Supplementary Material

Contents

1 Instructions for reproduction

From the OSF project page (osf.io/k9cvq), download the OSF Storage as a zip folder. Unzip on your computer. Also unzip the folder named `renv`, which ensures that the appropriate package versions are used.

Next you'll need to get raw data and save these into your project folders. Instructions for downloading financial data are below. In the event that researchers are unable to recover these data, the authors have static versions that are available upon request.

Financial data

The daily S&P500 closing prices were originally downloaded from Yahoo Finance[1], but download capabilities have been suspended. Identical data can be downloaded from MarketWatch. On this side, set the date range to start on January 1, 2018 and end on December 31, 2018. Download the data and save in the folder `data/raw` with the name `marketwatch_2018.csv`. Then, set a new date range to start on January 1, 2019 and end on December 31, 2019. Again, download the data and save it in the folder `data/raw` with the name `marketwatch_2019.csv`. Repeat this process a final time by setting the start date to January 1, 2020 and

[1] URLs available in the .Rmd file, or you can click the name of the website.

end on December 31, 2020. Again, download the data and save it in the folder `data/raw` with the name `marketwatch_2020.csv`.

VIX data can be downloaded from 2004 through present day at CBOE.com. Be sure to save this in the folder `data/raw` under the name `vixcurrent.csv`.

Treasury bond data can be downloaded from www.treasury.gov. Be sure to download data from 2020 (saved as `treasury10yr.xlsx`), 2019 (saved as `treasury10yr_2019.xlsx`), and 2018 (saved as `treasury10yr_2018.xlsx`), and save all three in the folder `data/raw`.

COVID-19 data

COVID-19 data come from the GitHub repository hosted by *The New York Times*. The code contained in this Rmarkdown file includes the scraping of data from this repository; there are no additional steps needed for reproduction.

SAPA data

Raw SAPA data is not currently publicly available for download. The authors anticipate making these data public in the near future on Dataverse. At that time, we will update this file to scrape raw data directly from Dataverse and reproduce all numbers.

Values necessary for reproducing the results – i.e., weighted daily averages and means – are available in this OSF project. We also share objects containing the descriptive statistics of the demographics and scale reliabilities. Readers interested in recreating the object used in IRT score are referred to Condon (2017) (code and links to data available here), which details the development of the SPI scales and the estimation of parameters for IRT scoring.

Census weights

In order to weight participants by demographics – thus better representing the US population – we use population estimates provided by the US Census. We used the data tables titled:

- All Races
- White Alone
- Non-Hispanic White Alone
- Black Alone
- Asian Alone

We used these files to aggregate the following categories: * None through 11th grade: less than high school degree * Associate's occupational and associate's academic: associate's degree * Master's, Professional, and Doctoral: graduate or professional degree

We also used additional and subtraction to estimate the following race/ethnicity categories: * Non-Hispanic White * Hispanic White * Mixed race/other

Categories were the unique intersection of sex (Male or Female), age (using the most detailed categories provided by the US census), education (Less than high school degree, high school, some college, college degree, associate's degree, graduate or professional degree), and race/ethnicity (Non-Hispanic White, Hispanic White, Black only, Asian only, Mixed race/other). By dividing the count of individuals in each category by the total, we were able to estimated proportions (see file `weights.xlsx`).

2 Data cleaning

The following code cleans raw data for analyses. Note that some code in this section is not evaluated. Raw (individual-level) data from SAPA will be posted on Dataverse by Fall 2022. Other data (NYT and financial) are not within the authors' rights to post, but detailed instructions are provided.

2.1 Financial indices

Here we load and clean the financial data. In all cases, we rename variables, set the date variable to class Date, and subset the data frame to the dates in question. Data are merged into a single file and saved in the `data/cleaned` folder.

```
# from scripts/prep_financial.R
# S&P500 ---------------------------------------------------------------------

#note these files have changed from original, to draw data from new source
#data remain unchanged
market20 = read_csv(here("data/raw/marketwatch_2020.csv"))
market19 = read_csv(here("data/raw/marketwatch_2019.csv"))
market18 = read_csv(here("data/raw/marketwatch_2018.csv"))

sp500 = full_join(market20, market19) %>% full_join(market18)
sp500$Date = as.Date(sp500$Date, format = "%m/%d/%Y")

sp500 = sp500 %>%
  select(Date, Close) %>%
  rename(SP500 = Close)

# VIX ------------------------------------------------------------------------

vixdata = read_csv(here("data/raw/vixcurrent.csv"), skip = 1)

vixdata = vixdata %>%
  mutate(Date = as.Date(Date, format = "%m/%d/%Y")) %>%
  select(Date, `VIX Close`) %>%
  rename(VIX = `VIX Close`) %>% # rename variable
  filter(Date > "2017-12-31" & Date < "2021-01-01") # only select data between these dates

# treasury bonds -------------------------------------------------------------

treasury = readxl::read_xlsx(here("data/raw/treasury10yr.xlsx"), sheet = 1)
treasury19 = readxl::read_xlsx(here("data/raw/treasury10yr_2019.xlsx"), sheet = 1)
treasury18 = readxl::read_xlsx(here("data/raw/treasury10yr_2018.xlsx"), sheet = 1)

treasury = treasury %>%
  full_join(treasury19) %>%
  full_join(treasury18) %>%
  mutate(Date = as.Date(Date, format = "%Y-%m-%d")) %>%
  select(Date, `10 Yr`) %>%
  rename(treasury = `10 Yr`) %>% # rename variable
  filter(Date > "2017-12-31" & Date < "2021-01-01") # only select data between these dates
```

```r
# merge files ------------------------------------------------------------

financial = full_join(sp500, vixdata) %>%
  full_join(treasury)

save(financial, file = here("data/cleaned/financial.Rdata"))
```

2.2 COVID cases from the *New York Times*

The *New York Times* uploads daily case and death counts to a GitHub repository. The following code extracts data from this repository and save the data frame to the `data/cleaned` folder.

```r
# from scripts/prep_nyt.R
github.location = "https://raw.githubusercontent.com/nytimes/covid-19-data/master/us.csv"
nyt_data = read_csv(url(github.location))

nyt_data = nyt_data %>%
  rename(Date = date)

save(nyt_data, file = here("data/cleaned/nyt.Rdata"))
```

2.3 SAPA data

The following code subsets the relevant items from the data frame of SAPA responses. We select only participants from the United States who are 13 years of age or older. We also subset the object `ItemLists` which is a list of vectors. Each vector contains the items which belong to a scale administered on the SAPA-Project; the name of the vector is the name of the scale. Here we subset the scales of the SPI.

We also create a subset of the data containing just the demographic variables. This is provided online for reproduction of estimates in the manuscript. [INSERT LINK HERE.]

Note the following code is not evaluated.

```r
# from scripts/prep_SAPA.R
load(here("data/raw/SAPAdata07feb2017thru14jan2021.rdata"))

# subset data ------------------------------------------------------------

demo <- c("servertime", "age", "sex", "education", "health", "jobstatus", "insurance")

subsetItems <- c("RID", demo, "country", itemsSPI)

SAPAdata <- SAPAdata07feb2017thru14jan2021 %>%
  select(all_of(subsetItems)) %>%
  filter(country == "USA") %>%
  select(-country) %>%
  filter(servertime > "2018-01-01" &  servertime < "2021-01-01") %>%
  filter(age >= 13)

SPIlists <- ItemLists[405:437]

save(SPIlists, SAPAdata, file = here("data/cleaned/SAPA.rdata"))
```

```
SAPAdemo = SAPAdata[,demo]

save(SPIlists, SAPAdemo, file = here("data/cleaned/SAPA_demo.rdata"))
```

2.4 Merge datasets

The following code is held in `scripts/merge_cleaned_data.R`. Note that in this supplemental file, the code used to score and aggregate personality traits are not evaluated.

Custom functions were created here to ensure identical procedures were followed in the calculation of daily means and variances (both weighted by participant demographics). We also have a separate script for raking weights, to facilitate use in multiple projects. These scripts are included in the OSF project.

```
# custom functions ------------------------------------------------------

source(here("scripts/function_weightedMean.R"))
source(here("scripts/function_weightedVar.R"))
source(here("scripts/weights_rake.R"))

# load data --------------------------------------------------------------

load(here("data/cleaned/financial.Rdata"))
load(here("data/cleaned/nyt.Rdata"))
```

Using raw SAPA data, we calculate mean scores for each of the Big Five traits. The `psych::alpha` function does double duty here of identifying reverse-scored items and calculating Cronbach's alpha for the report.

```
# This code is not evaluated
load(here("data/cleaned/SAPA.Rdata"))
# score personality -----------------------------------------------------

trait = character()
alpha_df = numeric()

n = 0
for(i in c("Agree", "Extra", "Consc", "Neuro", "Open")){
  n = n+1

  items = SPIlists[which(grepl(i, names(SPIlists)))][[1]]
  get_key = psych::alpha(SAPAdata[,items], check.keys = T)
  scored = scoreItems(keys = as.matrix(get_key$keys), items = SAPAdata[,items])

  trait[n] = i
  alpha_df[n] = get_key$total$raw_alpha
  scores = scored$scores[,1]
  scores = 10*((scores-mean(scores, na.rm=T))/(sd(scores, na.rm=T)))+50
  SAPAdata[,i] = scores
}

b5_alphas = data.frame(trait = trait, alpha = alpha_df)
```

Narrow traits are scored using an IRT-approach, requiring IRT parameters estimated in a separate sample. As these traits are scored, we again estimate Cronbach's alpha, even though this measure of internal consistency does not reflect the measure as scored.

```
# This code is not evaluated

# ----- score 27 personality factors (IRT scores) ----

# The IRT parameters derived loaded here are derived in Condon (2018) using publicly available SAPA dat

load(here("data/IRTinfoSPI27.rdata"))

# IRT score
dataSet <- subset(SAPAdata, select = c(orderForItems))

SPIirtScores <- matrix(nrow=dim(dataSet)[1], ncol=27)

for (i in 1:length(IRToutputSPI27)) {
  n = n +1
  trait_name = gsub("SPI27_", "", names(IRToutputSPI27)[i])
  data <- subset(dataSet, select = c(rownames(IRToutputSPI27[[i]]$irt$difficulty[[1]])))
  calibrations <- IRToutputSPI27[[i]]

  # save test information curves
  pdf(paste0(here("figures/IRT/"), trait_name, "_testInfo.pdf"))
  plot(calibrations, type = "test")
  dev.off()

  scored <- scoreIrt(calibrations, data, keys = NULL, cut = 0)
  trait_scores = scored$theta1
  trait_scores = (trait_scores - mean(trait_scores, na.rm = T))/sd(trait_scores, na.rm=T)
  if(trait_name %in% c("Irritability", "Sociability", "Honesty", "Industry",
    "Order", "ArtAppreciation", "Adaptability")) {trait_scores = -1*trait_scores}
  Tscores = trait_scores*10 + 50
  SPIirtScores[,i] <- Tscores

  alpha_test = psych::alpha(data, check.keys = T)
  trait[n] = trait_name
  alpha_df[n] = alpha_test$total$raw_alpha
}

SPIirtScores <- as.data.frame(SPIirtScores)
names(SPIirtScores) = gsub("SPI27_", "", names(IRToutputSPI27))

all_alphas = data.frame(trait = trait, alpha = alpha_df)

#add to sapa dataset
SAPAdata = cbind(SAPAdata, SPIirtScores)

SAPAdata = SAPAdata %>%
  select(-starts_with("q_"))

save(b5_alphas, all_alphas, file = here("data/cleaned/b5_alpha.Rdata"))

````
```
```

```
Each parciticpant is given a sample weight in accordance with their demographic characteristics (age, bi
```

```
# This code is not evaluated

# calculate weights -------------------------------------------------------

SAPAdata = SAPAdata %>%
  mutate(RID = as.character(RID),
         Date = as.character(servertime),
         Date = str_extract(Date, ".{10}"),
         Date = as.Date(Date))

weights2020 = SAPAdata %>%
  filter(Date >= "2020-01-01")

weights2020 = rake_weights(weights2020, pop_prop)

weights2019 = SAPAdata %>%
  filter(Date < "2020-01-01") %>%
  filter(Date >= "2019-01-01")

weights2019 = rake_weights(weights2019, pop_prop)

weights2018 = SAPAdata %>%
  filter(Date < "2019-01-01")

weights2018 = rake_weights(weights2018, pop_prop)

SAPAdata = full_join(weights2019, weights2020) %>%
  full_join(weights2018)
```

Here, weighted daily means (and weighted daily varaiances) are calculated. These daily means and variances are shared and made available on the Harvard Dataverse.

```
# This code is not evaluated

# means of personality ----------------------------------------------------

ppd = SAPAdata %>%
  mutate(Date = as.character(servertime),
         Date = str_extract(Date, ".{10}"),
         Date = as.Date(Date)) %>%
  group_by(Date) %>%
  summarize(N = n())

VARdata = SAPAdata %>%
  filter(!is.na(weightr)) %>%
  group_by(Date) %>%
  nest() %>%
  mutate(data = map(data, dw.var)) %>% #weighted variance
  unnest(data) %>%
  full_join(ppd)
```

```r
SAPAdata = SAPAdata %>%
  filter(!is.na(weightr)) %>%
  group_by(Date) %>%
  nest() %>%
  mutate(data = map(data, dw.mean)) %>% #weighted means
  unnest(data) %>%
  full_join(ppd)

save(SAPAdata, VARdata, file = here("data/cleaned/daily_scores.Rdata"))
```

