Quality of life

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A theory of what factors might influence quality of life and why

In my view, surrounding around by family and friends who can turn to is one of the factors that might influence the quality of life. Because having someone who can talk to and also trust leads me emotionally stable, which is significant to improve quality of life.

Moreover, money is always an undeniable factor linked to the quality of life. Even though money doesn't always guarantee a higher quality of life, I would like to relate money to people's health and treatment this time. It is obvious that people who are struggling with money tend to suffer insufficient proper medical treatment, and this may make people unsatisfied with their life compared to affluent people.

In addition, not being worried to be unemployed is another important factor of the life of quality. I assume that people who are more anxious about not be able to be employed have a lower quality of life, in terms of mental health.

Thinking about more about the external environment such as political issue in the country. A few years ago, such a big political corruption unfolded in Korea, and people, including myself, extremely stressed about this. I remember that I deeply felt living in Korea under that circumstance was pretty exhausting. However, after most of the things got fixed, I subsequently thought my life quality in Korea was much better than before when everything was messy.

Hence, I chose two variables that show how much respondents trust their family and people they know personally (could be considered friends) to support my first theory. In terms of money that I mentioned earlier, I decided to choose the answers that indicate how often have respondents or respondents' family gone without medicine or medical treatment that needed. Next, for my third theory, I selected the factor that tells how respondents are worred about losing my job or not finding a job. What I chose lastly is the response that shows views of respondents about overall corruption in Australia.

```
wvs.dat <- read.csv('01420_csv.csv')

dim(wvs.dat)
```

```
## [1] 1813  317
```

```
#head(wvs.dat)

# data cleaning

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
```

```
wvs.dat$happiness <- as.numeric(as.character(recode(wvs.dat$V10, '1' = '4',
                                    '2' = '3',
                                    '3' = '2',
                                    '4' = '1',
                                   '-2' = NULL)))
wvs.dat$health <- as.numeric(as.character(recode(wvs.dat$V11, '1' = '5',
                                    '2' = '4',
                                    '3' = '3',
                                    '4' = '2',
                                    '5' = '1',
                                   '-2' = NULL)))
wvs.dat$finances <- recode(wvs.dat$V59,'-2' = NULL, .default = wvs.dat$V59)
wvs.dat$satisfaction <- recode(wvs.dat$V23, '-2' = NULL, .default = wvs.dat$V23)
wvs.dat$freedom <- recode(wvs.dat$V55, '-2' = NULL, .default = wvs.dat$V55)


wvs.dat$trust.family <- as.numeric(as.character(recode(wvs.dat$V102,
                                                       '1' = '4', '2' = '3', '3' = '2',
                                                       '4' = '1', '-2' = NULL)))

wvs.dat$trust.friend <- as.numeric(as.character(recode(wvs.dat$V104,
                                                       '1' = '4', '2' = '3', '3' = '2',
                                                       '4' = '1', '-2' = NULL)))

wvs.dat$treatment <- recode(wvs.dat$V190, '-2' = NULL, .default = wvs.dat$V190)

wvs.dat$losing.job <- recode(wvs.dat$V181, '-2' = NULL, .default = wvs.dat$V181)

wvs.dat$corruption <- as.numeric(as.character(recode(wvs.dat$Q112,
                                                     '1' = '10', '2' = '9', '3' = '8',
                                                     '4' = '7','5' = '6', '6' = '5',
                                                     '7' = '4', '8' = '3', '9' = '2',
                                                     '10' = '1', '-2' = NULL)))
```

