Main Analysis - PureSpectrum Survey

Weifang Xu, Taylor Chewning, and Qing Wang

August 6, 2024

```
## Clean the working environment and set up the working directory
rm(list = ls())
setwd("/Users/qingwang/Downloads/Data Replication")

# load the libraries
library(tidyverse)
```

```
## Warning: package 'ggplot2' was built under R version 4.3.1
```

```
## Warning: package 'stringr' was built under R version 4.3.1
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.0     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to bec
```

```
library(texreg)
```

```
## Version:  1.38.6
## Date:     2022-04-06
## Author:   Philip Leifeld (University of Essex)
##
## Consider submitting praise using the praise or praise_interactive functions.
## Please cite the JSS article in your publications -- see citation("texreg").
##
## Attaching package: 'texreg'
##
## The following object is masked from 'package:tidyr':
##
##     extract
```

```
library(lmtest)
```

```
## Loading required package: zoo
##
## Attaching package: 'zoo'
##
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```r
library(sandwich)
library(ggplot2)
library(haven)

#### Table 1: Regression Estimates of Support for War (PureSpectrum Survey) ####

# load the cleaned dataset
df_clean <- readRDS("PureSpectrum/clean_data_PureSpectrum.rds")

# run the regression models
m1 <- lm(attack ~ hmrts + alliance, data = df_clean)
m2 <- lm(attack ~ alliance * hmrts, data = df_clean)
m3 <- lm(attack ~ alliance*hmrts +
                male + age_cat + edu4 + inc_10k, data = df_clean)

texreg(l = list(m1, m2, m3),
       reorder.coef= c(2, 3, 4, 5, 6, 7, 8, 1),
       custom.coef.names = c("(Intercept)", "Violating Human Rights", "U.S. Military Alliance"
                             "Violating Human Rights $\\times$ U.S. Military Alliance",
                             "Male", "Age", "Education", "Income"),
       stars = c(0.01, 0.05, 0.1),
       digits = 2,
       caption = "Regression Estimates of Support for War (PureSpectrum Survey)",
       caption.above = T,
       include.ci = F,
       include.rmse =F,
       include.rsq = F,
       include.adjrs = F,
       custom.note = "",
       label = "tab:main",
       fontsize = "small") %>%
  gsub(".begin.center.", "\\\\centering", .) %>%
  gsub(".end.center.", "", .)
```

```r
#### Figure 1: Impact of Treatments on Support for War (95% Confidence Intervals) ####

### Plot (1a) Support for Attack
# calculate the mean support for attack in each treatment group
df_ate <- df_clean %>%
  group_by(exp_4, alliance, hmrts) %>%
```

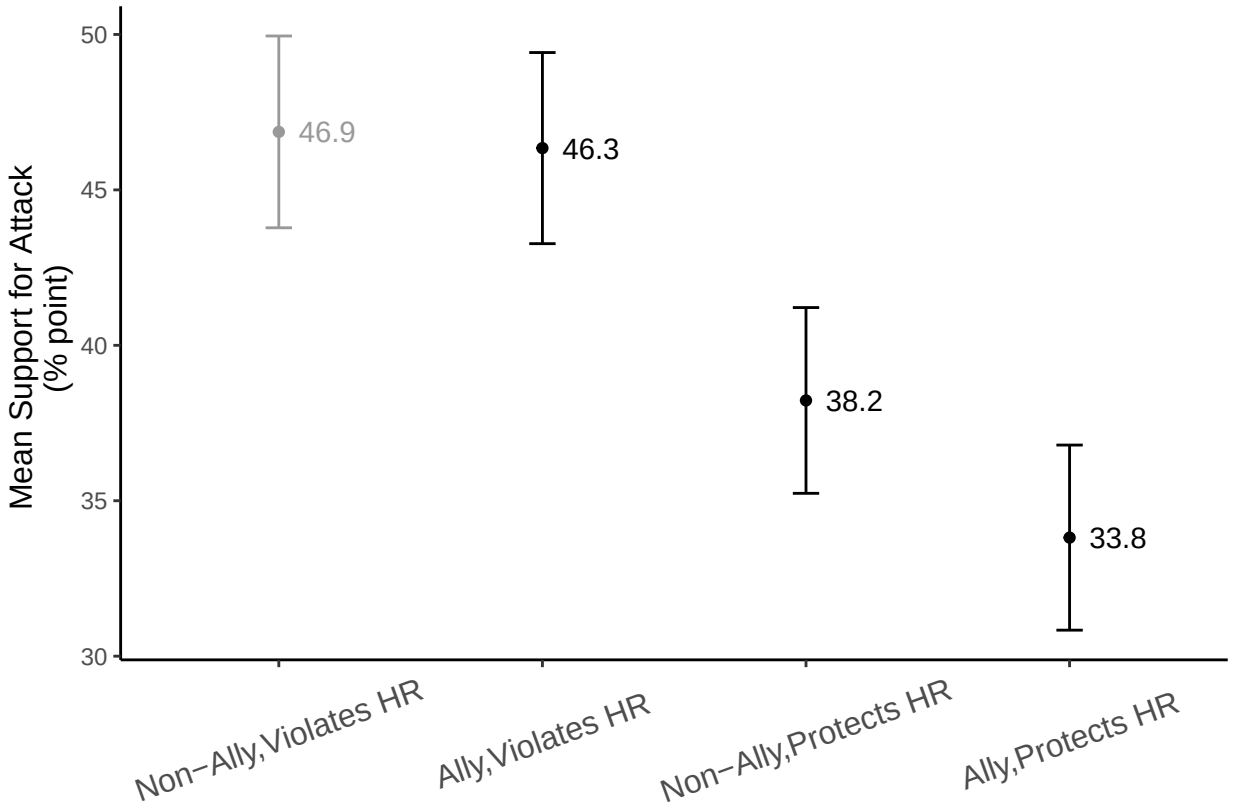
Table 1: Regression Estimates of Support for War (PureSpectrum Survey)