We combine the daily means of personality with the daily indices for financial indicators (S&P500 closing prices, VIX, 10-year treasury prices).

```r
# this code is evaluated

# merge with financial and NYT----------------------------------------------

merged = left_join(financial, nyt_data) %>%
  full_join(SAPAdata)  %>%
  arrange(Date)
```

Not every date in the NYT COVID data has a non-missing value (e.g., all of 2018 and 2019. Here, we fill in missing values by setting the earliest date (Jan 1, 2018) to 0, and then filling values down, such that any missing value is filled in by the value of the prior day.

```r
# new cases -------------------------------------------------------------
merged$cases[1] = 0
merged$deaths[1] = 0

merged = merged %>%
  mutate_at(vars(cases, deaths), na.locf0) %>%
  mutate(new_cases = cases - lag(cases, default = cases[1]),
         new_deaths = deaths - lag(deaths, default = deaths[1]))
```

Here we calculate rolling averages. All COVID data is first calculated as a 7-day rolling average. Next, we create three data frames, which represent different periods of aggregation: 3-day, 7-day, and 14-day. In these data frames, rolling averages are calculated only for personality traits .

```r
# rolling average -------------------------------------------------------

merged = merged %>%
  mutate_at(vars(starts_with("new")),
            .f = function(x) rollapplyr(x, FUN = mean, partial = T, width = 7, fill = "extend"))

rolling_3 = merged %>%
  mutate_at(vars(-Date, -SP500, -VIX, -treasury, -new_cases, -new_deaths),
            .f = function(x) rollapplyr(x, FUN = mean, partial = T, width = 3, fill = "extend"))

rolling_7 = merged %>%
  mutate_at(vars(-Date, -SP500, -VIX, -treasury, -new_cases, -new_deaths),
            .f = function(x) rollapplyr(x, FUN = mean, partial = T, width = 7, fill = "extend"))
```

```r
rolling_14 = merged %>%
  mutate_at(vars(-Date, -SP500, -VIX, -treasury, -new_cases, -new_deaths),
            .f = function(x) rollapplyr(x, FUN = mean, partial = T, width = 14, fill = "extend"))
```

We create separate data sets for each calendar year.

```r
merged_2018 = filter(merged, Date > "2017-12-31" & Date <= "2018-12-31")
merged_2019 = filter(merged, Date > "2018-12-31" & Date <= "2019-12-31")
merged_2020 = filter(merged, Date > "2019-12-31")

rolling_3_2018 = filter(rolling_3, Date > "2017-12-31" & Date <= "2018-12-31")
rolling_3_2019 = filter(rolling_3, Date > "2018-12-31" & Date <= "2019-12-31")
rolling_3 = filter(rolling_3, Date > "2019-12-31")

rolling_7_2018 = filter(rolling_7, Date > "2017-12-31" & Date <= "2018-12-31")
rolling_7_2019 = filter(rolling_7, Date > "2018-12-31" & Date <= "2019-12-31")
rolling_7 = filter(rolling_7, Date > "2019-12-31")

rolling_14_2018 = filter(rolling_14, Date > "2017-12-31" & Date <= "2018-12-31")
rolling_14_2019 = filter(rolling_14, Date > "2018-12-31" & Date <= "2019-12-31")
rolling_14 = filter(rolling_14, Date > "2019-12-31")
```

We save all data frames in our cleaned data directory for future use.

```r
# save data ---------------------------------------------------------------


save(merged, file = here("data/cleaned/merged.Rdata"))

save(merged_2020, rolling_3, rolling_7, rolling_14,
     file = here("data/cleaned/rolling_dfs.Rdata"))

save(merged_2019, rolling_3_2019, rolling_7_2019, rolling_14_2019,
     file = here("data/cleaned/data2019.Rdata"))

save(merged_2018, rolling_3_2018, rolling_7_2018, rolling_14_2018,
     file = here("data/cleaned/data2018.Rdata"))
```

3 Materials and Methods

3.1 Psychological data

Personality data was collected as part of the Synthetic Aperture Personality Assessment (SAPA) project, an international online personality assessment tool.[1] Participants were motivated to complete the survey in exchange for customized feedback about their personality. Participants could answer as many questions as they chose, from 25 to 250 personality questions; more feedback was given to participants who answered more questions. Responding was also optional for all demographic prompts except age, gender, and a question asking whether participants had previously completed the survey. Participant data for this sample were collected between the dates of January 1 and June 1, 2020 (inclusive).We also used data from up to 7 days prior to January 1 when calculating rolling averages of trait scores by day. Participants were included in these analyses if they reported residing in the United States (N = 40,677). On average, 111.14 people participated in SAPA each day (minimum = 18, July 13; maximum = 282, December 07).

3.1.1 Participants

Participants (67% female) ranged from 13 to 90 years old (M = 25.29, SD = 11.34). Participants are generally healthy, with 61% (N = 23,981) of those responding to a single item rating of self-reported health as very good or excellent and 12% (N = 4,476) reporting their health is poor or fair. Of those who reported employment status (84%), the majority were either currently employed (45%; N = 15,391) or a student (39%; N = 13,373).

3.1.2 Measures

```
load(here("data/cleaned/b5_alpha.Rdata"))
alphas = papaja::printnum(round(all_alphas$alpha,2))
names(alphas) = all_alphas$trait
```

Personality was assessed using the hierarchical SAPA Personality Inventory [SPI-135;].[1] While this measure can be scored to generate estimates for each of the broad Big Five traits and 27 narrow traits, we pre-registered our analyses for this study to focus on the Big Five trait of Neuroticism and the five narrow traits most highly correlated with Neuroticism:[1] Adaptability, Anxiety, Emotional Stability, Irritability, and Well Being. As with other hierarchical frameworks for measuring personality, the scores within each level of the hierarchy are independent and the scores across levels of the hierarchy are somewhat dependent. In other words, some of the questions used to derive Neuroticism estimates (at the level of the broad Big Five dimensions) are also used for one (but not more than one) of the narrow 27 traits lower down in the hierarchy.

Each person's Big Five trait scores were calculated by taking the average response to the 14 items in each trait scale ($\alpha_N = 0.90); \alpha_E = 0.88); \alpha_A = 0.85; \alpha_C = 0.85; \alpha_O = 0.81$). Because the narrow traits are unidimensional, we used IRT-scoring to estimate person scores on those traits, providing more precise estimates than a traditional sum score approach. Reliability for IRT-scored scales is best conveyed through test information curves as shown in Figures S1-5 (see osf.io/6anw7). Cronbach's alphas are not typically appropriate in this case, but for interested readers we list them here: Sociability, $\alpha = 0.83$; Sensation Seeking, $\alpha = 0.85$; Attention Seeking, $\alpha = 0.87$; Charisma, $\alpha = 0.80$; Humor, $\alpha = 0.79$; EasyGoingness, $\alpha = 0.67$; Compassion, $\alpha = 0.83$; Honesty, $\alpha = 0.78$; Trust, $\alpha = 0.87$; Industry, $\alpha = 0.82$; Impulsivity, $\alpha = 0.86$; Order, $\alpha = 0.80$; Perfectionism, $\alpha = 0.65$; Self Control, $\alpha = 0.74$; Irritability, $\alpha = 0.88$; Adaptability, $\alpha = 0.79$; Anxiety, $\alpha = 0.90$; Emotional Stability, $\alpha = 0.81$; Irritability, $\alpha = 0.88$; Well Being, $\alpha = 0.90$;
Intellect, $\alpha = 0.84$; Creativity, $\alpha = 0.82$; Authoritarianism, $\alpha = 0.79$; Art Appreciation, $\alpha = 0.77$; Introspection, $\alpha = 0.77$; Conformity, $\alpha = 0.80$; Conservatism, $\alpha = 0.80$. All trait measures were T-scored (given a mean of 50 and a standard devation of 10) for ease of interpretation.

The test information curve for the following traits are also available here: Anxiety (Figure S1), Emotional Stability (Figure S2), Irritability (Figure S3), Adaptability (Figure S4), and Well-Being (Figure S5).

```
knitr::include_graphics(here("figures/IRT/Anxiety_testInfo.pdf"))
```

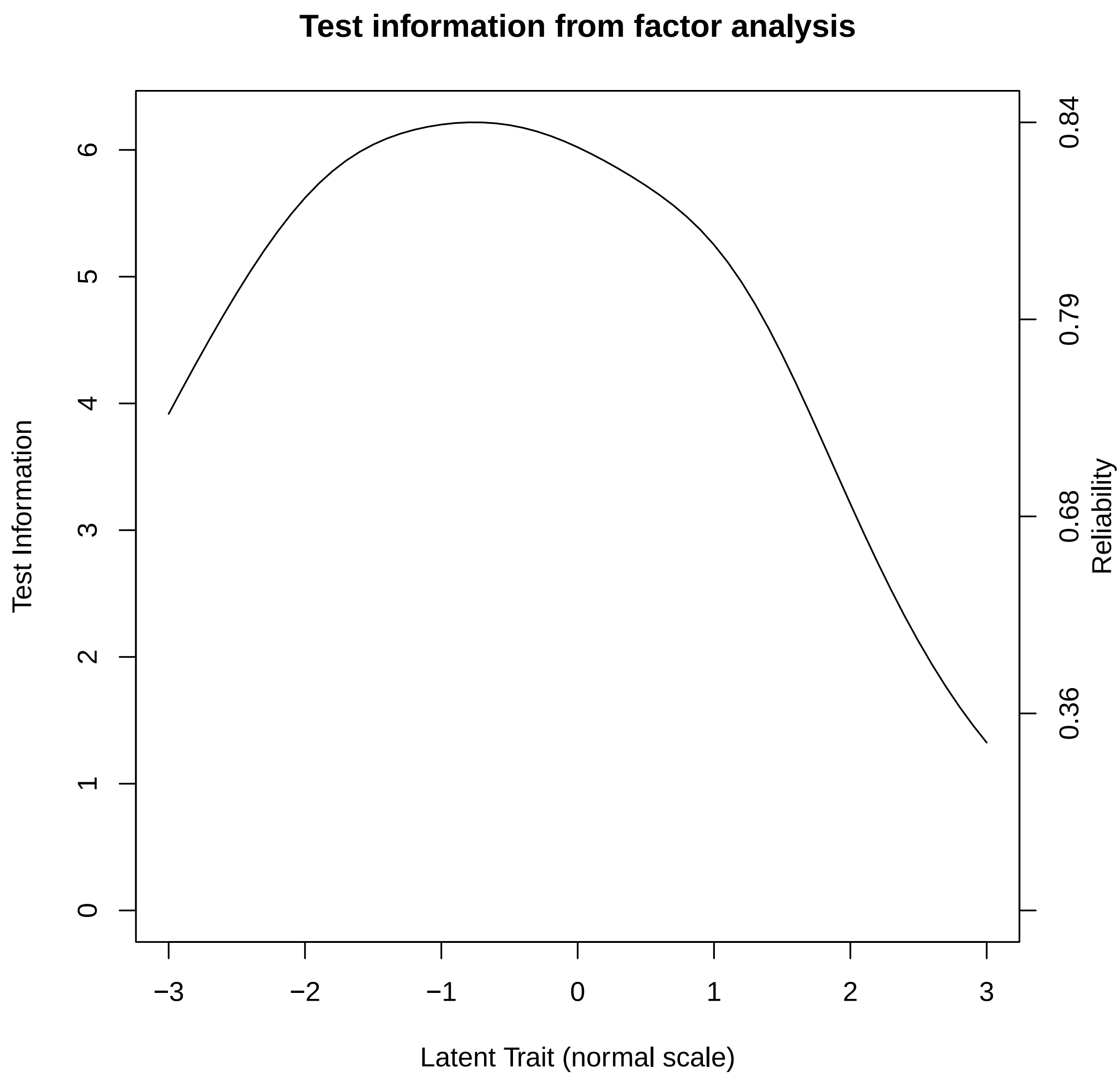

Figure S1: Test information curve for Anxiety scale. This curve is based on the validation sample used to determine item difficulty and discrimination for IRT analyses.

```r
knitr::include_graphics(here("figures/IRT/EmotionalStability_testInfo.pdf"))
```

