Quarto_Paper_MaC

Democracy and social media: Between the dialogue and the strategy

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Abstract

This study analyzes the role of traditional news media and social media in public deliberation within democratic systems. Using the concepts of Understanding Orientation (consensus-oriented, communicative rationality) and Strategic Orientation (goal-oriented, instrumental rationality), proposed by Jürgen Habermas, this study looks at the public space in a digital context to explore how the news media can either contribute to the existence of rational communication in the public debate or, conversely, promote interventions of a strategic nature. To estimate the influence of traditional news media and social media on the orientation to engage in dialogue with others within a framework of rationality and equality, this study relies on a two-wave online panel survey conducted in Chile before and after the constitutional referendum, held on September 4, 2022, a period of intense political polarization. The first wave (T1) received 2,117 responses, and the second wave (T2) received 903 responses. Results show that Understanding Orientation is a predictor of political situations linked to public deliberation, such as Political Participation and Political Interest. However, news consumption in both traditional news outlets and social media is not associated with the presence of Understanding Orientation, but rather with Strategic Orientation. These results support a more pessimistic view of the contribution of the news media and social media to creating a rational public sphere, where reason should predominate in interactions between citizens to strengthen democracy.

Methodology

Data

When you click the **Render** button a document will be generated that includes both content and the output of embedded code. You can embed code like this:

```
library(haven)
library(knitr)
library(lattice)
```

```r
library(tidyverse)
library(here)
library(flextable)
library(devtools)
library(lavaan)
library(ggplot2)
library(plm)
library(naniar)
library(purrr)
library(psych)
library(interactions)
library(semPlot)
library(coefplot)
```

```r
#Import Data
data_w1 <- read_sav("Data_W1.sav")

# ID
data_w1$id <- data_w1$CodPanelista
```

Variables

```r
# Age
data_w1$age_num <- data_w1$age

# Socioeconomic Status
data_w1$ses <- data_w1$RECO_NSE

# Education
data_w1$educ <- data_w1$P60

# Sex (1=women)
data_w1 <- data_w1%>%
  mutate(sex = ifelse(SEX == 2, 1,
                      ifelse(SEX == 1, 0, NA)))

# Ideology
data_w1$ideology <- ifelse(data_w1$P32 == 99, NA, data_w1$P32)

# Online Political Efficacy
data_w1$ope1 <- data_w1$P59_1
data_w1$ope2 <- data_w1$P59_2
data_w1$ope3 <- data_w1$P59_3
data_w1$ope4 <- data_w1$P59_4

# External Political Efficacy (recode)
data_w1$extef1 <- data_w1$P58_1
data_w1$extef2 <- data_w1$P58_2
data_w1$extef3 <- data_w1$P58_3
```

```
# To recode efficacies (intef1, intef3, extef1, extef3, extef4)
data_w1 <- data_w1 %>%
  mutate(across(c(extef1, extef2, extef3), ~ 6 - .x))

# Internal Political Efficacy
data_w1$intef1 <- data_w1$P58_4
data_w1$intef2 <- data_w1$P58_5
data_w1$intef3 <- data_w1$P58_6

# Media Exposure
data_w1$tv <- data_w1$P4_1
data_w1$cable <- data_w1$P4_2
data_w1$newspaper <- data_w1$P4_3
data_w1$radio <- data_w1$P4_4
data_w1$tradonline <- data_w1$P4_5
data_w1$online <- data_w1$P4_6
data_w1$podcast <- data_w1$P4_7
data_w1$officialsm <- data_w1$P4_8

# Social Media Exposure
data_w1$fb <- ifelse(data_w1$P5_1 == 99, NA, data_w1$P5_1)
data_w1$insta <- ifelse(data_w1$P5_2 == 99, NA, data_w1$P5_2)
data_w1$twitter <- ifelse(data_w1$P5_3 == 99, NA, data_w1$P5_3)
data_w1$whatsapp <- ifelse(data_w1$P5_4 == 99, NA, data_w1$P5_4)
data_w1$youtube <- ifelse(data_w1$P5_5 == 99, NA, data_w1$P5_5)
data_w1$tiktok <- ifelse(data_w1$P5_6 == 99, NA, data_w1$P5_6)
data_w1$discord <- ifelse(data_w1$P5_7 == 99, NA, data_w1$P5_7)
data_w1$twitch <- ifelse(data_w1$P5_8 == 99, NA, data_w1$P5_8)

# Franja Exposure
data_w1$franja <- data_w1$P6_1

# Social Media Political Use
data_w1$use1 <- data_w1$P25_5
data_w1$use2 <- data_w1$P25_6
data_w1$use3 <- data_w1$P25_7
data_w1$use4 <- data_w1$P25_8
data_w1$use5 <- data_w1$P25_9
data_w1$use6 <- data_w1$P25_10
data_w1$use7 <- data_w1$P25_11

# Interest
data_w1$polint <- data_w1$P21
data_w1$procint <- data_w1$P22
data_w1$plebint <- data_w1$P23

# Interpersonal confidence
data_w1 <- data_w1%>%
  mutate(intercon = ifelse(P51 == 2, 1,
                      ifelse(P51 == 1, 0, NA)))
```

```
#Understanding orientation
data_w1$under1 <- data_w1$P48_1
data_w1$under2 <- data_w1$P48_4
data_w1$under3 <- data_w1$P48_5
data_w1$under4 <- data_w1$P48_7

#Strategic orientation
data_w1$strate1 <- data_w1$P49_2
data_w1$strate2 <- data_w1$P49_3
data_w1$strate3 <- data_w1$P49_4
data_w1$strate4 <- data_w1$P49_8
```