	Model 1	Model 2	Model 3
Violating Human Rights	10.57***	8.64***	8.80***
	(1.55)	(2.18)	(2.16)
U.S. Military Alliance	−2.45	−4.41**	−4.09*
	(1.55)	(2.20)	(2.17)
Violating Human Rights × U.S. Military Alliance		3.89	3.43
		(3.10)	(3.06)
Male			9.43***
			(1.58)
Age			−0.21***
			(0.05)
Education			−6.56***
			(2.53)
Income			0.85***
			(0.18)
(Intercept)	37.27***	38.23***	40.47***
	(1.33)	(1.54)	(3.02)
Num. obs.	4002	4002	4000

```
  summarise(ate = mean(attack, na.rm = TRUE),
            n = n(),
            sd = sd(attack, na.rm = TRUE),
            se = sd(attack, na.rm = TRUE) / sqrt(n)) %>%
  mutate(ci_low = ate - 1.96*se,
         ci_high = ate + 1.96*se)
```

```
## `summarise()` has grouped output by 'exp_4', 'alliance'. You can override using
## the `.groups` argument.
```

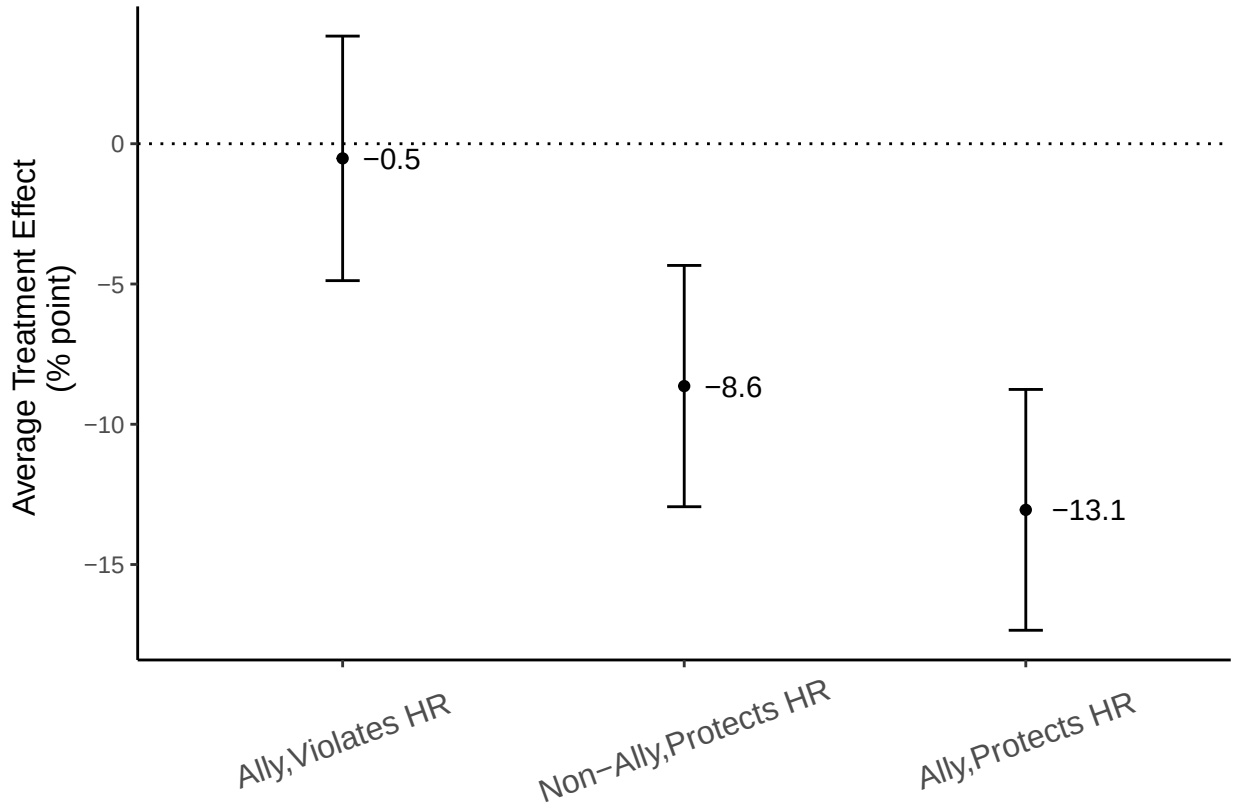
```
# plot the mean support for attack in each treatment group and the 95% CI
p <- ggplot(df_ate, aes(x = factor(exp_4, level=c('1', '3', '2', '4')), y = ate,
                    color=factor(exp_4))) +
  theme_classic() +
  geom_point()+
  geom_errorbar(aes(ymin=ci_low, ymax=ci_high), width=.1,
                position=position_dodge(0.05)) +
  scale_x_discrete(labels= c('Non-Ally,Violates HR', 'Ally,Violates HR',
                             'Non-Ally,Protects HR', "Ally,Protects HR")) +
  scale_color_manual(values=c('#999999', 'black', 'black', 'black')) +
  theme(legend.position = "none") +
  labs(x = "", y = "Mean Support for Attack \n (% point)", size = 12) +
  geom_text(aes(label=round(ate, 1)), position=position_dodge(width=0.9),
            vjust=.5, hjust = -.35) +
