Results Reproduction: Study 3

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11/26/2019

Contents

Introduction

YourMorals.org is a website that the authors of the Graham et al paper created to allow people to utilize social media to explore their morals. Participants self-select to become part of the research studies that are ran on the platform.

One of the datasets was used in the paper. This dataset contains responses from over 8,000 individuals on both the *What would you do for a million dollars* survey and the entirely of the 30-item MFQ. The MFQ will be explored in a different set of notes. This notebook is dedicated to reproducing the findngs of Study 3 of the study, which will be described later.

To clean the dataset, R scripts were ran and the code can be found under `MilDolMan.R`. The dataset used in this analysis is a subset of the original that the authors posted on the Harvard Dataverse website.

The goal of the third study in the paper is to explore the differences between liberals and conservatives through another perspective: moral tradeoffs. Here, participants were given a series of acts that are deemed immoral under each of the foundations. Their task is to judge the acts and decide if they would do it *so long as* people pay them x amount of money such that the scoring looks as follows

Scoring (Values in dollars)

1 = 0 (I'd do it for free)
2 = 10
3 = 100
4 = 1,000
5 = 10,000
6 = 100,000

7 = a million dollars
8 = never for any amount of money

Before we begin with reproducing the figure and analyses, I will load the required dataset and packages.

```
morals <- read.csv("~/Desktop/Working/Moral-Psychology/YourMorals/YM-MilDol.csv",
    header = TRUE, na.strings = c("", " ", "NA"))
```

```
library(car)
library(dplyr)
library(psych)
library(ggplot2)
library(GGally)
library("ggpubr")
library("reshape2")
library(scales)
library(lsr)
```

Figure 4 - Moral Tradeoffs

In Figure 4, the graph displays items for each foundation averaged as a function of each level of political ideology. To reproduce this graph, I begin by creating averages across each foundation.

```
### Harm ###
morals$Harm <- rowMeans(morals[, c("dogkick", "endangered", "overweight",
    "anthill", "palm")], na.rm = TRUE)

### Fairness ###
morals$Fairness <- rowMeans(morals[, c("cards", "stealpoor",
    "apartment", "ballots", "racepledge")], na.rm = TRUE)

### Ingroup ###
morals$Ingroup <- rowMeans(morals[, c("sportsbet", "flagburn",
    "talkradio", "familyshun", "citizenrenounce", "leaveclub")],
    na.rm = TRUE)

### Authority ###
morals$Authority <- rowMeans(morals[, c("parentcurse", "founderscurse",
    "handgesture", "rottentomato", "fatherslap")], na.rm = TRUE)

### Purity ###
morals$Purity <- rowMeans(morals[, c("soulsell", "eatdog", "tail",
```

```
    "molesterblood", "stageanimal")], na.rm = TRUE)
```

Next, I clean the political ideology variable. Here, we need to remove the answers where participants indicate that they don't know or belong in a third party ideology other than those that are considered mainstream.

```
table(morals$politics_new)
```

```
##
##                  Conservative     Don't know/not political
##                           511                          233
##                       Liberal                  Libertarian
##                          2554                         1034
##  Moderate/middle-of-the-road                        Other
##                           845                          304
##         Slightly Conservative             Slightly Liberal
##                           442                         1100
##             Very Conservative                Very Liberal
##                           139                         1010
```

```
morals$ideo <- as.character(as.factor(morals$politics_new))

morals$ideo <- recode(morals$ideo, ` Moderate/middle-of-the-road` = "Moderate")

morals <- morals[!(morals$ideo == " Don't know/not political"),
    ]
morals <- morals[!(morals$ideo == " Libertarian"), ]
morals <- morals[!(morals$ideo == " Other"), ]

morals$ideo <- as.factor(as.character(morals$ideo))

library(forcats)
morals$ideo <- fct_explicit_na(morals$ideo, na_level = "NA")
table(morals$ideo)
```

```
##
##           Conservative                Liberal  Slightly Conservative
##                    511                   2554                    442
##       Slightly Liberal      Very Conservative           Very Liberal
##                   1100                    139                   1010
##               Moderate                     NA
##                    845                     21
```

```
morals$ideo <- factor(morals$ideo, levels = c(" Very Liberal",
    " Liberal", " Slightly Liberal", "Moderate", " Slightly Conservative",
    " Conservative", " Very Conservative"))
```

```
table(morals$ideo)
```

```
##
##           Very Liberal                    Liberal       Slightly Liberal
##                   1010                       2554                   1100
##               Moderate  Slightly Conservative           Conservative
##                    845                        442                    511
##      Very Conservative
##                    139
```

To create the graph, we need to generate averages for each foundation based on each level of political ideology.

```
Harm <- aggregate(Harm ~ ideo, morals, mean, na.rm = TRUE)
Fairness <- aggregate(Fairness ~ ideo, morals, mean, na.rm = TRUE)
Ingroup <- aggregate(Ingroup ~ ideo, morals, mean, na.rm = TRUE)
Authority <- aggregate(Authority ~ ideo, morals, mean, na.rm = TRUE)
Purity <- aggregate(Purity ~ ideo, morals, mean, na.rm = TRUE)
```

The above step generages multiple data frames that would need to be combined in order to get one succinct, graphable data frame. This frame would then need to be "reshaped" so that the variables of interest such as ideology, moral foundations, and average values, would fit in it's own variable.