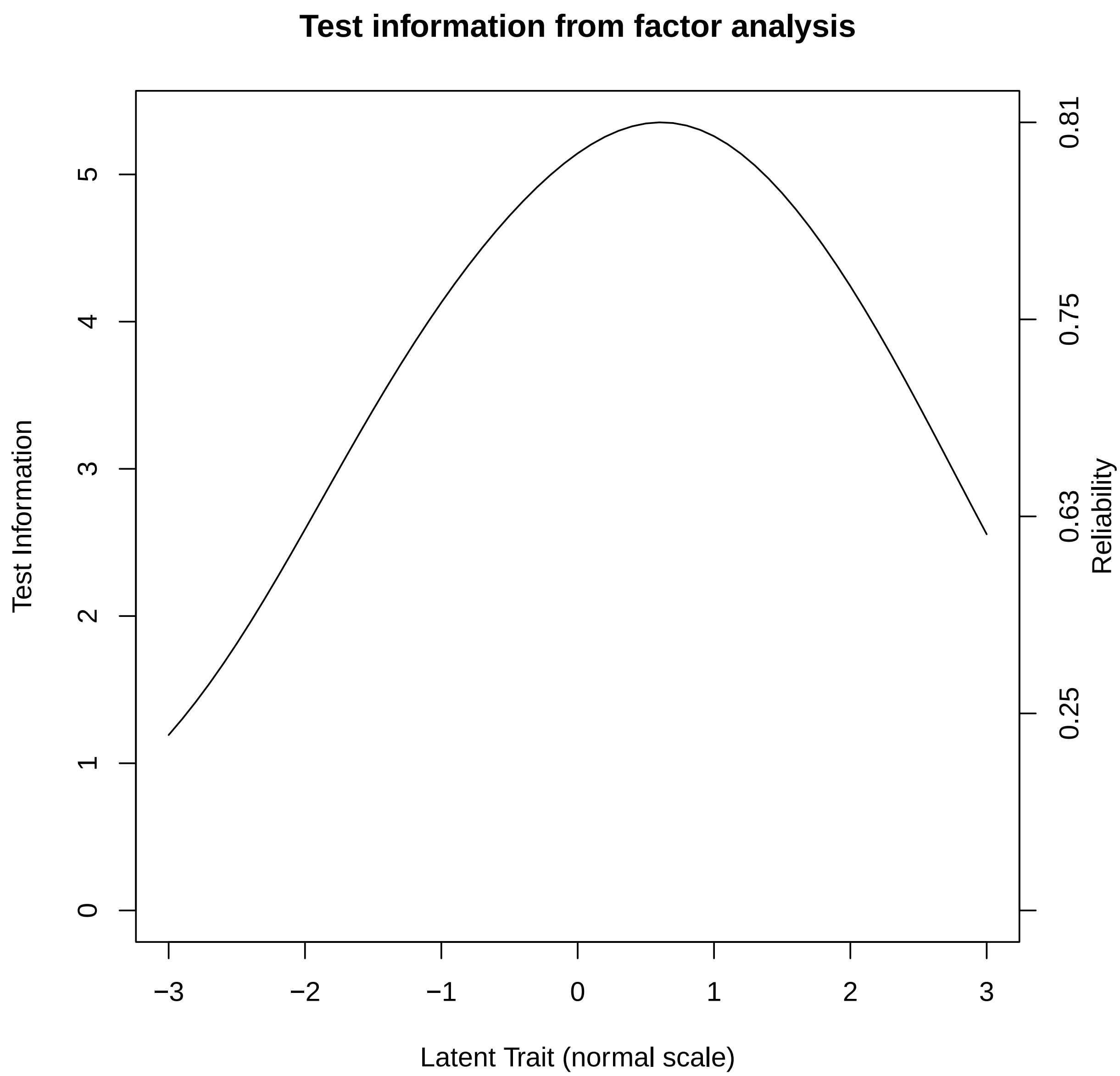

Figure S2: Test information curve for Emotional Stability scale. This curve is based on the validation sample used to determine item difficulty and discrimination for IRT analyses.

```r
knitr::include_graphics(here("figures/IRT/Irritability_testInfo.pdf"))
```

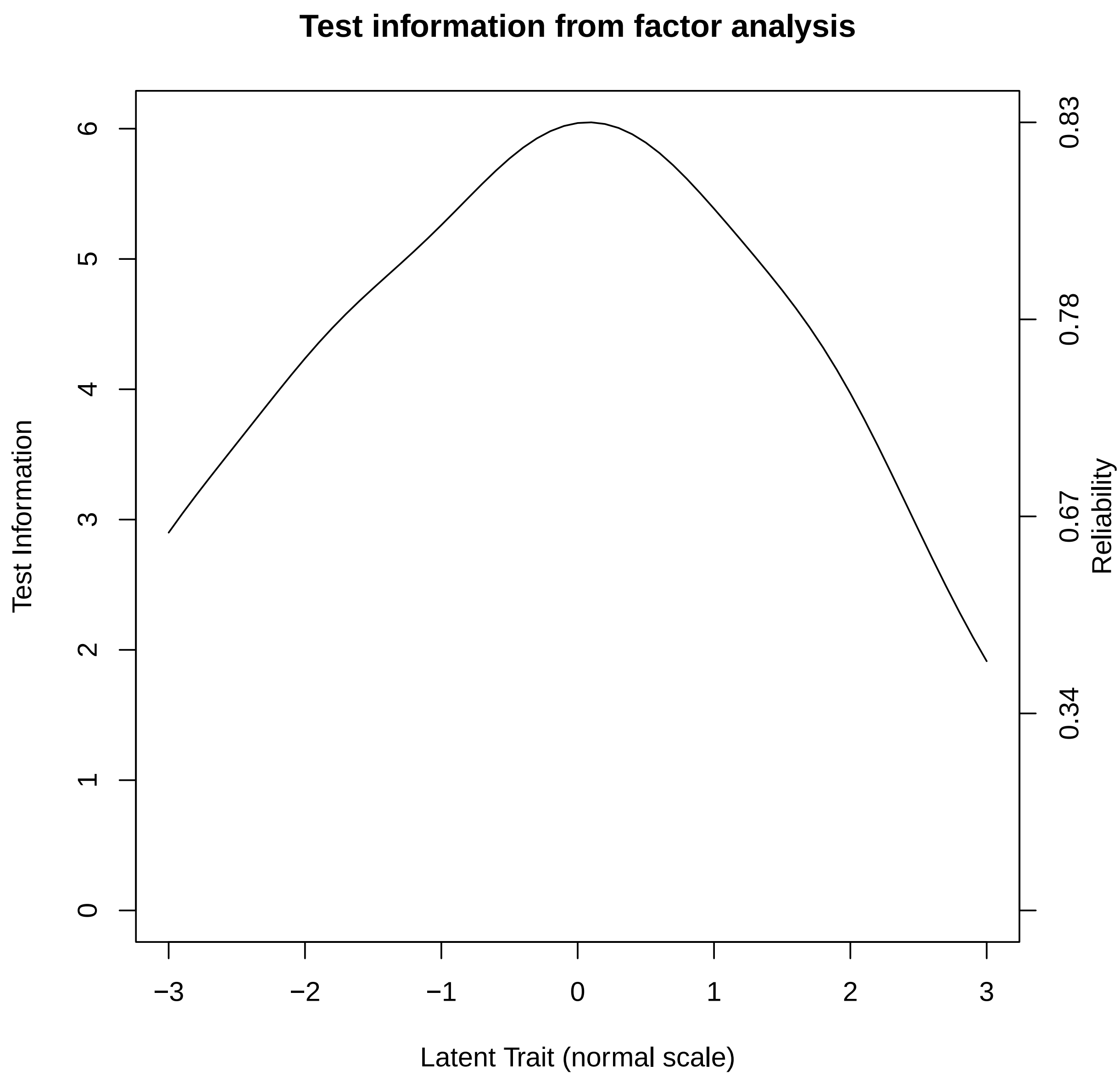

Figure S3: Test information curve for Irritability scale. This curve is based on the validation sample used to determine item difficulty and discrimination for IRT analyses.

```r
knitr::include_graphics(here("figures/IRT/Adaptability_testInfo.pdf"))
```

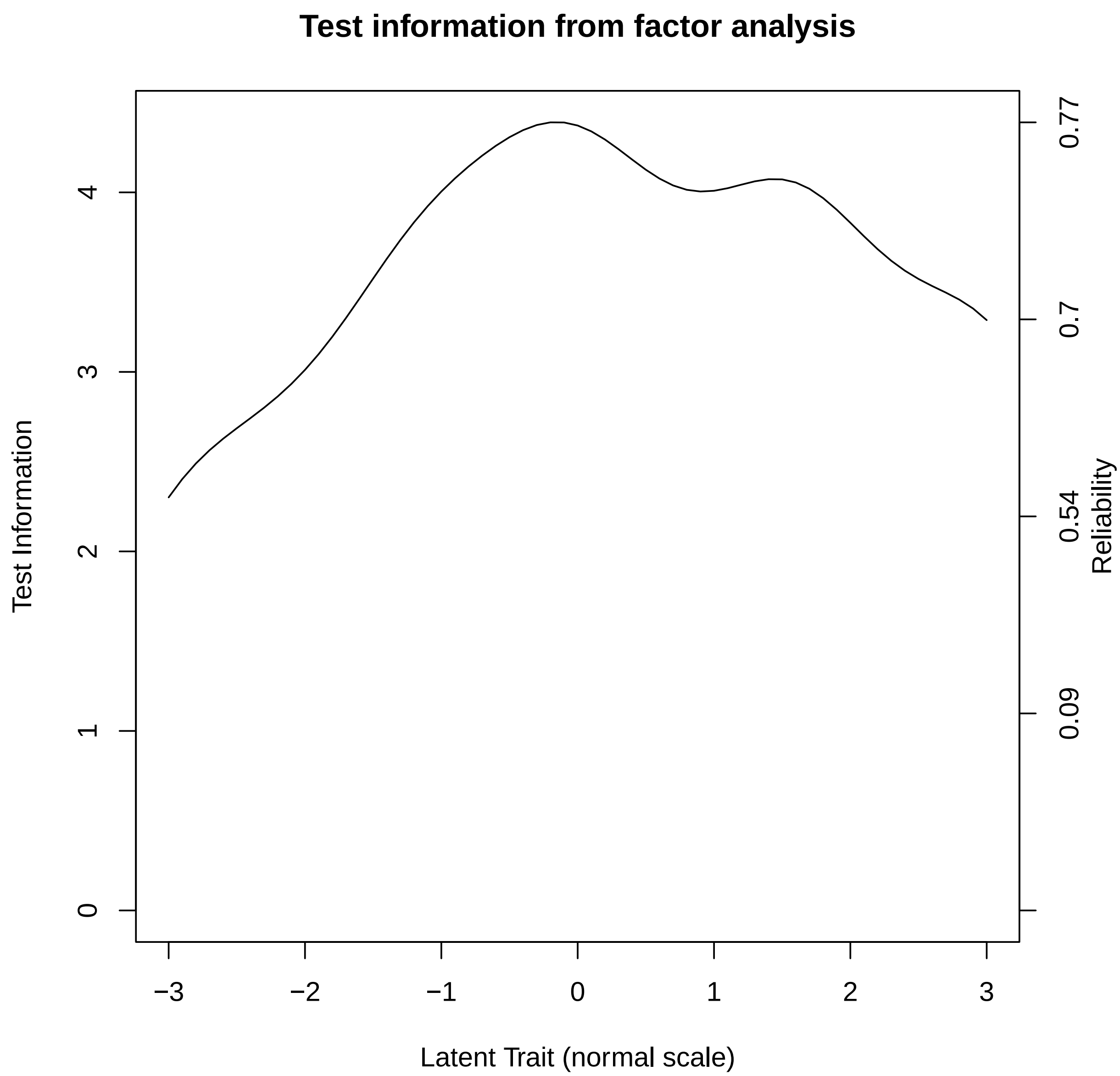

Figure S4: Test information curve for Adaptability scale. This curve is based on the validation sample used to determine item difficulty and discrimination for IRT analyses.

```r
knitr::include_graphics(here("figures/IRT/WellBeing_testInfo.pdf"))
```

Person-scores were aggregated at the level of day through weighted averaging. Weights were used to generate mean estimates that were more representative of the US population and calculated using a generalized raking procedure[2,3] that accounted for participant age, gender, educational attainment and race/ethnicy and compared these demographics to distributions provided by the US Census.[4]

Efforts were made to introduce sequential dependency within the personality data that would mirror the sequential dependency of the financial indices and the counts of COVID incidence and death. For example, the S&P 500 closing values were not independent from one day to the next. Opening stock prices on any given day are heavily influence by the closing prices of the previous (trading) day – this starting value influences closing prices, even during times of change. However, when any individual completes a personality questionnaire, their score does not "start" at the score of the person who took the questionnaire before them, nor is there any reason to suspect that the personalities of the individuals who take the survey are dependent on one another from one day to the next. To introduce sequential dependency in the data, we calculated rolling averages of each personality trait. These rolling averages were right-aligned, meaning the estimate for any given day was the average of the n-days that ended in that particular day. For each personality measure, we considered the daily average, the 3-day, 7-day, and 14-day rolling averages. Table **??** shows the means and standard deviations of traits at each of these aggregations. As can be seen in this table, rolling-day averages have an effect of reducing the variance of each trait.

3.2 Daily indexes

The financial state of the nation was measured using three indexes: the S&P500 (downloaded from https://finance.yahoo.com), the Chicago Board Options Exchange's CBOE Volatility Index (VIX; downloaded from http://www.cboe.com), and the 10-year treasury yield curve rates (downloaded from https://www.treasury.gov/).

The daily number of COVID-19 diagnoses and COVID-related deaths were downloaded from the database maintained by the *New York Times* (https://github.com/nytimes/covid-19-data). Cases and deaths are both the rolling 7-day average (right-aligned) of new cases or deaths in the United States, as is typically reported in major news sources.