Understanding Orientation

Strategic Orientation

Political Efficacy

Political Interest

Media Exposure

Sociodemographic Variables

Analysis

```
cronbach_ope <- alpha(na.omit(data_w1[c("ope1", "ope2", "ope3", "ope4")]))
cronbach_ope
```

```

Reliability analysis
Call: alpha(x = na.omit(data_w1[c("ope1", "ope2", "ope3", "ope4")]))

  raw_alpha std.alpha G6(smc) average_r S/N    ase mean sd median_r
      0.82      0.82    0.79      0.53 4.6 0.0064  2.8  1     0.51

    95% confidence boundaries
         lower alpha upper
Feldt     0.81  0.82  0.83
Duhachek  0.81  0.82  0.83

 Reliability if an item is dropped:
     raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
ope1      0.75      0.75    0.67      0.50 3.0   0.0093 0.0006  0.50
ope2      0.74      0.74    0.66      0.49 2.9   0.0098 0.0006  0.48
ope3      0.80      0.80    0.75      0.58 4.1   0.0074 0.0141  0.52
ope4      0.80      0.80    0.75      0.57 4.0   0.0077 0.0166  0.53
```

```
 Item statistics
        n raw.r std.r r.cor r.drop mean  sd
ope1 2117  0.84  0.84  0.78   0.69  2.6 1.3
ope2 2117  0.85  0.85  0.81   0.72  2.9 1.3
ope3 2117  0.77  0.77  0.63   0.58  3.1 1.3
ope4 2117  0.77  0.77  0.64   0.59  2.4 1.3

Non missing response frequency for each item
        1    2    3    4    5 miss
ope1 0.28 0.17 0.32 0.13 0.10    0
ope2 0.22 0.16 0.32 0.16 0.14    0
ope3 0.16 0.13 0.33 0.21 0.18    0
ope4 0.34 0.18 0.29 0.10 0.09    0
```

```r
cronbach_intef <- alpha(na.omit(data_w1[c("intef1", "intef2", "intef3")]))
cronbach_intef
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("intef1", "intef2", "intef3")]))

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
      0.71      0.71    0.64      0.45 2.5 0.011  3.5 0.97     0.39

    95% confidence boundaries
         lower alpha upper
Feldt     0.69  0.71  0.73
Duhachek  0.69  0.71  0.73

 Reliability if an item is dropped:
       raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
intef1      0.75      0.75    0.60      0.60 3.0    0.011    NA  0.60
intef2      0.54      0.54    0.37      0.37 1.2    0.020    NA  0.37
intef3      0.56      0.56    0.39      0.39 1.3    0.019    NA  0.39

 Item statistics
          n raw.r std.r r.cor r.drop mean  sd
intef1 2117  0.73  0.74  0.49   0.42  3.5 1.2
intef2 2117  0.84  0.83  0.72   0.59  3.3 1.3
intef3 2117  0.82  0.82  0.71   0.59  3.7 1.2

Non missing response frequency for each item
          1    2    3    4    5 miss
intef1 0.08 0.08 0.35 0.22 0.28    0
intef2 0.12 0.11 0.32 0.22 0.23    0
intef3 0.06 0.08 0.28 0.23 0.35    0
```

```r
cronbach_extef <- alpha(na.omit(data_w1[c("extef1", "extef2", "extef3")]))
```

```r
cronbach_extef
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("extef1", "extef2", "extef3")]))

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean sd median_r
      0.71      0.71    0.62      0.45 2.4 0.011  2.1  1     0.43

    95% confidence boundaries
         lower alpha upper
Feldt     0.69  0.71  0.73
Duhachek  0.69  0.71  0.73

 Reliability if an item is dropped:
       raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
extef1      0.60      0.60    0.43      0.43 1.5    0.017    NA  0.43
extef2      0.59      0.59    0.42      0.42 1.5    0.018    NA  0.42
extef3      0.66      0.66    0.49      0.49 1.9    0.015    NA  0.49

 Item statistics
          n raw.r std.r r.cor r.drop mean  sd
extef1 2117  0.80  0.80  0.64   0.54  2.2 1.3
extef2 2117  0.80  0.81  0.65   0.55  1.9 1.2
extef3 2117  0.79  0.78  0.59   0.50  2.1 1.3

Non missing response frequency for each item
          1    2    3    4    5 miss
extef1 0.43 0.18 0.23 0.08 0.08    0
extef2 0.55 0.16 0.18 0.05 0.06    0
extef3 0.47 0.15 0.22 0.07 0.08    0
```

```r
cronbach_media <- alpha(na.omit(data_w1[c("tv", "cable", "newspaper", "radio")]))
cronbach_media
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("tv", "cable", "newspaper", "radio")]))

  raw_alpha std.alpha G6(smc) average_r S/N  ase mean  sd median_r
      0.71      0.71    0.68      0.39 2.5 0.01  2.6 1.1     0.37

    95% confidence boundaries
         lower alpha upper
Feldt     0.69  0.71  0.73
Duhachek  0.69  0.71  0.73

 Reliability if an item is dropped:
          raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
tv             0.67      0.68    0.59      0.41 2.1    0.012 0.0055  0.37
```

```
cable          0.61      0.61    0.53      0.35 1.6    0.015 0.0169  0.28
newspaper      0.65      0.65    0.58      0.39 1.9    0.013 0.0199  0.36
radio          0.67      0.67    0.59      0.40 2.0    0.012 0.0165  0.37

 Item statistics
             n raw.r std.r r.cor r.drop mean  sd
tv        2117  0.72  0.71  0.57   0.47  3.3 1.5
cable     2117  0.78  0.77  0.68   0.57  2.7 1.5
newspaper 2117  0.71  0.73  0.60   0.50  2.1 1.3
radio     2117  0.72  0.72  0.58   0.47  2.5 1.5

Non missing response frequency for each item
             1    2    3    4    5 miss
tv        0.19 0.14 0.19 0.16 0.31    0
cable     0.33 0.16 0.19 0.16 0.17    0
newspaper 0.50 0.17 0.16 0.09 0.08    0
radio     0.37 0.16 0.19 0.14 0.15    0
```

```
cronbach_digital <- alpha(na.omit(data_w1[c("tradonline", "online", "podcast", "officials
cronbach_digital
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("tradonline", "online", "podcast", 
    "officialsm")]))

  raw_alpha std.alpha G6(smc) average_r S/N  ase mean sd median_r
      0.71      0.72    0.67      0.39 2.5 0.01  2.4  1     0.35

    95% confidence boundaries 
         lower alpha upper
Feldt     0.69  0.71  0.73
Duhachek  0.69  0.71  0.73

 Reliability if an item is dropped:
           raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
tradonline      0.63      0.64    0.55      0.37 1.7    0.014 0.0067  0.33
online          0.59      0.59    0.49      0.33 1.5    0.015 0.0015  0.31
podcast         0.68      0.68    0.61      0.42 2.2    0.012 0.0138  0.37
officialsm      0.70      0.70    0.63      0.44 2.3    0.011 0.0163  0.46

 Item statistics
              n raw.r std.r r.cor r.drop mean  sd
tradonline 2117  0.76  0.76  0.65   0.54  2.5 1.4
online     2117  0.80  0.80  0.73   0.60  2.4 1.4
podcast    2117  0.67  0.70  0.54   0.46  1.8 1.2
officialsm 2117  0.70  0.68  0.50   0.43  2.9 1.5

Non missing response frequency for each item
              1    2    3    4    5 miss
```

```
tradonline 0.36 0.18 0.20 0.15 0.12    0
online     0.42 0.17 0.17 0.13 0.12    0
podcast    0.62 0.14 0.12 0.08 0.05    0
officialsm 0.29 0.13 0.21 0.16 0.21    0
```

```
cronbach_social <- alpha(na.omit(data_w1[c("fb", "insta", "twitter", "whatsapp", "youtube
cronbach_social
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("fb", "insta", "twitter", "whatsapp",
    "youtube", "tiktok")]))

  raw_alpha std.alpha G6(smc) average_r S/N    ase mean  sd median_r
      0.82      0.82     0.8      0.42 4.4 0.0077  2.7 1.1     0.43

    95% confidence boundaries
         lower alpha upper
Feldt      0.8  0.82  0.83
Duhachek   0.8  0.82  0.83

 Reliability if an item is dropped:
         raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
fb            0.78      0.78    0.75      0.42 3.6   0.0093 0.0066  0.43
insta         0.77      0.77    0.74      0.41 3.4   0.0096 0.0100  0.39
twitter       0.81      0.81    0.79      0.47 4.4   0.0079 0.0046  0.45
whatsapp      0.77      0.77    0.74      0.40 3.4   0.0098 0.0064  0.42
youtube       0.78      0.78    0.75      0.41 3.5   0.0094 0.0081  0.42
tiktok        0.80      0.79    0.77      0.44 3.9   0.0087 0.0098  0.44

 Item statistics
            n raw.r std.r r.cor r.drop mean  sd
fb       1377  0.73  0.73  0.67   0.59  3.0 1.6
insta    1377  0.76  0.76  0.70   0.63  2.9 1.6
twitter  1377  0.62  0.62  0.50   0.45  2.4 1.6
whatsapp 1377  0.77  0.77  0.72   0.64  2.9 1.6
youtube  1377  0.75  0.75  0.68   0.61  2.5 1.5
tiktok   1377  0.69  0.69  0.59   0.54  2.2 1.5

Non missing response frequency for each item
            1    2    3    4    5 miss
fb       0.26 0.14 0.18 0.16 0.27    0
insta    0.31 0.14 0.17 0.15 0.23    0
twitter  0.45 0.11 0.15 0.12 0.17    0
whatsapp 0.32 0.13 0.16 0.11 0.27    0
youtube  0.40 0.14 0.15 0.14 0.17    0
tiktok   0.52 0.11 0.14 0.09 0.14    0
```

```
cronbach_interest <- alpha(na.omit(data_w1[c("polint", "procint", "plebint")]))
```

```r
cronbach_interest
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("polint", "procint", "plebint")]))

  raw_alpha std.alpha G6(smc) average_r S/N    ase mean  sd median_r
      0.88      0.88    0.84       0.7 7.1 0.0047  3.3 1.3     0.65

    95% confidence boundaries
         lower alpha upper
Feldt     0.87  0.88  0.89
Duhachek  0.87  0.88  0.89

 Reliability if an item is dropped:
        raw_alpha std.alpha G6(smc) average_r S/N alpha se var.r med.r
polint       0.91      0.91    0.83      0.83 9.7   0.0040    NA  0.83
procint      0.77      0.77    0.63      0.63 3.3   0.0100    NA  0.63
plebint      0.79      0.79    0.65      0.65 3.8   0.0091    NA  0.65

 Item statistics
           n raw.r std.r r.cor r.drop mean  sd
polint  2117  0.84  0.85  0.70   0.67  2.9 1.4
procint 2117  0.93  0.92  0.89   0.83  3.4 1.5
plebint 2117  0.92  0.91  0.87   0.80  3.6 1.5

Non missing response frequency for each item
           1    2    3    4    5 miss
polint  0.25 0.11 0.25 0.20 0.18    0
procint 0.18 0.09 0.19 0.21 0.33    0
plebint 0.16 0.08 0.16 0.18 0.42    0
```

```r
cronbach_under <- alpha(na.omit(data_w1[c("under1", "under2", "under3", "under4")]))
cronbach_under
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("under1", "under2", "under3", "under4")]))

  raw_alpha std.alpha G6(smc) average_r S/N    ase mean   sd median_r
      0.74      0.74     0.7      0.42 2.9 0.0091  3.6 0.92     0.43

    95% confidence boundaries
         lower alpha upper
Feldt     0.72  0.74  0.76
Duhachek  0.72  0.74  0.76

 Reliability if an item is dropped:
       raw_alpha std.alpha G6(smc) average_r S/N alpha se  var.r med.r
under1      0.71      0.71    0.62      0.45 2.4    0.011 0.0029  0.43
```

```
under2      0.67      0.66    0.59      0.40 2.0    0.012 0.0165  0.43
under3      0.71      0.71    0.62      0.45 2.4    0.011 0.0010  0.43
under4      0.65      0.65    0.57      0.38 1.8    0.013 0.0133  0.40

 Item statistics
          n raw.r std.r r.cor r.drop mean  sd
under1 2117  0.71  0.72  0.58   0.49  4.2 1.1
under2 2117  0.78  0.77  0.66   0.56  3.7 1.3
under3 2117  0.73  0.72  0.58   0.49  3.0 1.2
under4 2117  0.79  0.79  0.69   0.59  3.6 1.2

Non missing response frequency for each item
          1    2    3    4    5 miss
under1 0.05 0.03 0.18 0.16 0.58    0
under2 0.09 0.07 0.25 0.19 0.40    0
under3 0.16 0.11 0.40 0.18 0.15    0
under4 0.09 0.07 0.33 0.21 0.30    0
```

```
cronbach_strate <- alpha(na.omit(data_w1[c("strate1", "strate2", "strate3", "strate4")]))
cronbach_strate
```

```
Reliability analysis
Call: alpha(x = na.omit(data_w1[c("strate1", "strate2", "strate3",
    "strate4")]))

  raw_alpha std.alpha G6(smc) average_r S/N   ase mean   sd median_r
      0.58      0.58    0.52      0.26 1.4 0.015  2.5 0.87     0.25

    95% confidence boundaries
         lower alpha upper
Feldt     0.55  0.58  0.61
Duhachek  0.55  0.58  0.61

 Reliability if an item is dropped:
        raw_alpha std.alpha G6(smc) average_r  S/N alpha se  var.r med.r
strate1      0.53      0.53    0.43      0.27 1.13    0.018 0.0012  0.26
strate2      0.50      0.49    0.40      0.25 0.98    0.019 0.0048  0.25
strate3      0.53      0.53    0.43      0.27 1.12    0.018 0.0010  0.26
strate4      0.49      0.49    0.40      0.25 0.97    0.019 0.0045  0.25

 Item statistics
           n raw.r std.r r.cor r.drop mean  sd
strate1 2117  0.62  0.65  0.45   0.34  1.9 1.2
strate2 2117  0.68  0.68  0.51   0.38  2.7 1.3
strate3 2117  0.68  0.65  0.45   0.35  2.9 1.4
strate4 2117  0.69  0.68  0.51   0.39  2.4 1.3

Non missing response frequency for each item
           1    2    3    4    5 miss
```

```
strate1 0.58 0.13 0.20 0.05 0.05    0
strate2 0.26 0.15 0.35 0.12 0.13    0
strate3 0.26 0.12 0.29 0.15 0.18    0
strate4 0.38 0.13 0.31 0.08 0.10    0
```