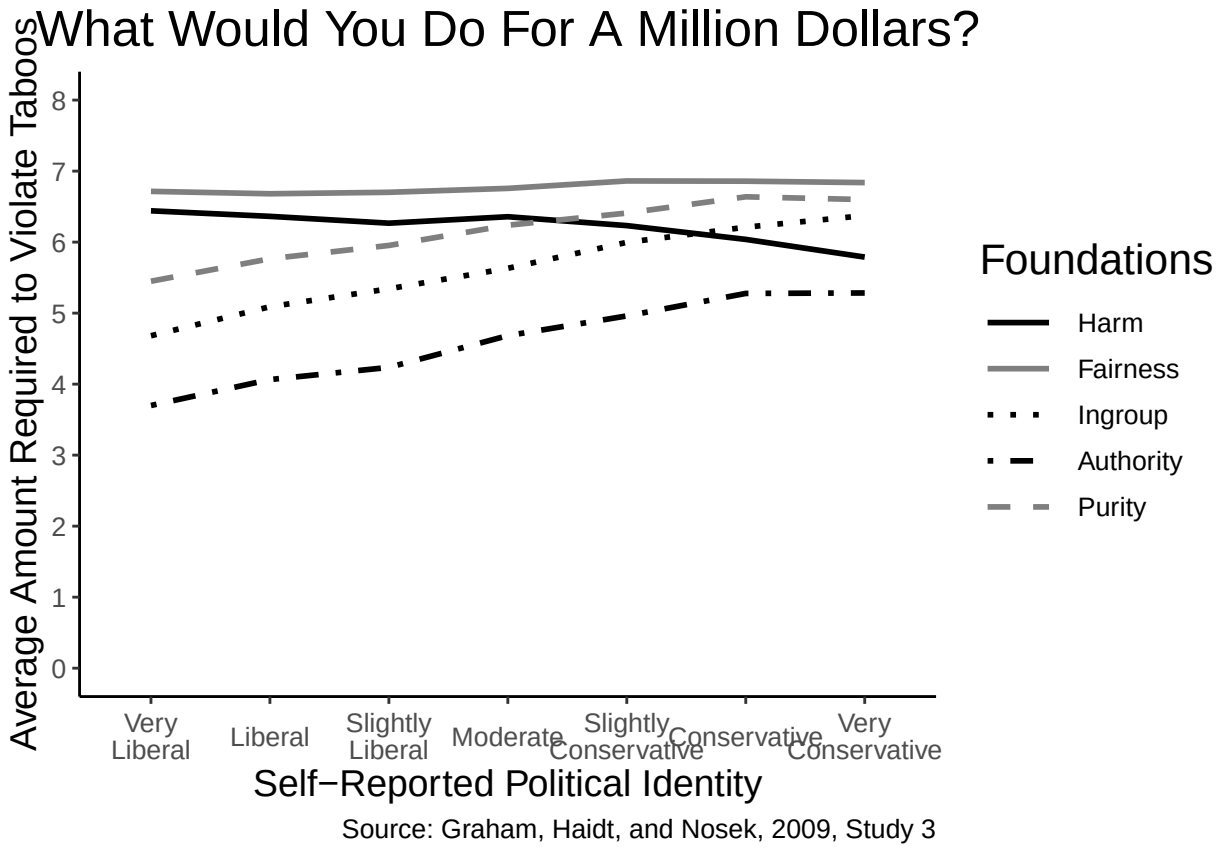
```
moral <- merge(Harm, Fairness, by.x = "ideo", by.y = "ideo",
    all.x = TRUE, all.y = TRUE)
moral <- merge(moral, Ingroup, by.x = "ideo", by.y = "ideo",
    all.x = TRUE, all.y = TRUE)
moral <- merge(moral, Authority, by.x = "ideo", by.y = "ideo",
    all.x = TRUE, all.y = TRUE)
moral <- merge(moral, Purity, by.x = "ideo", by.y = "ideo", all.x = TRUE,
    all.y = TRUE)

mfq <- reshape2::melt(moral, id.var = "ideo")
```