Factor Analysis

```
#install.packages('psych')
library(psych)

fa.fit <- fa(wvs.dat[,c("happiness", "health", "finances", "satisfaction", "freedom")],nfactors=1)

fa.fit
```

```
## Factor Analysis using method =  minres
## Call: fa(r = wvs.dat[, c("happiness", "health", "finances", "satisfaction",
##     "freedom")], nfactors = 1)
## Standardized loadings (pattern matrix) based upon correlation matrix
```

```
##               MR1   h2   u2 com
## happiness    0.64 0.41 0.59   1
## health       0.52 0.28 0.72   1
## finances     0.63 0.39 0.61   1
## satisfaction 0.93 0.86 0.14   1
## freedom      0.71 0.50 0.50   1
##
##                 MR1
## SS loadings    2.43
## Proportion Var 0.49
##
## Mean item complexity =  1
## Test of the hypothesis that 1 factor is sufficient.
##
## The degrees of freedom for the null model are  10  and the objective function was  1.73 with Chi Squa
## The degrees of freedom for the model are 5  and the objective function was  0.02
##
## The root mean square of the residuals (RMSR) is  0.02
## The df corrected root mean square of the residuals is  0.04
##
## The harmonic number of observations is  1788 with the empirical chi square  22.35  with prob <  0.000
## The total number of observations was  1813  with Likelihood Chi Square =  33.28  with prob <  3.3e-0
##
## Tucker Lewis Index of factoring reliability =  0.982
## RMSEA index =  0.056  and the 90 % confidence intervals are  0.039 0.075
## BIC =  -4.23
## Fit based upon off diagonal values = 1
## Measures of factor score adequacy
##                                                  MR1
## Correlation of (regression) scores with factors   0.95
## Multiple R square of scores with factors          0.90
## Minimum correlation of possible factor scores     0.79
```

```
wvs.dat$life.quality <- fa.fit$scores

head(wvs.dat$life.quality, 10)
```

```
##               MR1
##  [1,]  0.72256548
##  [2,] -0.74706729
##  [3,]          NA
##  [4,]  0.26937731
##  [5,]  1.28122093
##  [6,]  0.12100610
##  [7,]          NA
##  [8,]  0.08338665
##  [9,]          NA
## [10,] -1.25791923
```

```
mean(wvs.dat$life.quality, na.rm = T)
```

```
## [1] -0.001894926
```

```r
sd(wvs.dat$life.quality, na.rm = T)
```

```
## [1] 0.9421396
```

```r
library(ggplot2)
```

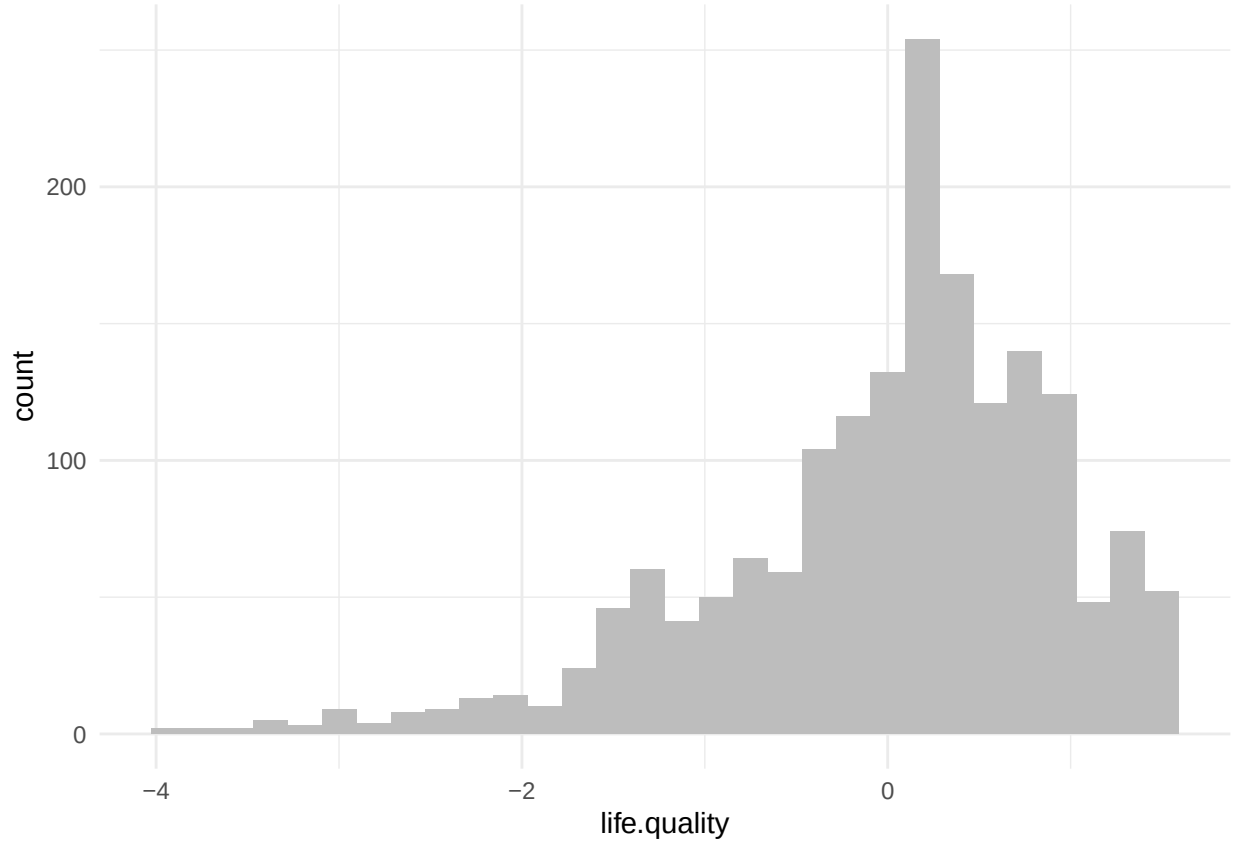
```
##
## Attaching package: 'ggplot2'
```