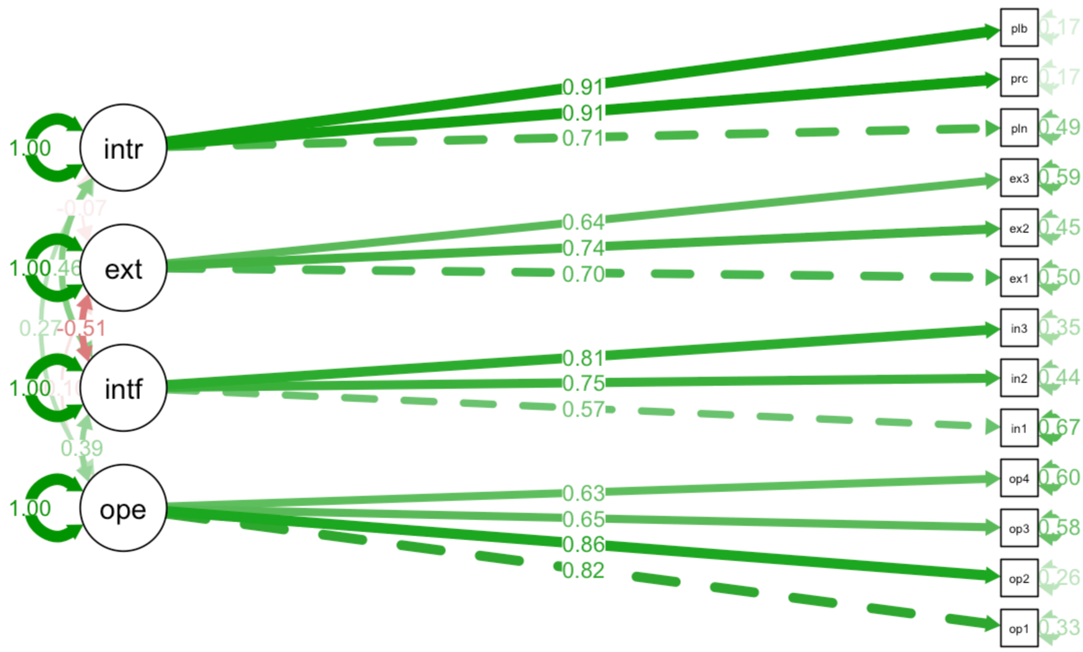
```
data_w1_na <- na.omit(data_w1[c("id", "polint", "procint", "plebint", "ope1", "ope2", "op
sum(is.na(data_w1_na))
```

```
[1] 0
```