Finally, we generate the graph.

```
ggplot(mfq, aes(x = ideo, y = value, group = variable)) + geom_line(aes(linetype = varia
    color = variable), size = 1) + theme_classic() + scale_linetype_manual("Foundations
    breaks = c("Harm", "Fairness", "Ingroup", "Authority", "Purity"),
    values = c(Harm = "solid", Fairness = "solid", Ingroup = "dotted",
        Authority = "dotdash", Purity = "dashed")) + scale_color_manual("Foundations",
    breaks = c("Harm", "Fairness", "Ingroup", "Authority", "Purity"),
    values = c(Harm = "black", Fairness = "grey50", Ingroup = "black",
        Authority = "black", Purity = "grey50")) + ggtitle("What Would You Do For A Mill
    xlab("Self-Reported Political Identity") + ylab("Average Amount Required to Violate
```

```
    labs(caption = "Source: Graham, Haidt, and Nosek, 2009, Study 3") +
    theme(text = element_text(size = 12, colour = "black"), axis.title = element_text(s
        colour = "black"), title = element_text(size = 16, colour = "black"),
        plot.caption = element_text(size = 10, color = "black"),
        axis.text.x = element_text(angle = 0, hjust = 0.5, vjust = 0.5),
        plot.title = element_text(hjust = 0.5), legend.key.width = unit(2,
            "line")) + scale_x_discrete(labels = wrap_format(10)) +
    scale_y_continuous(breaks = seq(0, 8, 1), limits = c(0, 8))
```



Repeated Measures GLM

To compare the liberals and conservatives, the authors conduct a repeated measures GLM.

We begin by creating a combined individualising and binding subscale score.

```
# Individualizing and binding foundation scores
morals$indiv <- rowMeans(morals[, c("dogkick", "endangered",
    "overweight", "anthill", "palm", "cards", "stealpoor", "apartment",
    "ballots", "racepledge")], na.rm = TRUE)
morals$bind <- rowMeans(morals[, c("sportsbet", "flagburn", "talkradio",
    "familyshun", "citizenrenounce", "leaveclub", "parentcurse",
```

```
    "founderscurse", "handgesture", "rottentomato", "fatherslap",
    "soulsell", "eatdog", "tail", "molesterblood", "stageanimal")],
    na.rm = TRUE)
```

Next, I generate a difference score between the individualizing and binding foundations.

```
morals$diffscore <- morals$indiv - morals$bind
```

Now, I run the model and print out a table summarizing the results and include an η^2 statistic.

```
diff.model <- lm(diffscore ~ politics, data = morals)
summary(diff.model)
```

```
##
## Call:
## lm(formula = diffscore ~ politics, data = morals)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -3.9207 -0.6586 -0.0430  0.6190  4.4126
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  2.169271   0.025449   85.24   <2e-16 ***
## politics    -0.290951   0.007771  -37.44   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.9788 on 6576 degrees of freedom
##   (44 observations deleted due to missingness)
## Multiple R-squared:  0.1757, Adjusted R-squared:  0.1756
## F-statistic:  1402 on 1 and 6576 DF,  p-value: < 2.2e-16
```

```
etaSquared(diff.model)
```

```
##             eta.sq eta.sq.part
## politics 0.1757032   0.1757032
```

The results are interpreted as follows:

The `F-statistic: 1402 on 1 and 6576 DF,  p-value: < 2.2e-16` reflects the moderation of politics in the model. To find the difference between the scales as is, we square the t-value next to the `(Intercept)` row and use that p-value

The results are as follows:

- Aggregate difference between individualizing and binding foundations: $F(1, 6576) = 7265.85$, $p < .001$

- Moderation by politics: $F(1, 6576) = 1402$, $p < .001$, $\eta^2 = .175$

To see the distribution of the scores, I generate a scatterplot with the linear model fitted. the political ideology variable is acress the x-axis and it is represented by 1 = Very Liberal to 7 = Very Conservative

```
ggplot(morals, aes(x = politics, y = diffscore)) + geom_point(size = 2) +
    geom_smooth(method = "lm", se = TRUE, fullrange = FALSE,
        level = 0.95) + theme_classic() + ggtitle("Moral Tradeoffs") +
    xlab("Self-Reported Political Ideology") + ylab("Difference Score") +
    labs(caption = "Source: YourMorals.org") + theme(text = element_text(size = 12,
    colour = "black"), axis.title = element_text(size = 14, colour = "black"),
    title = element_text(size = 16, colour = "black"), plot.caption = element_text(size
        color = "black"), axis.text.x = element_text(angle = 0,
        hjust = 0.5, vjust = 0.5), plot.title = element_text(hjust = 0.5),
    legend.key.width = unit(2, "line"))
```

```
## Warning: Removed 44 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 44 rows containing missing values (geom_point).
```