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

```r
ggplot(wvs.dat,
       aes(life.quality)) +
  geom_histogram(fill='#BDBDBD') + theme_minimal()
```

```
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```

```
## Warning: Removed 55 rows containing non-finite values (stat_bin).
```



Plot the relationship between factors and Quality of Life

```
mean.trust.family <- wvs.dat %>%
                     group_by(trust.family) %>%
                     summarise(life.quality = mean(life.quality, na.rm=TRUE))
mean.trust.family
```

```
## # A tibble: 5 x 2
##   trust.family life.quality
##          <dbl>        <dbl>
## 1            1       -2.01
## 2            2       -0.861
## 3            3       -0.323
## 4            4        0.109
## 5           NA       -0.226
```

```
mean.trust.friend <- wvs.dat %>%
                     group_by(trust.friend) %>%
                     summarise(life.quality = mean(life.quality, na.rm=TRUE))
mean.trust.friend
```

```
## # A tibble: 5 x 2
##   trust.friend life.quality
##          <dbl>        <dbl>
## 1            1      -0.984
## 2            2      -0.736
## 3            3      -0.121
## 4            4       0.195
## 5           NA       0.0603
```

```
mean.treatment <- wvs.dat %>%
                  group_by(treatment) %>%
                  summarise(life.quality = mean(life.quality, na.rm=TRUE))
mean.treatment
```

```
## # A tibble: 5 x 2
##   treatment life.quality
##       <int>        <dbl>
## 1         1       -1.52
## 2         2       -0.763
## 3         3       -0.405
## 4         4        0.154
## 5        NA       -0.259
```

```
mean.losing.job <- wvs.dat %>%
                     group_by(losing.job) %>%
                     summarise(life.quality = mean(life.quality, na.rm=TRUE))
mean.losing.job
```

```
## # A tibble: 5 x 2
```

```
##   losing.job life.quality
##        <int>        <dbl>
## 1          1      -0.468
## 2          2      -0.193
## 3          3       0.118
## 4          4       0.267
## 5         NA       0.0850
```

```
mean.corruption <- wvs.dat %>%
                      group_by(corruption) %>%
                      summarise(life.quality = mean(life.quality, na.rm=TRUE))
mean.corruption
```

```
## # A tibble: 11 x 2
##    corruption life.quality
##         <dbl>        <dbl>
##  1          1     -0.263
##  2          2     -0.111
##  3          3     -0.00934
##  4          4     -0.0142
##  5          5      0.153
##  6          6      0.0814
##  7          7      0.106
##  8          8      0.0988
##  9          9      0.200
## 10         10     -0.0811
## 11         NA     -0.179
```