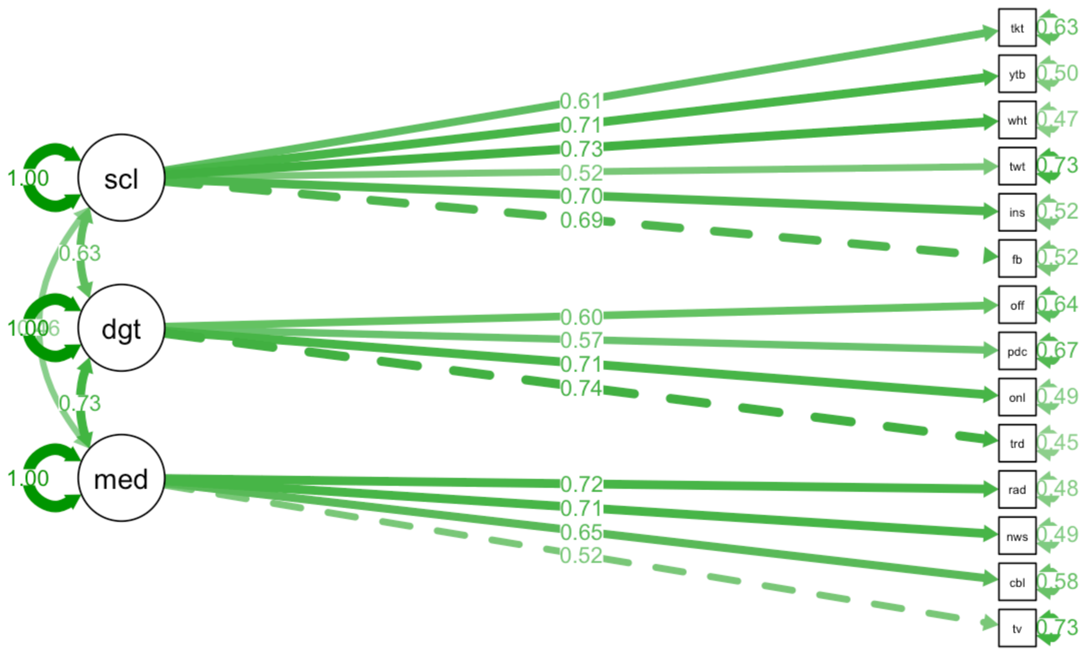
```
data_w1_na <- data_w1_na %>%
  mutate(across(where(is.labelled), as.numeric))

cfa.model1 <- 'ope =~ ope1 + ope2 + ope3 + ope4
              intef =~ intef1 + intef2 + intef3
              extef =~ extef1 + extef2 + extef3
              interest =~ polint + procint + plebint'
cfa.model2 <- 'media =~ tv + cable + newspaper + radio
              digital =~ tradonline + online + podcast + officialsm
              social =~ fb + insta + twitter + whatsapp + youtube + tiktok'
cfa.model3 <- 'under =~ under1 + under2 + under3 + under4
              strate =~ strate1 + strate2 + strate3 + strate4'

fit_cfa1 <- cfa(cfa.model1, data = data_w1_na)
latent_scores1 <- predict(fit_cfa1)

fit_cfa2 <- cfa(cfa.model2, data = data_w1_na)
latent_scores2 <- predict(fit_cfa2)

fit_cfa3 <- cfa(cfa.model3, data = data_w1_na)
latent_scores3 <- predict(fit_cfa3)

data_w1_scores <- cbind(data_w1_na, latent_scores1, latent_scores2, latent_scores3)
```