4 Reported Analysis

We correlate the daily, 3-day, 7-day, and 14-day rolling averages of each personality trait with our four indexes. We set an alpha threshold of .05. Analyses were preregistered at https://osf.io/ypbfn. We deviated from the preregistration in two ways: by weighting averages based on demographics from the US Census, and by adding the rolling averages of traits to our analyses to match reporting for COVID-19 and the auto-correlated quality of financial data.

```r
# from scripts/correlations.R
source(here("scripts/function_matrix2df.R"))

# load data ------------------------------------------------------------

load(here("data/cleaned/SAPA.rdata"))
load(here("data/cleaned/rolling_dfs.Rdata"))
load(here("data/cleaned/data2019.Rdata"))



# set up ---------------------------------------------------------------
```

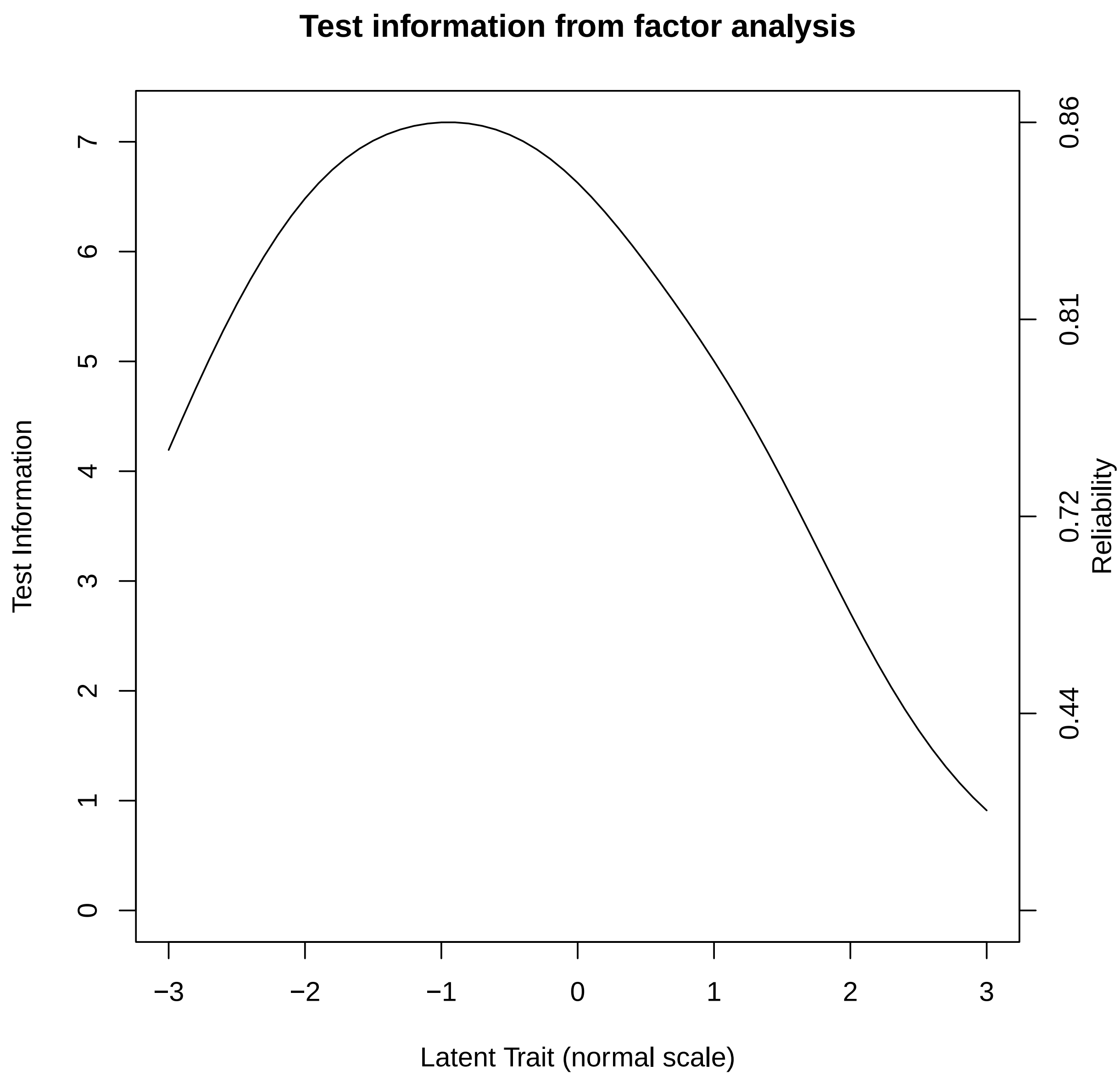

Figure S5: Test information curve for Well Being scale. This curve is based on the validation sample used to determine item difficulty and discrimination for IRT analyses.

```r
all_sets = data.frame(
  smoothing = rep(c(0, 3, 7, 14),4),
  year = rep(c("Current_all", "Current_preNE", "Current_postNE", "Prior"), each = 4)
)

pre_ne = lapply(list(merged_2020, rolling_3, rolling_7, rolling_14),
                FUN = function(x) filter(x, Date < "2020-03-13"))
post_ne = lapply(list(merged_2020, rolling_3, rolling_7, rolling_14),
                FUN = function(x) filter(x, Date >= "2020-03-13"))


all_sets$data =  c(list(merged_2020, rolling_3, rolling_7, rolling_14),
                   pre_ne, post_ne,
                   c(list(merged_2019, rolling_3_2019, rolling_7_2019, rolling_14_2019)))

# correlations -----------------------------------------------------------

financial_cors = function(x){
  cor(x[,c("SP500", "VIX", "treasury","new_cases", "new_deaths")], use = "pairwise")
}

neuroticism_cors = function(x){
  corr.test(x[, c("Neuro", "Anxiety", "WellBeing", "Adaptability", "EmotionalStability", "Irritability"
            x[,c("SP500", "VIX", "treasury","new_cases", "new_deaths")], adjust = "none")
}

personality_cors = function(x){
  corr.test(x[,str_remove(names(SPIlists)[-1],"SPI_135_27_5_")],
            x[,c("SP500", "VIX", "treasury", "new_cases", "new_deaths")], adjust = "none")
}

all_sets = all_sets %>%
  mutate(financialR = map(data, financial_cors),
         neuroticismR = map(data, neuroticism_cors),
         personalityR  = map(data, personality_cors)) %>%
  mutate(financial_Rmat = map(financialR, 1),
         neuroticism_Rmat = map(neuroticismR, 1),
         personality_Rmat = map(personalityR, 1)) %>%
  mutate(neuroticism_ci = map(neuroticismR, "ci"),
         personality_ci = map(personalityR, "ci"))

# word tables ------------------------------------------------------------

vars_for_man = c("SP500", "VIX", "treasury", "new_cases", "new_deaths",
                 "Neuro", "Anxiety", "WellBeing", "Adaptability", "EmotionalStability", "Irritability")
merged_2020 %>%
  select(all_of(vars_for_man)) %>%
  apa.cor.table(filename = here("tables/correlations_nosmooth.doc"))
```

```
##
##
## Means, standard deviations, and correlations with confidence intervals
##
```

```
##
##   Variable               M        SD       1            2
##   1. SP500               3217.86  319.23
##
##   2. VIX                 29.25    12.34    -.78**
##                                           [-.82, -.73]
##
##   3. treasury            0.89     0.35     .18**        -.42**
##                                           [.05, .29]   [-.51, -.31]
##
##   4. new_cases           52642.73 58684.07 .65**        -.23**
##                                           [.57, .71]   [-.35, -.11]
##
##   5. new_deaths          917.34   721.70   .24**        -.05
##                                           [.12, .35]   [-.17, .07]
##
##   6. Neuro               50.53    3.55     .15*         -.03
##                                           [.03, .27]   [-.15, .09]
##
##   7. Anxiety             50.23    2.86     .19**        -.09
##                                           [.07, .30]   [-.21, .03]
##
##   8. WellBeing           49.42    3.09     -.18**       .09
##                                           [-.29, -.06] [-.04, .21]
##
##   9. Adaptability        49.53    3.20     -.15*        .13*
##                                           [-.27, -.03] [.01, .25]
##
##   10. EmotionalStability 49.10    2.87     -.08         .03
##                                           [-.20, .04]  [-.10, .15]
##
##   11. Irritability       50.32    3.19     .12*         -.11
##                                           [.00, .24]   [-.23, .01]
##
##   3            4            5            6            7            8
##
##
##
##
##
##
##
##
##   -.21**
##   [-.33, -.09]
##
##   -.49**       .70**
##   [-.58, -.39] [.64, .75]
##
##   -.19**       .21**        .16**
##   [-.30, -.07] [.11, .30]   [.06, .26]
##
##   -.06         .21**        .11*         .81**
##   [-.18, .06]  [.11, .30]   [.01, .21]   [.77, .84]
```

```
##
##   .08           -.21**        -.16**        -.61**        -.44**
##   [-.04, .20]  [-.30, -.11] [-.26, -.06] [-.67, -.54] [-.52, -.36]
##
##   -.03          -.13*         -.07          -.28**        -.30**        .29**
##   [-.15, .09]  [-.23, -.03] [-.17, .03]  [-.37, -.18] [-.39, -.21] [.19, .38]
##
##   .10           -.17**        -.14**        -.73**        -.49**        .36**
##   [-.03, .22]  [-.27, -.07] [-.24, -.04] [-.77, -.68] [-.56, -.41] [.27, .45]
##
##   -.10          .14**         .14**         .68**         .40**         -.38**
##   [-.22, .03]  [.04, .24]   [.04, .24]   [.62, .73]   [.31, .48]   [-.46, -.29]
##
##   9             10
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##
##
##
##
##
##
##
##
##
##   .12*
##   [.02, .22]
##
##   -.20**        -.46**
##   [-.29, -.09] [-.53, -.37]
##
##
## Note. M and SD are used to represent mean and standard deviation, respectively.
## Values in square brackets indicate the 95% confidence interval.
## The confidence interval is a plausible range of population correlations
## that could have caused the sample correlation (Cumming, 2014).
##  * indicates p < .05. ** indicates p < .01.
##
```

```r
rolling_3 %>%
  select(all_of(vars_for_man)) %>%
  apa.cor.table(filename = here("tables/correlations_3day.doc"))
```

```
##
##
## Means, standard deviations, and correlations with confidence intervals
##
##
##   Variable               M        SD       1            2
##   1. SP500               3217.86  319.23
##
##   2. VIX                 29.25    12.34    -.78**
##                                            [-.82, -.73]
##
##   3. treasury            0.89     0.35     .18**        -.42**
##                                            [.05, .29]   [-.51, -.31]
##
##   4. new_cases           52642.73 58684.07 .65**        -.23**
##                                            [.57, .71]   [-.35, -.11]
##
##   5. new_deaths          917.34   721.70   .24**        -.05
##                                            [.12, .35]   [-.17, .07]
##
##   6. Neuro               50.54    2.07     .23**        -.05
##                                            [.11, .35]   [-.17, .08]
##
##   7. Anxiety             50.23    1.66     .34**        -.17**
##                                            [.22, .44]   [-.29, -.05]
##
##   8. WellBeing           49.41    1.76     -.28**       .13*
##                                            [-.39, -.17] [.00, .25]
##
##   9. Adaptability        49.53    1.79     -.27**       .19**
##                                            [-.38, -.15] [.06, .30]
##
##   10. EmotionalStability 49.09    1.65     -.11         -.01
##                                            [-.23, .01]  [-.14, .11]
##
##   11. Irritability       50.31    1.92     .15*         -.10
##                                            [.02, .26]   [-.22, .02]
##
##   3            4            5            6            7            8
##
##
##
##
##
##
##
##
##   -.21**
##   [-.33, -.09]
```

```
## 
##    -.49**         .70**                                                                    
##    [-.58, -.39] [.64, .75]                                                                
##                                                                                           
##    -.22**         .38**         .31**                                                      
##    [-.34, -.10] [.29, .46]    [.21, .40]                                                  
##                                                                                           
##    -.09           .37**         .22**         .78**                                        
##    [-.21, .04]  [.27, .45]    [.12, .31]    [.73, .81]                                    
##                                                                                           
##    .07            -.37**        -.29**        -.61**        -.45**                         
##    [-.05, .20]  [-.45, -.27] [-.38, -.19] [-.67, -.54] [-.53, -.36]                       
##                                                                                           
##    .01            -.25**        -.14**        -.29**        -.34**        .29**            
##    [-.12, .13]  [-.34, -.15] [-.24, -.04] [-.38, -.19] [-.43, -.24] [.19, .38]            
##                                                                                           
##    .17**          -.32**        -.29**        -.75**        -.44**        .38**            
##    [.04, .28]   [-.41, -.23] [-.38, -.19] [-.79, -.70] [-.52, -.36] [.28, .46]            
##                                                                                           
##    -.12           .24**         .25**         .70**         .40**         -.40**           
##    [-.24, .01]  [.14, .34]    [.16, .35]    [.64, .75]    [.31, .48]    [-.48, -.31]       
##                                                                                           
##    9              10                                                                      
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## 
## 
## 
## 
##    .15**
##    [.05, .25]
## 
##    -.20**         -.54**
##    [-.29, -.10] [-.60, -.46]
```

```
##
##
## Note. M and SD are used to represent mean and standard deviation, respectively.
## Values in square brackets indicate the 95% confidence interval.
## The confidence interval is a plausible range of population correlations
## that could have caused the sample correlation (Cumming, 2014).
##  * indicates p < .05. ** indicates p < .01.
##
```