```
library(ggpubr)
```

```
## Loading required package: magrittr
```

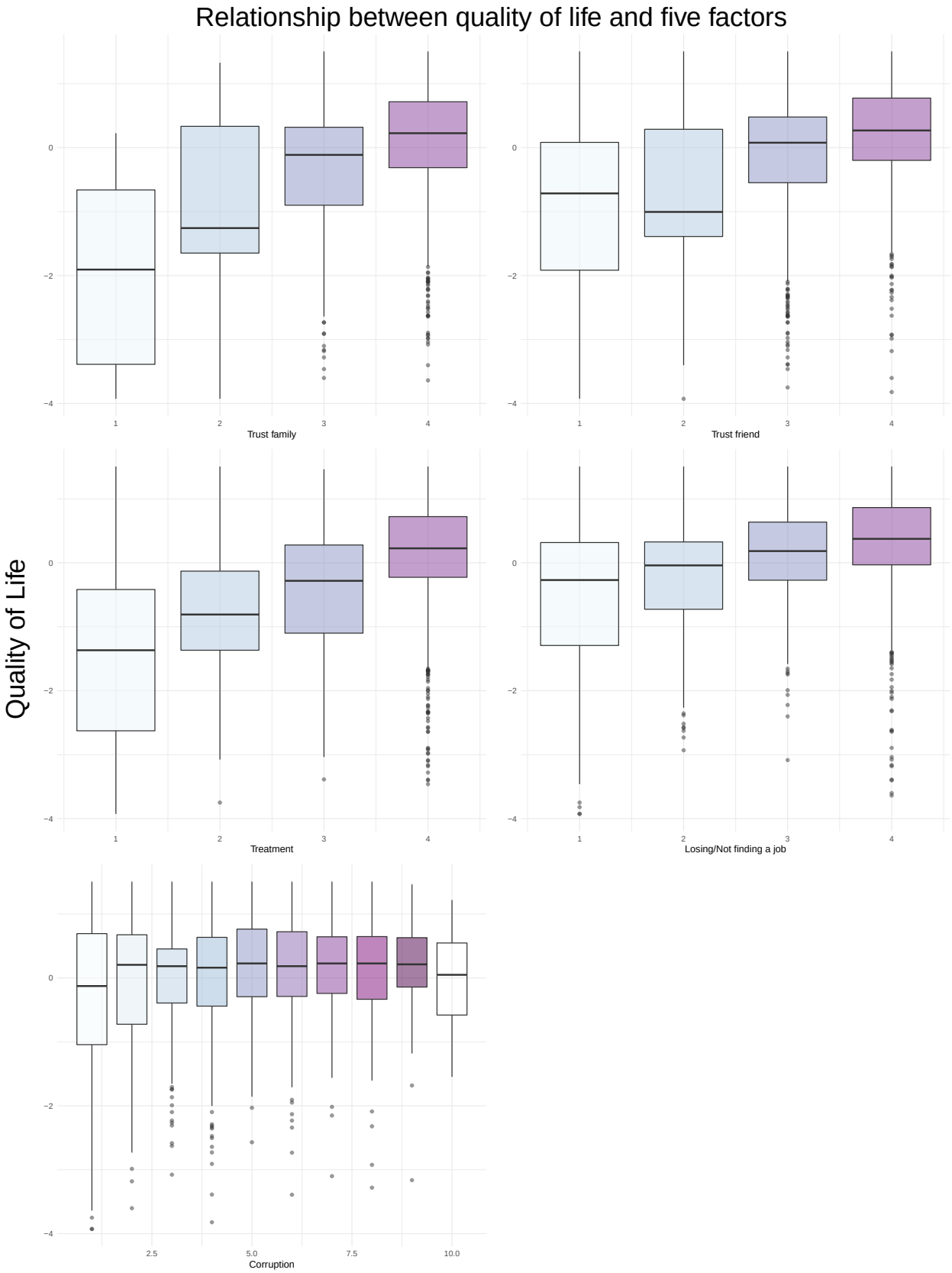
```
corplot.trust.family <- ggplot(wvs.dat, aes(x = trust.family, y = life.quality, group = trust.family)) +
                        geom_boxplot(aes(fill=factor(trust.family)), alpha = 0.5) +
                        xlab("Trust family") + ylab("") +
                        theme_minimal() + theme(legend.position="none") +
                        scale_fill_brewer(palette="BuPu")

corplot.trust.friend <- ggplot(wvs.dat, aes(x = trust.friend, y = life.quality, group = trust.friend)) +
                        geom_boxplot(aes(fill=factor(trust.friend)), alpha = 0.5) +
                        xlab("Trust friend") + ylab("") +
                        theme_minimal() + theme(legend.position="none") +
                        scale_fill_brewer(palette="BuPu")

corplot.treatment <- ggplot(wvs.dat, aes(x = treatment, y = life.quality, group = treatment)) +
                        geom_boxplot(aes(fill=factor(treatment)), alpha = 0.5) +
                        xlab("Treatment") + ylab("") +
                        theme_minimal() + theme(legend.position="none") +
                        scale_fill_brewer(palette="BuPu")

corplot.losing.job <- ggplot(wvs.dat, aes(x = losing.job, y = life.quality, group = losing.job)) +
                        geom_boxplot(aes(fill=factor(losing.job)), alpha = 0.5) +
```

```
                        xlab("Losing/Not finding a job") + ylab("") +
                        theme_minimal() + theme(legend.position="none") +
                        scale_fill_brewer(palette="BuPu")

corplot.corruption <- ggplot(wvs.dat, aes(x = corruption, y = life.quality, group = corruption)) +
                        geom_boxplot(aes(fill=factor(corruption)), alpha = 0.5) +
                        xlab("Corruption") + ylab("") +
                        theme_minimal() + theme(legend.position="none") +
                        scale_fill_brewer(palette="BuPu")
```

```
corplot.fin <- ggarrange(corplot.trust.family, corplot.trust.friend,
                         corplot.treatment, corplot.losing.job, corplot.corruption,
                         ncol = 2, nrow = 3)
```

```
## Warning: Removed 11 rows containing missing values (stat_boxplot).