Measurement Model

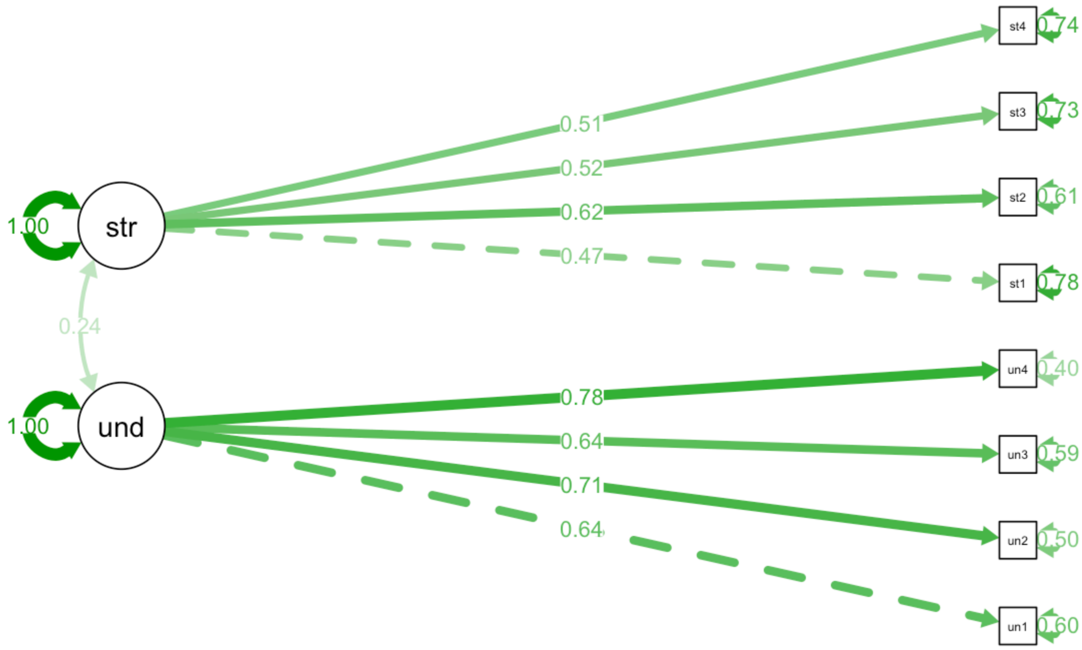
```
semPaths(fit_cfa1, "std", layout = "tree", rotation = 2,
         whatLabels = "std", edge.label.cex = 0.8,
         sizeMan = 3, sizeLat = 7, title = TRUE)
```




```r
semPaths(fit_cfa2, "std", layout = "tree", rotation = 2,
         whatLabels = "std", edge.label.cex = 0.8,
         sizeMan = 3, sizeLat = 7, title = TRUE)
```




```r
semPaths(fit_cfa3, "std", layout = "tree", rotation = 2,
         whatLabels = "std", edge.label.cex = 0.8,
         sizeMan = 3, sizeLat = 7, title = TRUE)
```



Regressions

```
model1 <- lm(under ~ ses + sex + age_num + media + digital + social + interest + intercon
summary(model1)
```

```
Call:
lm(formula = under ~ ses + sex + age_num + media + digital +
    social + interest + intercon + extef + intef + ope, data = data_w1_scores)

Residuals:
     Min       1Q   Median       3Q      Max
-2.57506 -0.36864  0.04248  0.41366  1.94858

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.087487   0.088665  -0.987  0.32400
ses         -0.004347   0.015511  -0.280  0.77935
sex          0.019027   0.035465   0.536  0.59172
age_num      0.001898   0.001298   1.462  0.14406
media        0.071103   0.046712   1.522  0.12825
digital      0.029378   0.043650   0.673  0.50107
social      -0.003512   0.026384  -0.133  0.89414
```

```
interest     0.197635   0.023025   8.583  < 2e-16 ***
intercon     0.079834   0.053756   1.485  0.13779
extef       -0.080243   0.029336  -2.735  0.00633 **
intef        0.079503   0.047217   1.684  0.09251 .
ope          0.114554   0.020611   5.558 3.41e-08 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.5846 on 1122 degrees of freedom
Multiple R-squared:  0.2613,    Adjusted R-squared:  0.2541
F-statistic: 36.09 on 11 and 1122 DF,  p-value: < 2.2e-16
```

```
model2 <- lm(strate ~ ses + sex + age_num + media + digital + social + interest + interco
summary(model2)
```

```

Call:
lm(formula = strate ~ ses + sex + age_num + media + digital +
    social + interest + intercon + extef + intef + ope, data = data_w1_scores)

Residuals:
     Min       1Q   Median       3Q      Max
-1.18926 -0.30265  0.02782  0.27132  1.55976

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.0651310  0.0641358  -1.016  0.31008
ses          0.0298459  0.0112195   2.660  0.00792 **
sex          0.0143851  0.0256534   0.561  0.57508
age_num     -0.0005613  0.0009392  -0.598  0.55018
media        0.0737409  0.0337888   2.182  0.02929 *
digital      0.0048618  0.0315739   0.154  0.87765
social       0.0155346  0.0190848   0.814  0.41583
interest    -0.0148682  0.0166552  -0.893  0.37221
intercon    -0.1082104  0.0388845  -2.783  0.00548 **
extef       -0.0467365  0.0212203  -2.202  0.02784 *
intef       -0.0470204  0.0341546  -1.377  0.16888
ope          0.0755189  0.0149087   5.065 4.76e-07 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.4229 on 1122 degrees of freedom
Multiple R-squared:  0.07092,   Adjusted R-squared:  0.06181
F-statistic: 7.785 on 11 and 1122 DF,  p-value: 4.123e-13
```