```
rolling_7 %>%
  select(all_of(vars_for_man)) %>%
  apa.cor.table(filename = here("tables/correlations_7day.doc"))
```

```
##
##
## Means, standard deviations, and correlations with confidence intervals
##
##
##   Variable              M        SD       1            2
##   1. SP500              3217.86  319.23
##
##   2. VIX                29.25    12.34    -.78**
##                                           [-.82, -.73]
##
##   3. treasury           0.89     0.35     .18**        -.42**
##                                           [.05, .29]   [-.51, -.31]
##
##   4. new_cases          52642.73 58684.07 .65**        -.23**
##                                           [.57, .71]   [-.35, -.11]
##
##   5. new_deaths         917.34   721.70   .24**        -.05
##                                           [.12, .35]   [-.17, .07]
##
##   6. Neuro              50.54    1.41     .38**        -.08
##                                           [.26, .48]   [-.20, .04]
##
##   7. Anxiety            50.23    1.17     .45**        -.17**
##                                           [.35, .55]   [-.29, -.05]
##
##   8. WellBeing          49.40    1.24     -.42**       .21**
##                                           [-.51, -.31] [.09, .33]
##
##   9. Adaptability       49.54    1.22     -.40**       .24**
##                                           [-.50, -.29] [.12, .35]
##
##   10. EmotionalStability 49.09   1.09     -.18**       .01
##                                           [-.30, -.06] [-.11, .13]
##
##   11. Irritability      50.32    1.29     .31**        -.24**
##                                           [.19, .41]   [-.36, -.13]
##
##   3            4            5            6            7            8
##
##
```

```
##
##
##
##
##
##
##   -.21**
##   [-.33, -.09]
##
##   -.49**       .70**
##   [-.58, -.39] [.64, .75]
##
##   -.30**       .54**        .45**
##   [-.41, -.18] [.47, .61]   [.36, .52]
##
##   -.15*        .51**        .31**        .79**
##   [-.27, -.03] [.43, .58]   [.21, .40]   [.75, .83]
##
##   .12          -.49**       -.37**       -.68**       -.50**
##   [-.01, .24]  [-.57, -.41] [-.46, -.28] [-.73, -.62] [-.57, -.41]
##
##   .08          -.36**       -.21**       -.31**       -.40**       .33**
##   [-.04, .20]  [-.44, -.26] [-.31, -.11] [-.40, -.22] [-.48, -.31] [.24, .42]
##
##   .19**        -.47**       -.43**       -.72**       -.45**       .44**
##   [.06, .30]   [-.55, -.39] [-.51, -.34] [-.77, -.67] [-.53, -.36] [.35, .52]
##
##   -.13*        .35**        .38**        .73**        .46**        -.53**
##   [-.25, -.00] [.25, .43]   [.28, .46]   [.68, .77]   [.37, .54]   [-.60, -.46]
##
##   9            10
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##
##
##
##
##
```

```
##
##
##
##   .09
##   [-.02, .19]
##
##   -.20**       -.53**
##   [-.30, -.10] [-.60, -.45]
##
##
## Note. M and SD are used to represent mean and standard deviation, respectively.
## Values in square brackets indicate the 95% confidence interval.
## The confidence interval is a plausible range of population correlations
## that could have caused the sample correlation (Cumming, 2014).
##  * indicates p < .05. ** indicates p < .01.
##
```

```
rolling_14 %>%
  select(all_of(vars_for_man)) %>%
  apa.cor.table(filename = here("tables/correlations_14day.doc"))
```

```
##
##
## Means, standard deviations, and correlations with confidence intervals
##
##
##   Variable              M        SD       1            2
##   1. SP500              3217.86  319.23
##
##   2. VIX                29.25    12.34    -.78**
##                                           [-.82, -.73]
##
##   3. treasury           0.89     0.35     .18**        -.42**
##                                           [.05, .29]   [-.51, -.31]
##
##   4. new_cases          52642.73 58684.07 .65**        -.23**
##                                           [.57, .71]   [-.35, -.11]
##
##   5. new_deaths         917.34   721.70   .24**        -.05
##                                           [.12, .35]   [-.17, .07]
##
##   6. Neuro              50.52    1.06     .49**        -.13*
##                                           [.39, .57]   [-.25, -.01]
##
##   7. Anxiety            50.21    0.92     .55**        -.23**
##                                           [.46, .63]   [-.35, -.11]
##
##   8. WellBeing          49.41    0.92     -.52**       .29**
##                                           [-.61, -.43] [.17, .40]
##
##   9. Adaptability       49.56    0.84     -.59**       .39**
##                                           [-.66, -.50] [.28, .49]
##
##   10. EmotionalStability 49.09   0.80     -.27**       .08
```

```
##                                              [-.38, -.15] [-.05, .20]
##
##   11. Irritability       50.29    0.88      .42**        -.34**
##                                             [.31, .52]   [-.44, -.23]
##
##   3            4            5            6            7            8
##
##
##
##
##
##
##
##
##   -.21**
##   [-.33, -.09]
##
##   -.49**       .70**
##   [-.58, -.39] [.64, .75]
##
##   -.40**       .70**        .55**
##   [-.50, -.29] [.65, .75]   [.48, .62]
##
##   -.20**       .64**        .39**        .83**
##   [-.32, -.08] [.57, .70]   [.30, .47]   [.80, .86]
##
##   .10          -.57**       -.38**       -.69**       -.52**
##   [-.03, .22]  [-.64, -.50] [-.46, -.29] [-.74, -.64] [-.59, -.44]
##
##   .14*         -.49**       -.32**       -.40**       -.45**       .44**
##   [.02, .26]   [-.57, -.41] [-.41, -.23] [-.48, -.31] [-.52, -.36] [.35, .52]
##
##   .23**        -.65**       -.56**       -.70**       -.48**       .45**
##   [.11, .34]   [-.71, -.59] [-.62, -.48] [-.75, -.64] [-.55, -.40] [.37, .53]
##
##   -.19**       .43**        .45**        .72**        .49**        -.54**
##   [-.31, -.07] [.34, .51]   [.36, .53]   [.67, .76]   [.41, .57]   [-.61, -.46]
##
##   9            10
##
##
##
##
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##
##
```

```
##
##
##
##
##
##
##
##
##
##
##
##   .11*
##   [.01, .21]
##
##   -.25**        -.53**
##   [-.34, -.15] [-.60, -.46]
##
##
## Note. M and SD are used to represent mean and standard deviation, respectively.
## Values in square brackets indicate the 95% confidence interval.
## The confidence interval is a plausible range of population correlations
## that could have caused the sample correlation (Cumming, 2014).
##  * indicates p < .05. ** indicates p < .01.
##
```

```
rfig = all_sets %>%
  filter(smoothing == 7) %>%
  filter(year == "Current_postNE") %>%
  select(personality_ci) %>%
  mutate(personality_ci = map(personality_ci, matrix2df)) %>%
  unnest(cols = c(personality_ci)) %>%
  separate(vars, into = c("trait", "financial"), sep = "-") %>%
  mutate(
    trait = factor(trait,
                   levels = c(
                     "Extra", "Scblt", "SnstS", "AttnS", "Chrsm", "Humor", "EsyGn",
                     "Agree", "Cmpss", "Hnsty", "Trust",
                     "Consc", "Indst", "Impls", "Order", "Prfct", "SlfCn",
                     "Neuro", "Anxty", "EmtnS", "Irrtb", "EmtnE", "Adptb", "WllBn",
                     "Open", "Intll", "Crtvt", "Athrt", "ArtAp", "Intrs", "Cnfrm", "Cnsrv"
                   ),
                   labels = c(
                     "Extraversion", "Sociability", "Sensation Seeking", "Attention Seeking", "Charisma
                     "Agreeableness", "Compassion", "Honesty", "Trust",
                     "Conscientiousness", "Industry", "Impulsivity", "Order", "Perfectionism", "Self Co
                     "Neuroticism", "Anxiety", "Emotional Stability", "Irritability", "Emotional Expres
                     "Openness", "Intellect", "Creativity", "Authoritarianism", "Art Appreciation", "In
    financial = factor(financial,
                       levels = c("nw_cs", "nw_dt", "SP500", "VIX", "trsry"),
                       labels = c("COVID cases", "COVID deaths", "S&P 500", "VIX", "US10Y Yields"))) %>
  mutate(
    group = case_when(
      trait %in% c("Extraversion", "Agreeableness", "Conscientiousness", "Neuroticism", "Openness") ~ "
      TRUE ~ "Narrow Traits")) %>%
```

```r
  mutate(fisherz = map_dbl(r, fisherz),
         density = map_dbl(fisherz, pnorm))

rfig %>%
  filter(financial == "COVID deaths") %>%
  mutate(trait = fct_reorder(trait, r, .desc = TRUE)) %>%
  ggplot(aes(x = trait, y = r)) +
  geom_point(aes(color = density)) +
  geom_errorbar(aes(color = density, ymin = lower, ymax = upper), width = .01) +
  geom_hline(aes(yintercept = 0), linetype = "dashed") +
  geom_text(aes(y = .92,
                label = papaja::printnum(r, gt1 = F)),
            hjust = 1) +
  geom_text(aes(y = .93,
                label = paste0(
                  " [",
                  papaja::printnum(lower, gt1 = F),
                  ", ",
                  papaja::printnum(upper, gt1 = F),
                  "]")),
            hjust = 0) +
  scale_color_gradient(low = "#1B9E77", high = "#D95F02") +
  scale_y_continuous(limits = c(-1, 1.5),
                     breaks = c(-1, -.5, 0, .5, 1)) +
  guides(color = F)+
  facet_grid(group~., space = "free", scales = "free")+
  labs(x = NULL, y = NULL, title = "Correlation with daily COVID deaths") +
  coord_flip() +
  theme_pubr()
```

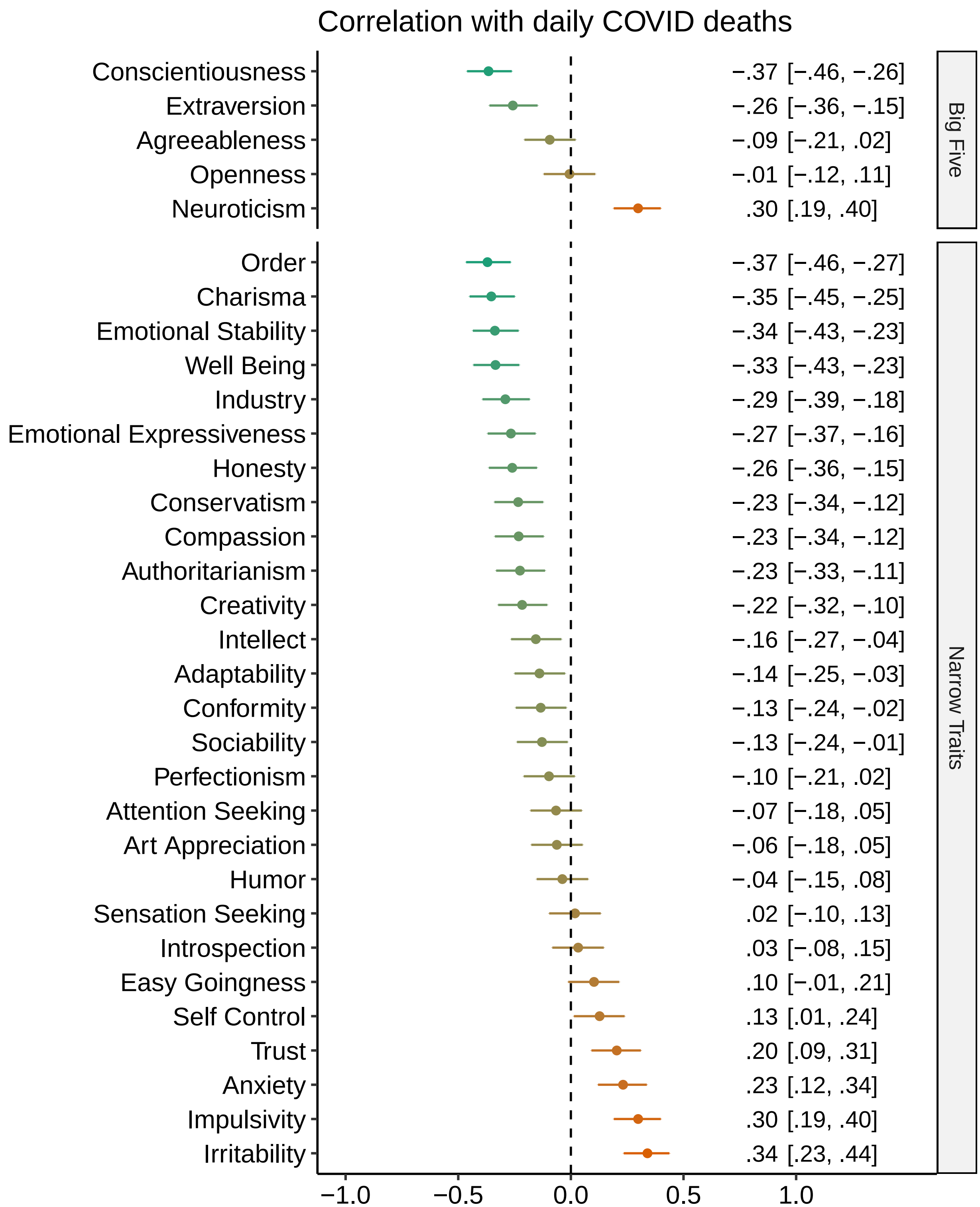

Figure S6: Correlations of personality states with daily COVID-19 deaths.

```r
rfig %>%
  filter(financial == "VIX") %>%
  mutate(trait = fct_reorder(trait, r, .desc = TRUE)) %>%
  ggplot(aes(x = trait, y = r)) +
  geom_point(aes(color = density)) +
  geom_errorbar(aes(color = density, ymin = lower, ymax = upper), width = .01) +
  geom_hline(aes(yintercept = 0), linetype = "dashed") +
  geom_text(aes(y = .92,
                label = papaja::printnum(r, gt1 = F)),
            hjust = 1) +
  geom_text(aes(y = .93,
                label = paste0(
                  " [",
                  papaja::printnum(lower, gt1 = F),
                  ", ",
                  papaja::printnum(upper, gt1 = F),
                  "]")),
            hjust = 0) +
  scale_color_gradient(low = "#1B9E77", high = "#D95F02") +
  scale_y_continuous(limits = c(-1, 1.5),
                     breaks = c(-1, -.5, 0, .5, 1)) +
  guides(color = F)+
  facet_grid(group~., space = "free", scales = "free")+
  labs(x = NULL, y = NULL, title = "Correlation with VIX") +
  coord_flip() +
  theme_pubr()
```