## Warning: Removed 52 rows containing non-finite values (stat_boxplot).

## Warning: Removed 17 rows containing missing values (stat_boxplot).

## Warning: Removed 51 rows containing non-finite values (stat_boxplot).

## Warning: Removed 18 rows containing missing values (stat_boxplot).

## Warning: Removed 50 rows containing non-finite values (stat_boxplot).

## Warning: Removed 93 rows containing missing values (stat_boxplot).

## Warning: Removed 49 rows containing non-finite values (stat_boxplot).

## Warning: Removed 19 rows containing missing values (stat_boxplot).

## Warning: Removed 51 rows containing non-finite values (stat_boxplot).

## Warning in RColorBrewer::brewer.pal(n, pal): n too large, allowed maximum for palette BuPu is 9
## Returning the palette you asked for with that many colors
```

```
annotate_figure(corplot.fin,
                top = text_grob("Relationship between quality of life and five factors", size = 30),
                left = text_grob("Quality of Life", rot = 90, size = 30))
```


Relationship between quality of life and five factors
Quality of Life
Trust family
Trust friend
Treatment
Losing/Not finding a job
Corruption

```r
library(arm)
```

```
## Loading required package: MASS
```

```
##
## Attaching package: 'MASS'
```

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

```
## Loading required package: Matrix
```

```
## Loading required package: lme4
```

```
##
## arm (Version 1.10-1, built: 2018-4-12)
```

```
## Working directory is /Users/yeseul/Desktop/USYD/2020-1/Data Analysis in the Social Science/Tutorial/W
```

```
##
## Attaching package: 'arm'
```

```
## The following objects are masked from 'package:psych':
##
##     logit, rescale, sim
```

```r
quality.data <- data.frame(life.quality = wvs.dat$life.quality,
                           trust.family = wvs.dat$trust.family, trust.friend = wvs.dat$trust.friend,
                           losing.job = wvs.dat$losing.job, treatment = wvs.dat$treatment,
                           corruption = wvs.dat$corruption)

model <- lm(MR1 ~ ., data = quality.data)

summary(model)
```

```
##
## Call:
## lm(formula = MR1 ~ ., data = quality.data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.4913 -0.4047  0.0781  0.5319  2.9005
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -3.608081   0.189504 -19.040  < 2e-16 ***
## trust.family  0.320780   0.043060   7.450 1.51e-13 ***
## trust.friend  0.169875   0.038515   4.411 1.10e-05 ***
## losing.job    0.176080   0.019335   9.107  < 2e-16 ***
```

```
## treatment     0.337486   0.031972  10.556  < 2e-16 ***
## corruption    0.020221   0.009176   2.204   0.0277 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.8268 on 1631 degrees of freedom
##   (176 observations deleted due to missingness)
## Multiple R-squared:  0.2252, Adjusted R-squared:  0.2228
## F-statistic:  94.8 on 5 and 1631 DF,  p-value: < 2.2e-16
```

Summary

According to calculation and the graphs that are showing the relationship between 5 variables and life quality prediction, trust.family and treatment seem significant compared to others. Looking at the box plot above, what I can see is that the data of trust.family and treatment vary in direct proportion to quality of life. Losing.job also looks like having a linear relationship with the dependent variable, but not as much as two variables that I mentioned earlier. I saw some interesting result in trust.friend that is the mean of prediction of life quality where trust.friend=2 is lower than where trust.friend=1, even if is this data seems linearly related to life.quality in overall. On the other hand, I see such a vague correlation between corruption and quality of life since the data look fluctuating, aside from the data where corruption=1. Hence, I can tell that views of respondents about overall corruption in Australia are insignificant compared to other factors.

From the summary of linear regression, I see trust.family, trust.friend, losing.job and treatment variables are statistically significant, whereas corruption is less significant. Since R-squared value is only 0.2252, approximately, I can't say that this model is perfect.