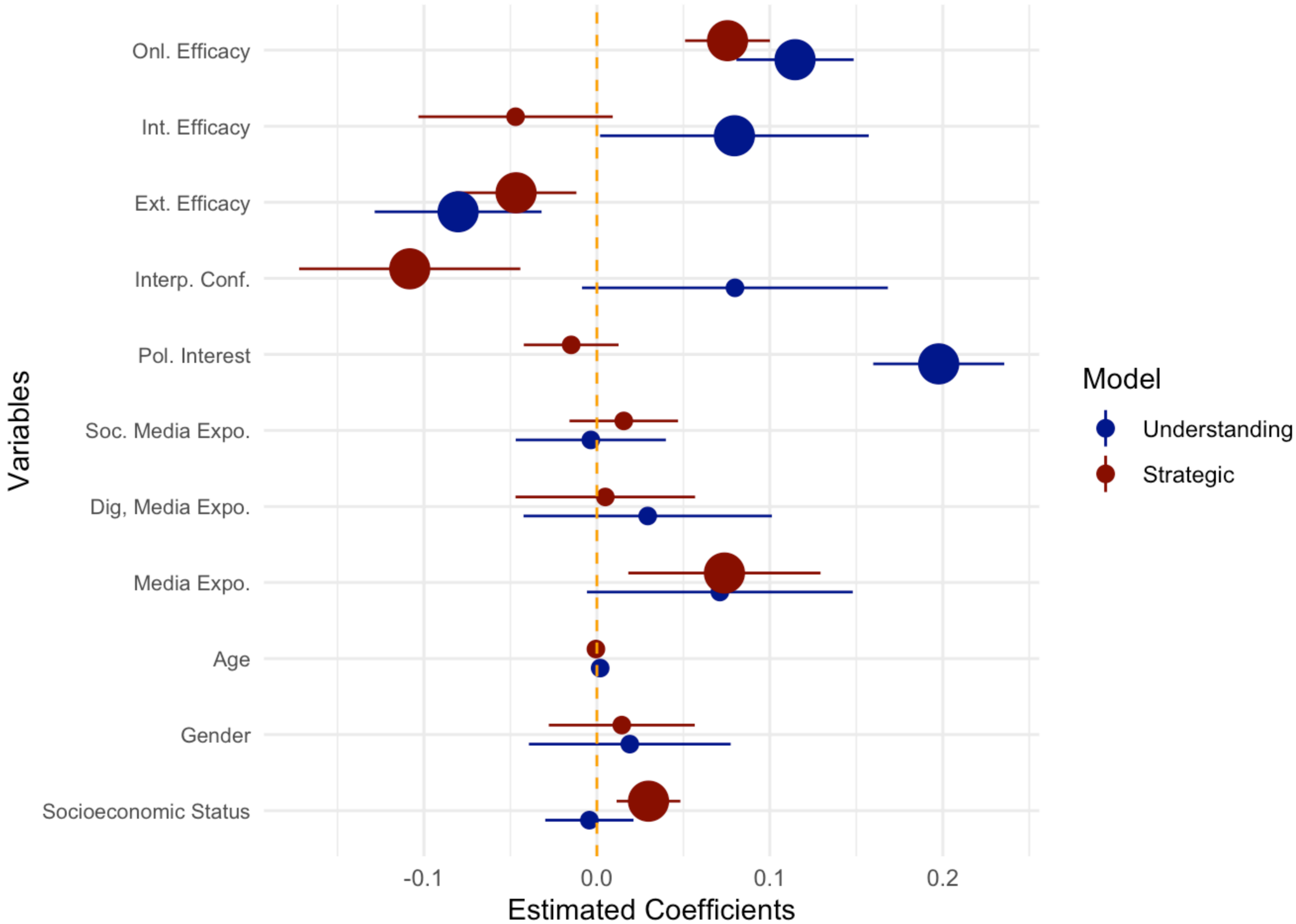
```
# Update the extraction function to avoid spaces in names
get_coef <- function(model, model_name) {
  coefs <- summary(model)$coefficients
  data.frame(
    Term = rownames(coefs),
```

```
    Estimate = coefs[, "Estimate"],
    Std_Error = coefs[, "Std. Error"],  # Rename to 'Std_Error'
    Model = model_name
  )
}

# Apply the function to both models
coef_df1 <- get_coef(model1, "Model 1")
coef_df2 <- get_coef(model2, "Model 2")

# Combine the data frames and remove the intercept
coef_df <- rbind(coef_df1, coef_df2)
coef_df <- coef_df[coef_df$Term != "(Intercept)", ]
```

```
# Assuming coef_df is already prepared as per previous instructions

# Update the extraction function to avoid spaces in names
get_coef <- function(model, model_name) {
  coefs <- summary(model)$coefficients
  data.frame(
    Term = rownames(coefs),
    Estimate = coefs[, "Estimate"],
    Std_Error = coefs[, "Std. Error"],  # Rename to 'Std_Error'
    Model = model_name
  )
}

# Apply the function to both models
coef_df1 <- get_coef(model1, "Model 1")
coef_df2 <- get_coef(model2, "Model 2")

# Combine the data frames and remove the intercept
coef_df <- rbind(coef_df1, coef_df2)
coef_df <- coef_df[coef_df$Term != "(Intercept)", ]

# Calculate 95% confidence intervals and determine significance
coef_df <- coef_df %>%
  mutate(
    Lower_CI = Estimate - 1.645 * Std_Error,  # Lower bound of the CI
    Upper_CI = Estimate + 1.645 * Std_Error,  # Upper bound of the CI
    Significant = if_else(Lower_CI > 0 & Upper_CI > 0 | Lower_CI < 0 & Upper_CI < 0, TRUE
    )

# Create a mapping of old variable names to new names
name_mapping <- c(
  ses = "Socioeconomic Status",
  sex = "Gender",
  age_num = "Age",
  media = "Media Expo.",
  digital = "Dig, Media Expo.",
```

```
  social = "Soc. Media Expo.",
  interest = "Pol. Interest",
  intercon = "Interp. Conf.",
  extef = "Ext. Efficacy",
  intef = "Int. Efficacy",
  ope = "Onl. Efficacy"
)

# Apply the mapping to the dataframe
coef_df <- coef_df %>%
  mutate(Term = factor(Term, levels = names(name_mapping), labels = name_mapping))

# Define a dodge width for better separation
dodge_width <- 0.5

# Create the plot with updated names
ggplot(coef_df, aes(x = Term, y = Estimate, ymin = Lower_CI, ymax = Upper_CI, color = Mod
  geom_pointrange(position = position_dodge(width = dodge_width), aes(size = Significant)
  geom_hline(yintercept = 0, linetype = "dashed", color = "orange") +
  theme_minimal() +
  labs(x = "Variables", y = "Estimated Coefficients") +
  coord_flip() +  # Flips the axes for better visualization of terms
  scale_color_manual(values = c("darkblue", "darkred"),
                     labels = c("Understanding", "Strategic")) +  # Set custom colors for
  scale_size_manual(values = c(0.5, 1.5), guide = FALSE) +  # Adjust line width based on
  theme(
    legend.position = "right",  # Hide the legend for line size
    axis.text.y = element_text(size = 8)  # Adjust text size if needed
  )
```

```
Warning: The `guide` argument in `scale_*()` cannot be `FALSE`. This was deprecated in
ggplot2 3.3.4.
ℹ Please use "none" instead.
```




```r
model2_1 <- lm(strate1 ~ ses + sex + age_num + media + digital + social + interest + inte
summary(model2_1)
```

```

Call:
lm(formula = strate1 ~ ses + sex + age_num + media + digital + 
    social + interest + intercon + extef + intef + ope, data = data_w1_scores)

Residuals:
    Min      1Q  Median      3Q     Max 
-1.8078 -0.8611 -0.4065  0.8093  3.6162 

Coefficients:
             Estimate Std. Error t value Pr(>|t|)    
(Intercept)  2.024671   0.172995  11.704  < 2e-16 ***
ses          0.088309   0.030263   2.918  0.00359 ** 
sex         -0.157543   0.069196  -2.277  0.02299 *  
age_num     -0.007486   0.002533  -2.955  0.00319 ** 
media        0.236788   0.091140   2.598  0.00950 ** 
digital     -0.095501   0.085165  -1.121  0.26237    
social       0.049481   0.051478   0.961  0.33666    
interest    -0.104875   0.044925  -2.334  0.01975 *  
intercon    -0.015691   0.104884  -0.150  0.88111    
```

```
extef        0.102832   0.057238   1.797  0.07267 .
intef       -0.127700   0.092126  -1.386  0.16598
ope          0.175655   0.040214   4.368 1.37e-05 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.141 on 1122 degrees of freedom
Multiple R-squared:  0.0797,    Adjusted R-squared:  0.07068
F-statistic: 8.834 on 11 and 1122 DF,  p-value: 3.331e-15
```

```
model2_2 <- lm(strate2 ~ ses + sex + age_num + media + digital + social + interest + inte
summary(model2_2)
```

```

Call:
lm(formula = strate2 ~ ses + sex + age_num + media + digital +
    social + interest + intercon + extef + intef + ope, data = data_w1_scores)

Residuals:
    Min      1Q  Median      3Q     Max
-2.6595 -1.0918  0.1060  0.7258  3.2237

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.750595   0.192185  14.312  < 2e-16 ***
ses          0.040685   0.033620   1.210   0.2265
sex          0.079711   0.076871   1.037   0.3000
age_num     -0.004419   0.002814  -1.570   0.1166
media        0.184645   0.101249   1.824   0.0685 .
digital     -0.036421   0.094612  -0.385   0.7003
social       0.062293   0.057188   1.089   0.2763
interest    -0.009673   0.049908  -0.194   0.8464
intercon    -0.232256   0.116519  -1.993   0.0465 *
extef       -0.139695   0.063587  -2.197   0.0282 *
intef       -0.031669   0.102345  -0.309   0.7571
ope          0.199520   0.044674   4.466 8.77e-06 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.267 on 1122 degrees of freedom
Multiple R-squared:  0.0559,    Adjusted R-squared:  0.04665
F-statistic:  6.04 on 11 and 1122 DF,  p-value: 1.173e-09
```

```
model2_3 <- lm(strate3 ~ ses + sex + age_num + media + digital + social + interest + inte
summary(model2_3)
```

```

Call:
lm(formula = strate3 ~ ses + sex + age_num + media + digital +
```

```
    social + interest + intercon + extef + intef + ope, data = data_w1_scores)

Residuals:
     Min       1Q   Median       3Q      Max 
-2.55167 -1.18015  0.07474  1.07228  2.83517 

Coefficients:
             Estimate Std. Error t value Pr(>|t|)    
(Intercept)  2.512255   0.207300  12.119  < 2e-16 ***
ses          0.060994   0.036264   1.682 0.092859 .  
sex          0.108827   0.082917   1.312 0.189628    
age_num      0.003122   0.003036   1.029 0.303918    
media        0.012810   0.109213   0.117 0.906647    
digital      0.187510   0.102053   1.837 0.066419 .  
social      -0.061888   0.061686  -1.003 0.315944    
interest    -0.052043   0.053833  -0.967 0.333877    
intercon    -0.446935   0.125683  -3.556 0.000392 ***
extef       -0.170322   0.068588  -2.483 0.013164 *  
intef       -0.159619   0.110395  -1.446 0.148488    
ope          0.050513   0.048188   1.048 0.294756    
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.367 on 1122 degrees of freedom
Multiple R-squared:  0.0354,	Adjusted R-squared:  0.02594 
F-statistic: 3.743 on 11 and 1122 DF,  p-value: 2.822e-05
```