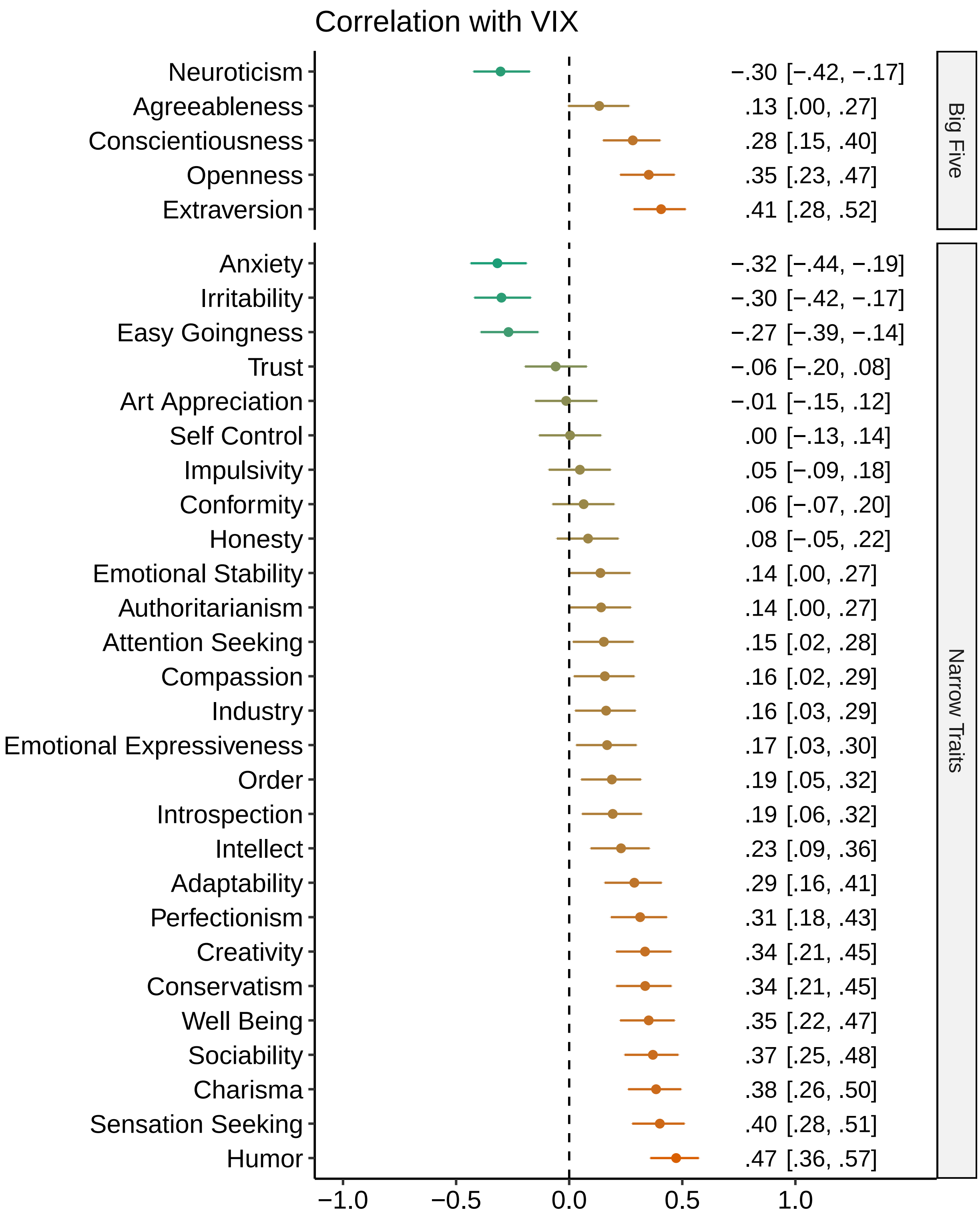

Figure S7: Correlation of personality states with daily VIX

```r
rfig %>%
  filter(financial == "US10Y Yields") %>%
  mutate(trait = fct_reorder(trait, r, .desc = TRUE)) %>%
  ggplot(aes(x = trait, y = r)) +
  geom_point(aes(color = density)) +
  geom_errorbar(aes(color = density, ymin = lower, ymax = upper), width = .01) +
  geom_hline(aes(yintercept = 0), linetype = "dashed") +
  geom_text(aes(y = .92,
              label = papaja::printnum(r, gt1 = F)),
          hjust = 1) +
  geom_text(aes(y = .93,
              label = paste0(
                " [",
                papaja::printnum(lower, gt1 = F),
                ", ",
                papaja::printnum(upper, gt1 = F),
                "]")),
          hjust = 0) +
  scale_color_gradient(low = "#1B9E77", high = "#D95F02") +
  scale_y_continuous(limits = c(-1, 1.5),
                     breaks = c(-1, -.5, 0, .5, 1)) +
  guides(color = F)+
  facet_grid(group~., space = "free", scales = "free")+
  labs(x = NULL, y = NULL, title = "Correlation with US10Y Yields") +
  coord_flip() +
  theme_pubr()
```

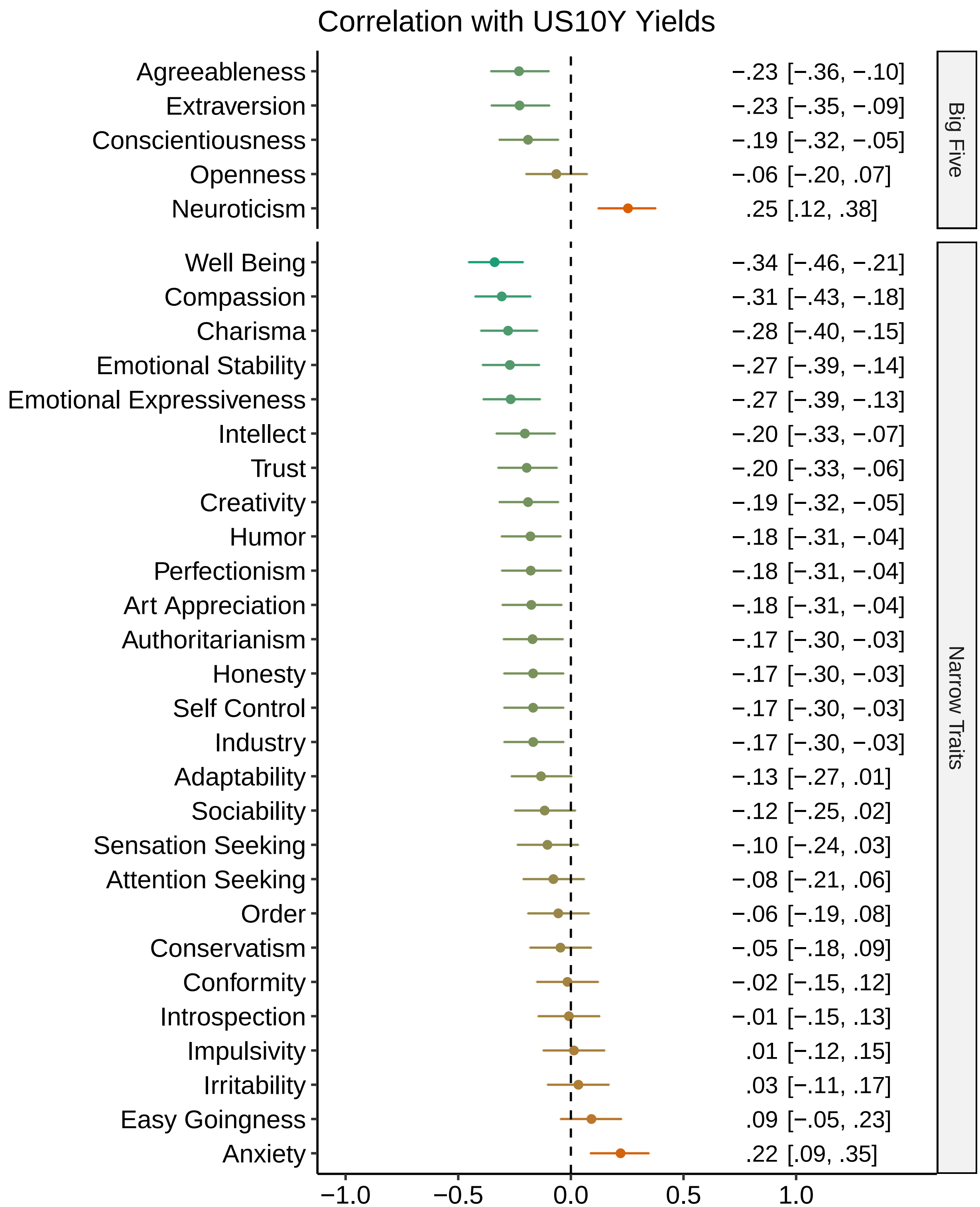

Figure S8: Correlation of personality states with daily US10Y Yields

```r
load(here("data/cleaned/rolling_dfs.Rdata"))
load(here("data/cleaned/data2019.Rdata"))

all_p = full_join(rolling_7, rolling_7_2019) %>%
  mutate(
    season = case_when(
      Date >= as.Date("2020-10-1") ~ "Fall",
      Date >= as.Date("2020-6-2") ~ "Summer",
      Date >= as.Date("2020-3-13") ~ "Spring",
      Date >= as.Date("2020-1-1") ~ "Winter",
      Date >= as.Date("2019-10-1") ~ "Fall",
      Date >= as.Date("2019-6-2") ~ "Summer",
      Date >= as.Date("2019-3-13") ~ "Spring",
      TRUE ~ "Winter"),
    year = case_when(
      Date >= as.Date("2020-1-1") ~ "2020",
      TRUE ~ "2019")
    ) %>%
  filter(season %in% c("Winter", "Spring"))

all_diff = all_p %>%
  gather(trait, tscore, Agree:Conservatism) %>%
  group_by(trait, year) %>%
  nest() %>%
  mutate(ttest = map(data, ~t.test(tscore ~ season, data = .x))) %>%
  mutate(ttest = map(ttest, broom::tidy)) %>%
  select(trait, year, ttest) %>%
  unnest(cols = c(ttest)) %>%
  ungroup() %>%
  mutate(p.adj = p.adjust(p.value, method = "holm"),
         p.adj.sig = case_when(
           p.adj < .001 ~ "***",
           p.adj < .01 ~ "**",
           p.adj < .05 ~ "*",
           TRUE ~ ""
         ),
         p.adj = papaja::printp(p.adj))

interaction_diff = all_p %>%
  gather(trait, tscore, Agree:Conservatism) %>%
  group_by(trait) %>%
  nest() %>%
  mutate(ttest = map(data, ~lm(tscore ~ season*year, data = .x))) %>%
  mutate(ttest = map(ttest, broom::tidy, conf.int = T)) %>%
  select(trait, ttest) %>%
  unnest(cols = c(ttest)) %>%
  filter(grepl(":", term)) %>%
  ungroup() %>%
  mutate_at(vars(estimate, conf.low, conf.high), ~.x*-1) %>%
  mutate(p.adj = p.adjust(p.value, method = "holm"),
         p.adj.sig = case_when(
           p.adj < .001 ~ "***",
           p.adj < .01 ~ "**",
```

```
          p.adj < .05 ~ "*",
          TRUE ~ ""
        ),
        p.adj = papaja::printp(p.adj)) %>%
  select(trait, estimate, conf.low, conf.high, p.adj.sig) %>%
  mutate(term = "interaction")

all_diff %>%
  filter(year == "2019") %>%
  select(trait, estimate, conf.low, conf.high, p.adj.sig) %>%
  mutate(term = "difference") %>%
  full_join(interaction_diff) %>%
  mutate(scale = case_when(
    trait %in% c("Agree", "Consc", "Extra", "Neuro", "Open") ~ "Big 5",
    TRUE ~ "Narrow 27"),
    sigy = case_when(
      term == "difference" & estimate > 0 ~ conf.high + .3,
      term == "difference" & estimate <= 0 ~ conf.low - .3,
      term != "difference" & estimate > 0 ~ conf.low + .3,
      term != "difference" & estimate <= 0 ~ conf.high - .3
    )) %>%
  mutate(term = factor(term, levels = c("difference","interaction"),
                       labels = c("Change from Winter\nto Spring 2020",
                                  "Difference in change\nfrom 2019 to 2020"))) %>%
  ggplot(aes(x = reorder(trait, estimate), y = estimate, fill = term)) +
  geom_bar(stat = "identity") +
  geom_errorbar(aes(ymin = conf.low, ymax = conf.high), width = .3) +
  geom_text(aes(y = sigy, label = p.adj.sig)) +
  coord_flip() +
  labs(x = NULL, y = NULL, title = "Trait change over time") +
  guides(fill = F) +
  facet_grid(scale~term, scales = "free", space = "free") +
  theme_pubr()
```

```
all_diff %>%
  filter(year == "2020") %>%
  select(trait, estimate, conf.low, conf.high, p.adj.sig) %>%
  mutate(scale = case_when(
    trait %in% c("Agree", "Consc", "Extra", "Neuro", "Open") ~ "Big 5",
    TRUE ~ "Narrow 27"),
    sigy = case_when(
      estimate > 0 ~ conf.high + .3,
      estimate <= 0 ~ conf.low - .3,
      estimate > 0 ~ conf.low + .3,
      estimate <= 0 ~ conf.high - .3
    )) %>%
  ggplot(aes(x = reorder(trait, estimate), y = estimate)) +
  geom_bar(stat = "identity", fill = "#FC8D62") +
  geom_errorbar(aes(ymin = conf.low, ymax = conf.high), width = .3) +
  geom_text(aes(y = sigy, label = p.adj.sig)) +
  coord_flip() +
  labs(x = NULL, y = NULL, title = "Trait change over time") +
  guides(fill = F) +
```