  theme(axis.text.x = element_text(angle = 20, hjust = 0.5, vjust = 0.5, size = 12),
        axis.title.y = element_text(size=12))

p
```




```r
# save the plot
# ggsave("ate-1.pdf", width = 6, height = 4)


### Plot (1b) Average Treatment Effect on Support for Attack
# calculate the difference in support for attack between 2-4 against baseline condition
est <- rep(NA, 4)
ci_low <- rep(NA, 4)
ci_high <- rep(NA, 4)
se <- rep(NA, 4)

for(i in 2:4){
  test <- t.test(df_clean$attack[df_clean$exp_4==i],
                 df_clean$attack[df_clean$exp_4==1])
  est[i] <- test[["estimate"]][["mean of x"]] - test[["estimate"]][["mean of y"]]
  ci_low[i] <- test[["conf.int"]][1]
  ci_high[i] <- test[["conf.int"]][2]
  se[i] <- test[["stderr"]]
}

df_ate_diff <- data.frame(exp_4 = df_ate$exp_4, est, ci_low, ci_high, se)
df_ate_diff <- df_ate_diff[-1, ]

# plot the differences and 95% CI
p1 <- ggplot(df_ate_diff, aes(x = factor(exp_4, level=c('3', '2', '4')), y = est)) +
```

```
  theme_classic() +
  geom_point()+
  geom_errorbar(aes(ymin=ci_low, ymax=ci_high), width=.1,
                position=position_dodge(0.05)) +
  scale_x_discrete(labels= c('Ally,Violates HR', 'Non-Ally,Protects HR',
                             'Ally,Protects HR')) +
  labs(x = "", y = "Average Treatment Effect \n (% point)") +
  geom_text(aes(label=round(est, 1)), position=position_dodge(width=0.9),
            vjust=.5, hjust = -.35) +
  geom_hline(yintercept = 0, linetype="dotted") +
  theme(axis.text.x = element_text(angle = 20, hjust = 0.5, vjust = 0.5, size = 12),
        axis.title.y = element_text(size=12))
```

```
p1
```




```
# ggsave("ate-diff-1.pdf", width = 6, height = 4)
```