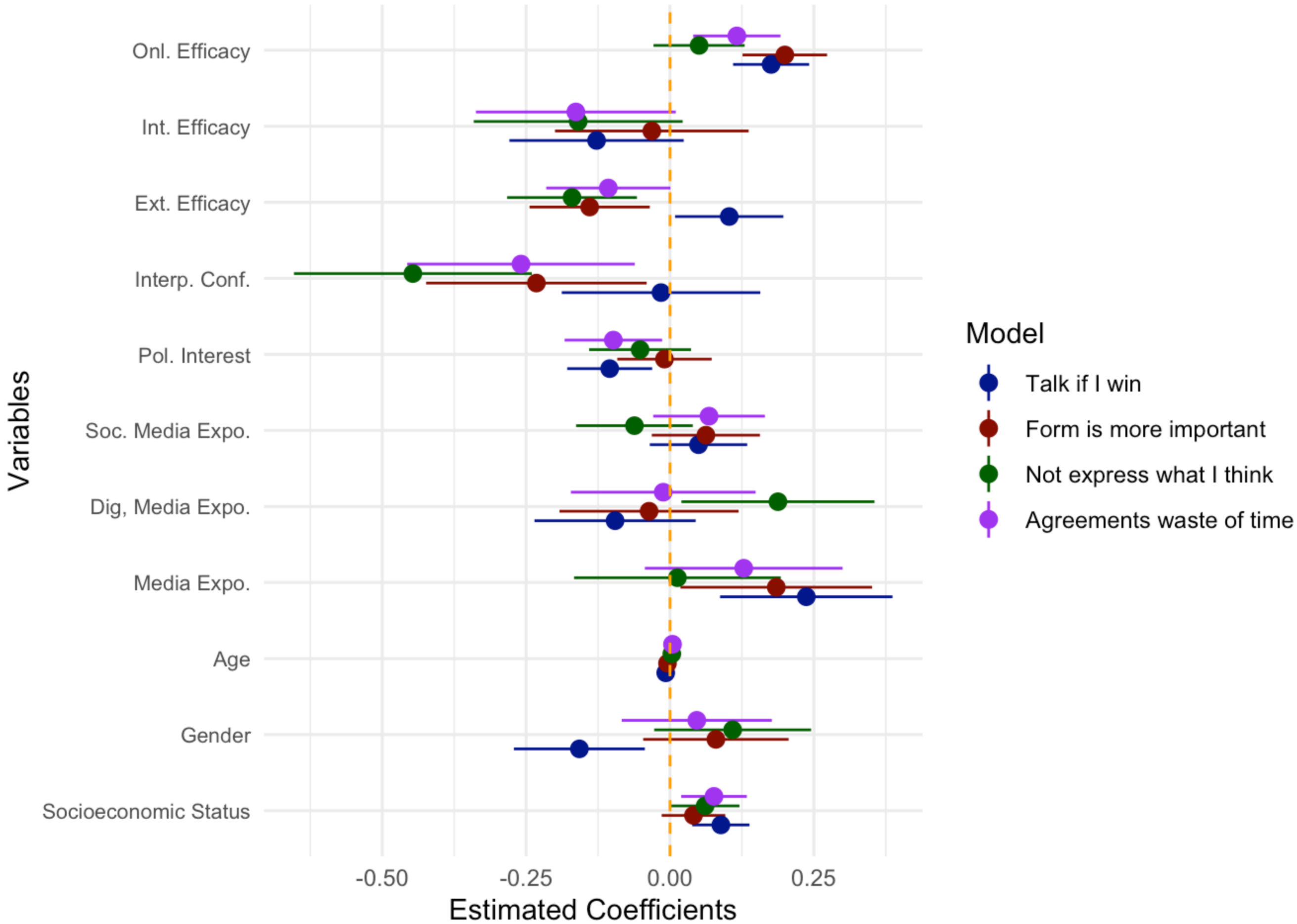
```r
model2_4 <- lm(strate4 ~ ses + sex + age_num + media + digital + social + interest + inte
summary(model2_4)
```

```

Call:
lm(formula = strate4 ~ ses + sex + age_num + media + digital + 
    social + interest + intercon + extef + intef + ope, data = data_w1_scores)

Residuals:
    Min      1Q  Median      3Q     Max 
-2.1903 -1.2713  0.2060  0.6673  3.0888 

Coefficients:
             Estimate Std. Error t value Pr(>|t|)    
(Intercept)  2.054059   0.198245  10.361   <2e-16 ***
ses          0.076373   0.034680   2.202   0.0279 *  
sex          0.046446   0.079295   0.586   0.5582    
age_num      0.004312   0.002903   1.485   0.1378    
media        0.128086   0.104442   1.226   0.2203    
digital     -0.011806   0.097596  -0.121   0.9037    
social       0.067790   0.058992   1.149   0.2507    
interest    -0.098500   0.051482  -1.913   0.0560 .  
intercon    -0.258985   0.120193  -2.155   0.0314 *  
```

```
extef       -0.107280   0.065592  -1.636   0.1022
intef       -0.163686   0.105573  -1.550   0.1213
ope          0.116130   0.046083   2.520   0.0119 *
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.307 on 1122 degrees of freedom
Multiple R-squared:  0.03437,   Adjusted R-squared:  0.0249
F-statistic:  3.63 on 11 and 1122 DF,  p-value: 4.539e-05
```

```r
# Apply the function to both models
coef_strate1 <- get_coef(model2_1, "Model S1")
coef_strate2 <- get_coef(model2_2, "Model S2")
coef_strate3 <- get_coef(model2_3, "Model S3")
coef_strate4 <- get_coef(model2_4, "Model S4")

# Combine the data frames and remove the intercept
coef_strate <- rbind(coef_strate1, coef_strate2, coef_strate3, coef_strate4)
coef_strate <- coef_strate[coef_strate$Term != "(Intercept)", ]

# Calculate 95% confidence intervals and determine significance
coef_strate <- coef_strate %>%
  mutate(
    Lower_CI = Estimate - 1.645 * Std_Error,  # Lower bound of the CI
    Upper_CI = Estimate + 1.645 * Std_Error,  # Upper bound of the CI
    Significant = if_else(Lower_CI > 0 & Upper_CI > 0 | Lower_CI < 0 & Upper_CI < 0, TRUE
  )



# Apply the mapping to the dataframe
coef_strate <- coef_strate %>%
  mutate(Term = factor(Term, levels = names(name_mapping), labels = name_mapping))

# Define a dodge width for better separation
dodge_width <- 0.5

# Create the plot with updated names
ggplot(coef_strate, aes(x = Term, y = Estimate, ymin = Lower_CI, ymax = Upper_CI, color =
  geom_pointrange(position = position_dodge(width = dodge_width)) +
  geom_hline(yintercept = 0, linetype = "dashed", color = "orange") +
  theme_minimal() +
  labs(x = "Variables", y = "Estimated Coefficients") +
  coord_flip() +  # Flips the axes for better visualization of terms
  scale_color_manual(
    values = c("darkblue", "darkred","darkgreen", "purple"),
    labels = c("Talk if I win", "Form is more important", "Not express what I think", "Ag
  scale_size_manual(values = c(0.5, 1.5), guide = FALSE) +  # Adjust line width based on
  theme(
    legend.position = "right",
```

```
    axis.text.y = element_text(size = 8)  # Adjust text size if needed
  )
```




```

# Alternative models

