character
##
##                 Freq   % Valid   % Valid Cum.   % Total   % Total Cum.
## ------------- ------ ---------- -------------- --------- --------------
##         China      5     62.50          62.50      7.04           7.04
##           chn      1     12.50          75.00      1.41           8.45
##         Korea      1     12.50          87.50      1.41           9.86
##       Vietnam      1     12.50         100.00      1.41          11.27
##          <NA>     63                              88.73         100.00
##         Total     71    100.00         100.00    100.00         100.00
```

```r
#Inferential Analysis
Anova(lm(Vol_Intent_O~Condition, data=HT_MC1))
```

```
## Anova Table (Type II tests)
##
## Response: Vol_Intent_O
##           Sum Sq Df F value Pr(>F)
## Condition  0.216  2  0.2207 0.8026
## Residuals 33.221 68
```

```r
tapply(HT_MC1$Vol_Intent_O, INDEX =HT_MC1$Condition, FUN = mean)
```

```
##      other       self self&other
##   6.291667   6.291667   6.173913
```

```r
tapply(HT_MC1$Vol_Intent_O, INDEX =HT_MC1$Condition, FUN = sd)
```

```
##      other       self self&other
##  0.6240935  0.7506036  0.7168221
```

```r
TukeyHSD(aov(lm(Vol_Intent_O~Condition, data=HT_MC1)))
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = lm(Vol_Intent_O ~ Condition, data = HT_MC1))
##
## $Condition
##                            diff        lwr       upr     p adj
## self-other         8.881784e-16 -0.4834634 0.4834634 1.0000000
## self&other-other -1.177536e-01 -0.6064438 0.3709365 0.8326407
## self&other-self  -1.177536e-01 -0.6064438 0.3709365 0.8326407
```

```r
Anova(lm(Vol_Intent_S~Condition, data=HT_MC1))
```

```
## Anova Table (Type II tests)
##
## Response: Vol_Intent_S
##            Sum Sq Df F value Pr(>F)
## Condition   9.451  2  1.8259 0.1689
## Residuals 175.986 68
```

```r
tapply(HT_MC1$Vol_Intent_S, INDEX =HT_MC1$Condition, FUN = mean)
```

```
##      other       self self&other
##   3.750000   4.583333   4.434783
```

```r
tapply(HT_MC1$Vol_Intent_S, INDEX =HT_MC1$Condition, FUN = sd)
```

```
##      other       self self&other
##   1.621862   1.348644   1.829707
```

```r
TukeyHSD(aov(lm(Vol_Intent_S~Condition, data=HT_MC1)))
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = lm(Vol_Intent_S ~ Condition, data = HT_MC1))
##
## $Condition
##                        diff        lwr       upr     p adj
## self-other        0.8333333 -0.2794115 1.9460782 0.1791221
## self&other-other  0.6847826 -0.4399923 1.8095575 0.3171055
## self&other-self  -0.1485507 -1.2733256 0.9762241 0.9463382
```

```r
Anova(lm(Vol_Benefits_Uni~Condition, data=HT_MC1))
```

```
## Anova Table (Type II tests)
##
## Response: Vol_Benefits_Uni
##            Sum Sq Df F value Pr(>F)
## Condition   1.497  2  0.2904 0.7489
## Residuals 175.236 68
```

```r
tapply(HT_MC1$Vol_Benefits_Uni, INDEX =HT_MC1$Condition, FUN = mean)
```

```
##      other       self self&other
## -0.6250000 -0.7916667 -0.4347826
```

```r
tapply(HT_MC1$Vol_Benefits_Uni, INDEX =HT_MC1$Condition, FUN = sd)
```

```
##      other       self self&other
##   1.582857   1.473805   1.753596
```

```r
TukeyHSD(aov(lm(Vol_Benefits_Uni~Condition, data=HT_MC1)))
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = lm(Vol_Benefits_Uni ~ Condition, data = HT_MC1))
##
## $Condition
##                         diff        lwr       upr     p adj
## self-other        -0.1666667 -1.2770379 0.9437045 0.9312574
## self&other-other   0.1902174 -0.9321582 1.3125930 0.9132350
## self&other-self    0.3568841 -0.7654915 1.4792596 0.7275000
```

```r
Anova(lm(Vol_Benefits_Bi_O~Condition, data=HT_MC1))
```

```
## Anova Table (Type II tests)
##
## Response: Vol_Benefits_Bi_O
##           Sum Sq Df F value  Pr(>F)
## Condition  3.247  2  3.0273 0.05502 .
## Residuals 36.471 68
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```r
tapply(HT_MC1$Vol_Benefits_Bi_O, INDEX =HT_MC1$Condition, FUN = mean)
```

```
##      other       self self&other
##   6.583333   6.666667   6.173913
```

```r
tapply(HT_MC1$Vol_Benefits_Bi_O, INDEX =HT_MC1$Condition, FUN = sd)
```

```
##      other       self self&other
##  0.5036102  0.7613870  0.8868829
```

```r
TukeyHSD(aov(lm(Vol_Benefits_Bi_O~Condition, data=HT_MC1)))
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = lm(Vol_Benefits_Bi_O ~ Condition, data = HT_MC1))
##
## $Condition
##                          diff        lwr        upr     p adj
## self-other         0.08333333 -0.4232269 0.58989353 0.9180293
## self&other-other -0.40942029 -0.9214570 0.10261639 0.1419824
## self&other-self  -0.49275362 -1.0047903 0.01928305 0.0617310
```

```r
Anova(lm(Vol_Benefits_Bi_S~Condition, data=HT_MC1))
```

```
## Anova Table (Type II tests)
##
## Response: Vol_Benefits_Bi_S
##           Sum Sq Df F value Pr(>F)
## Condition  0.047  2  0.0423 0.9586
## Residuals 37.531 68
```

```r
tapply(HT_MC1$Vol_Benefits_Bi_S, INDEX =HT_MC1$Condition, FUN = mean)
```

```
##      other       self self&other
##   6.458333   6.416667   6.478261
```

```r
tapply(HT_MC1$Vol_Benefits_Bi_S, INDEX =HT_MC1$Condition, FUN = sd)
```

```
##      other       self self&other
##  0.7210600  0.9286112  0.5107539
```

```r
TukeyHSD(aov(lm(Vol_Benefits_Bi_S~Condition, data=HT_MC1)))
```

```
##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = lm(Vol_Benefits_Bi_S ~ Condition, data = HT_MC1))
##
## $Condition
##                          diff        lwr       upr     p adj
## self-other        -0.04166667 -0.5555340 0.4722007 0.9794121
## self&other-other   0.01992754 -0.4994953 0.5393504 0.9953524
## self&other-self    0.06159420 -0.4578286 0.5810170 0.9565018
```

```r
chisq.test(HT_MC1$Condition,HT_MC1$Vol_Benefits_forced)
```

```
##
##  Pearson's Chi-squared test
##
## data:  HT_MC1$Condition and HT_MC1$Vol_Benefits_forced
## X-squared = 0.59895, df = 2, p-value = 0.7412
```