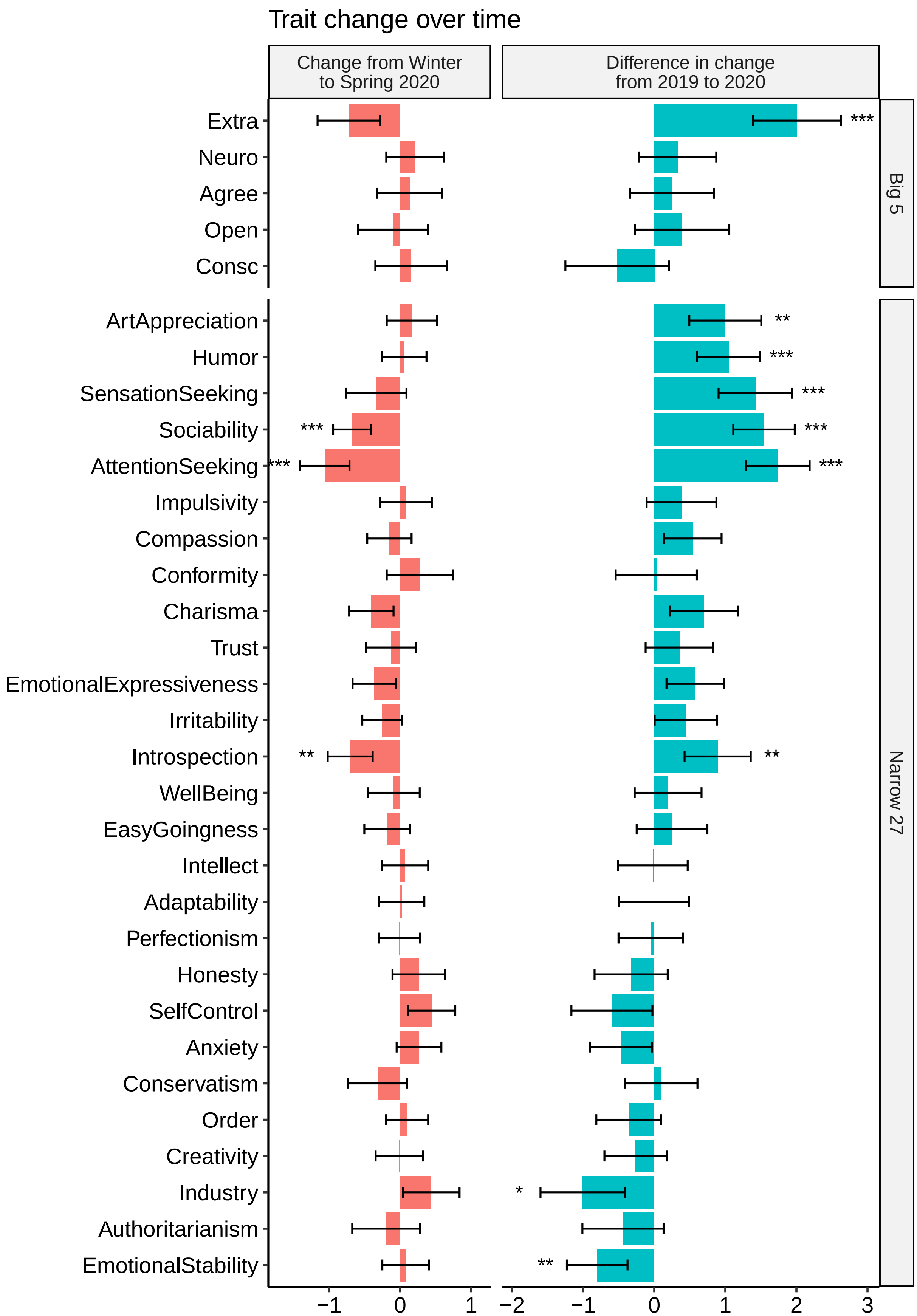

Figure S9: Change in national personality traits from winter to spring. Bars represent the standardized amount of change in daily personality states; error bars are 95% confidence intervals. Stars represent statstical significance after adjusting p-values for multiple comparisons using a Holm correction; * p < .05, ** p < .01, *** p < .001.

```
  facet_grid(scale~., scales = "free", space = "free") +
  theme_pubr()
```

```
load(here("data/cleaned/rolling_dfs.Rdata"))
load(here("data/cleaned/data2019.Rdata"))

all_p = full_join(rolling_7, rolling_7_2019) %>%
  mutate(
    season = case_when(
      Date >= as.Date("2020-10-1") ~ "Fall",
      Date >= as.Date("2020-7-1") ~ "Summer",
      Date >= as.Date("2020-4-1") ~ "Spring",
      Date >= as.Date("2020-1-1") ~ "Winter",
      Date >= as.Date("2019-10-1") ~ "Fall",
      Date >= as.Date("2019-7-1") ~ "Summer",
      Date >= as.Date("2019-4-1") ~ "Spring",
      TRUE ~ "Winter"),
    year = case_when(
      Date >= as.Date("2020-1-1") ~ "2020",
      TRUE ~ "2019")
    )

all_p %>%
  mutate(season = factor(season,
                         levels = c("Winter", "Spring", "Summer", "Fall"))) %>%
  gather(trait, tscore, Agree:Conservatism) %>%
  filter(!is.na(tscore)) %>%
  group_by(trait, season, year) %>%
  summarize(
    n = n(),
    m = mean(tscore),
    sd = sd(tscore),
    cv = qt(.975, df = n-1, lower.tail = T),
    moe = (sd/sqrt(n))*cv
  ) %>%
  mutate(trait = str_replace(trait, "([[:lower:]])([[:upper:]])", "\\1\n\\2")) %>%
  ggplot(aes(x = season, y = m, group = year)) +
  geom_errorbar(aes(ymin = m-moe, ymax = m+moe),
                width = .5,
                position = position_dodge(.5)) +
  geom_point(aes(color = year), position = position_dodge(.5)) +
  facet_wrap(~trait) +
  theme_pubclean() +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

```
load(here("data/cleaned/data2018.Rdata"))


all_p = full_join(rolling_7, rolling_7_2019) %>%
  full_join(rolling_7_2018) %>%
  mutate(
    season = case_when(
```

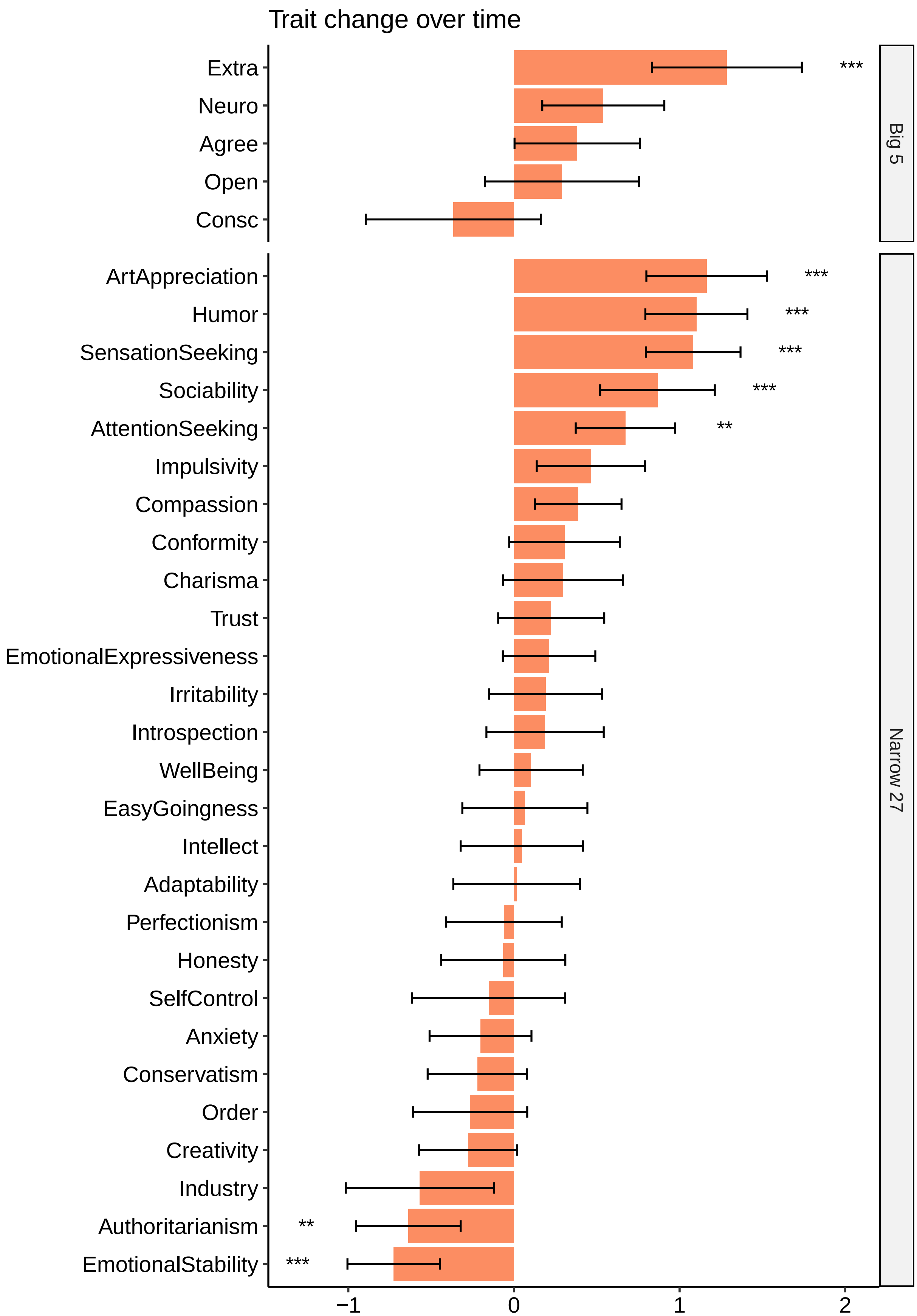

Figure S10: Change in national personality traits from winter 2020 to spring 2020. Bars represent the standardized amount of change in daily personality states; error bars are 95% confidence intervals. Stars represent statstical significance after adjusting p-values for multiple comparisons using a Holm correction; * $p < .05$, ** $p < .01$, *** $p < .001$.

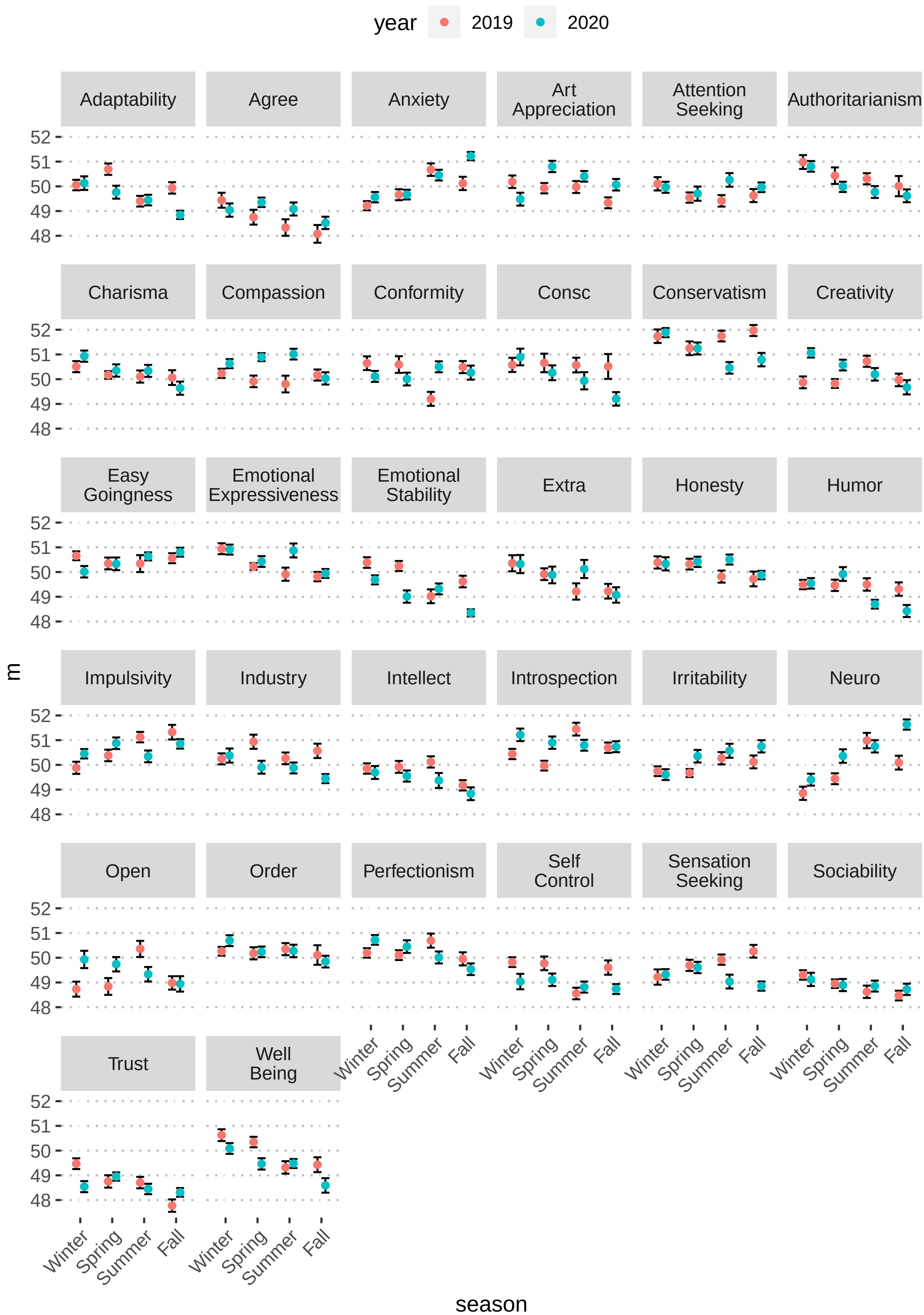

Figure S11: Average trait t-scores by year and season.