```
data_w1_scores$undersum <- (data_w1_scores$under1+data_w1_scores$under2+data_w1_scores$un
data_w1_scores$stratesum <- (data_w1_scores$strate1+data_w1_scores$strate2+data_w1_scores

data_w1_scores$mediasum <- (data_w1_scores$tv+data_w1_scores$cable+data_w1_scores$newspap
data_w1_scores$digitalsum <-(data_w1_scores$tradonline+data_w1_scores$online+data_w1_scor
data_w1_scores$socialsum <- (data_w1_scores$fb+data_w1_scores$insta+data_w1_scores$twitte

data_w1_scores$extefsum <- (data_w1_scores$extef1+data_w1_scores$extef2+data_w1_scores$ex
data_w1_scores$intefsum <- (data_w1_scores$intef1+data_w1_scores$intef2+data_w1_scores$in
data_w1_scores$opesum <- (data_w1_scores$ope1+data_w1_scores$ope2+data_w1_scores$ope3+dat
```

## Regressions

```
model_a1 <- lm(undersum ~ ses + sex + age_num + mediasum + digitalsum + socialsum + polin
summary(model_a1)
```
```

```
Call:
lm(formula = undersum ~ ses + sex + age_num + mediasum + digitalsum +
    socialsum + polint + intercon + extefsum + intefsum + opesum,
    data = data_w1_scores)

Residuals:
    Min      1Q  Median      3Q     Max
-3.7442 -0.5240  0.0544  0.6268  2.5909

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.030579   0.191775  10.588  < 2e-16 ***
ses         -0.032749   0.022025  -1.487 0.137323
sex          0.023171   0.050892   0.455 0.648976
age_num      0.003904   0.001886   2.070 0.038658 *
mediasum     0.072964   0.027529   2.650 0.008152 **
digitalsum   0.044280   0.033217   1.333 0.182794
socialsum   -0.003325   0.027952  -0.119 0.905347
polint       0.159450   0.020231   7.881 7.62e-15 ***
intercon     0.132121   0.077396   1.707 0.088086 .
extefsum    -0.093423   0.026991  -3.461 0.000558 ***
intefsum     0.110869   0.031466   3.523 0.000443 ***
opesum       0.179158   0.026154   6.850 1.21e-11 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.8403 on 1122 degrees of freedom
Multiple R-squared:  0.2523,    Adjusted R-squared:  0.245
F-statistic: 34.42 on 11 and 1122 DF,  p-value: < 2.2e-16
```

```r
model_a2 <- lm(stratesum ~ ses + sex + age_num + mediasum + digitalsum + socialsum + poli
summary(model_a2)
```

```
Call:
lm(formula = stratesum ~ ses + sex + age_num + mediasum + digitalsum +
    socialsum + polint + intercon + extefsum + intefsum + opesum,
    data = data_w1_scores)

Residuals:
     Min       1Q   Median       3Q      Max
-2.09354 -0.63014  0.05855  0.56001  3.00885

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)  2.013568   0.195005  10.326  < 2e-16 ***
ses          0.070481   0.022396   3.147  0.00169 **
sex          0.019065   0.051749   0.368  0.71264
age_num     -0.001469   0.001918  -0.766  0.44381
```

```
mediasum     0.091536   0.027993   3.270  0.00111 **
digitalsum   0.028691   0.033777   0.849  0.39583
socialsum    0.014811   0.028423   0.521  0.60240
polint      -0.046889   0.020572  -2.279  0.02284 *
intercon    -0.243804   0.078700  -3.098  0.00200 **
extefsum    -0.044184   0.027446  -1.610  0.10771
intefsum    -0.048129   0.031996  -1.504  0.13281
opesum       0.137534   0.026594   5.172 2.75e-07 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.8545 on 1122 degrees of freedom
Multiple R-squared:  0.07398,   Adjusted R-squared:  0.0649
F-statistic: 8.149 on 11 and 1122 DF,  p-value: 7.779e-14
```