```
      Date >= as.Date("2020-10-1") ~ "Fall",
      Date >= as.Date("2020-6-2") ~ "Summer",
      Date >= as.Date("2020-3-13") ~ "Spring",
      Date >= as.Date("2020-1-1") ~ "Winter",
      Date >= as.Date("2019-10-1") ~ "Fall",
      Date >= as.Date("2019-6-2") ~ "Summer",
      Date >= as.Date("2019-3-13") ~ "Spring",
      Date >= as.Date("2019-1-1") ~ "Winter",
      Date >= as.Date("2018-10-1") ~ "Fall",
      Date >= as.Date("2018-6-2") ~ "Summer",
      Date >= as.Date("2018-3-13") ~ "Spring",
      TRUE ~ "Winter"),
    year = case_when(
      Date >= as.Date("2020-1-1") ~ "2020",
      Date >= as.Date("2019-1-1") ~ "2019",
      TRUE ~ "2018")
  ) %>%
  filter(season %in% c("Winter", "Spring"))


all_diff = all_p %>%
  gather(trait, tscore, Agree:Conservatism) %>%
  group_by(trait, year) %>%
  nest() %>%
  mutate(ttest = map(data, ~t.test(tscore ~ season, data = .x))) %>%
  mutate(ttest = map(ttest, broom::tidy)) %>%
  select(trait, year, ttest) %>%
  unnest(cols = c(ttest)) %>%
  ungroup() %>%
  mutate(p.adj = p.adjust(p.value, method = "holm"),
         p.adj.sig = case_when(
           p.adj < .001 ~ "***",
           p.adj < .01 ~ "**",
           p.adj < .05 ~ "*",
           TRUE ~ ""
         ),
         p.adj = papaja::printp(p.adj))

all_diff %>%
  mutate(trait = str_replace(trait, "([[:lower:]])([[:upper:]])", "\\1\n\\2")) %>%
  ggplot(aes(x = year, y = estimate)) +
  geom_bar(stat = "identity", aes(fill = p.adj.sig), alpha = .7) +
  geom_errorbar(aes(ymin = conf.low, ymax = conf.high), width = .3) +
  scale_fill_manual(values = c("grey", "lightblue", "blue", "darkblue")) +
  facet_wrap(~trait) +
  labs("Change in personality from winter to spring") +
  theme_pubr()+
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

```
all_p %>%
  gather(trait, tscore, Agree:Conservatism) %>%
  group_by(trait, year) %>%
  nest() %>%
```

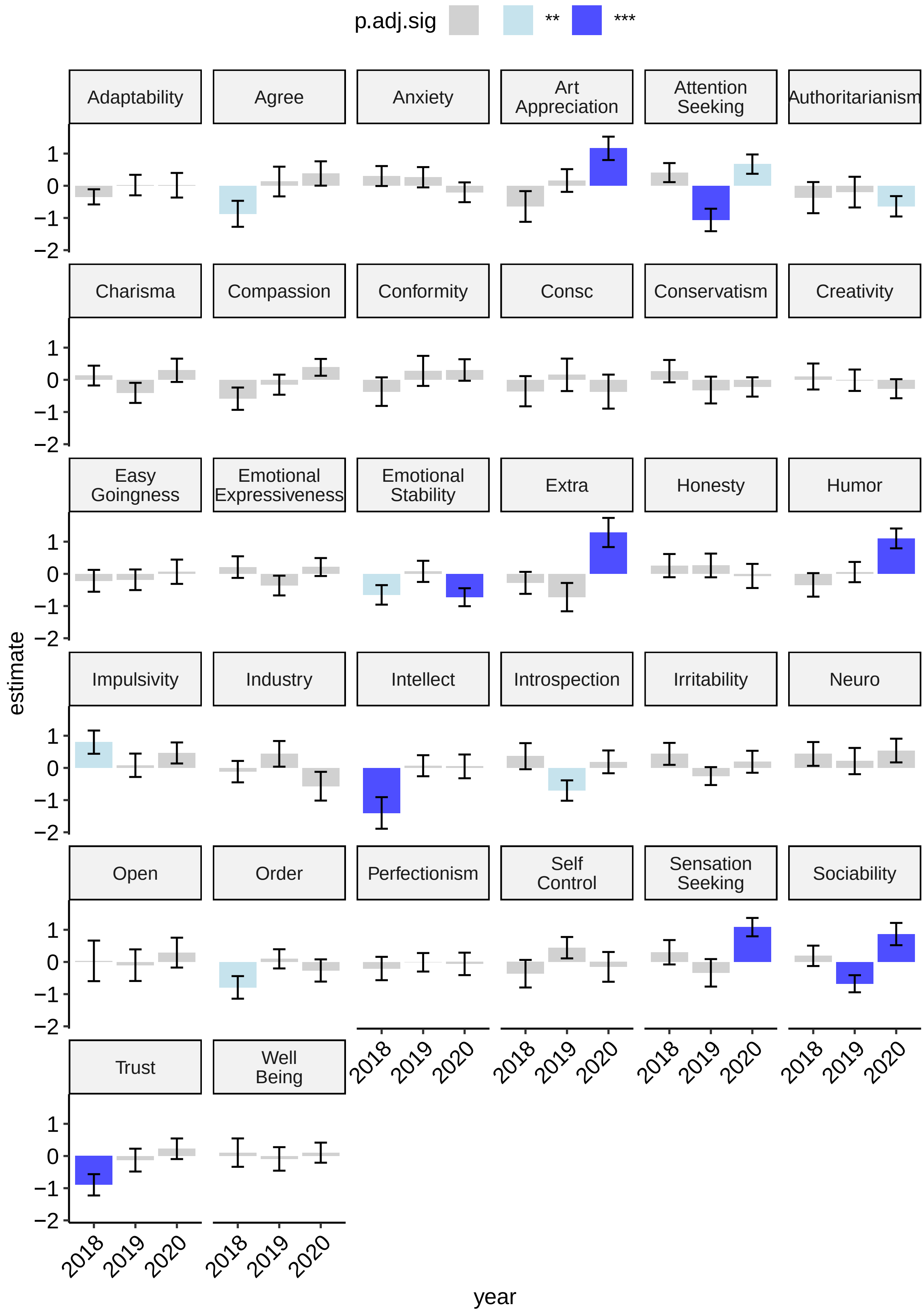

Figure S12: Added after peer review: Seasonal trait change by year.

```
mutate(ttest = map(data, ~t.test(tscore ~ season, data = .x))) %>%
mutate(es = map(ttest, effectsize::cohens_d)) %>%
mutate(trait = str_replace(trait, "([[:lower:]])([[:upper:]])", "\\1\n\\2")) %>%
select(trait, year, es) %>%
unnest(cols = c(es)) %>%
ggplot(aes(x = year, y = d, fill = abs(d))) +
geom_bar(stat = "identity") +
geom_hline(aes(yintercept = 0)) +
facet_wrap(~trait)+
guides(fill = F) +
labs(title = "Standardized difference in trait change from Winter to Spring") +
theme_pubr() +
theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

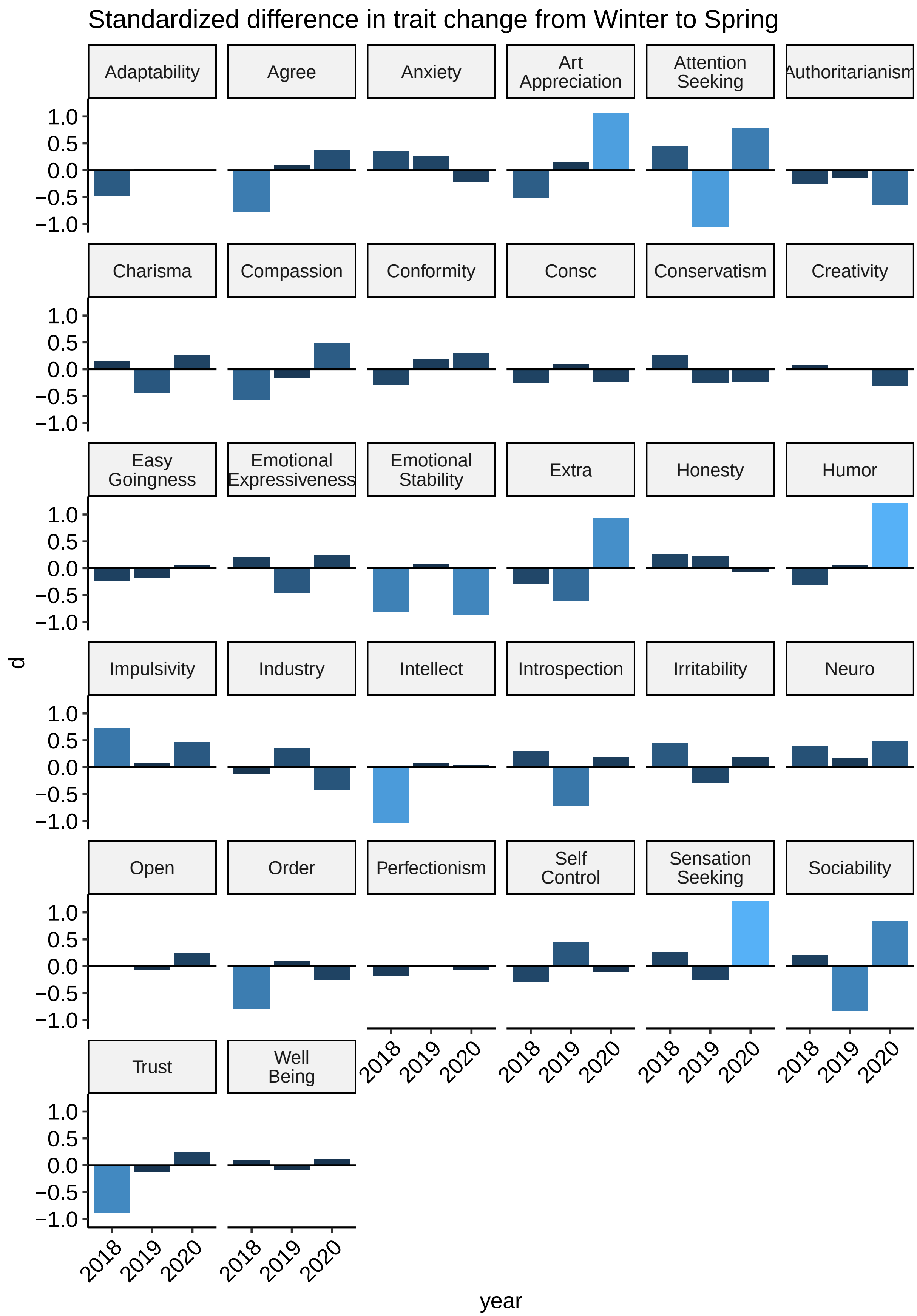

Figure S13: Added after peer review: Seasonal trait change by year, standardized effect sizes.

```r
load(here("data/cleaned/SAPA.rdata"))
load(here("data/cleaned/merged.Rdata"))
load(here("data/cleaned/rolling_dfs.Rdata"))

table_summary = data.frame(
  smoothing = c("none", "3-day", "7-day", "14-day")
)

table_summary$data = list(merged, rolling_3, rolling_7, rolling_14)

table_summary %>%
  unnest(cols = c(data)) %>%
  select(smoothing, Date, gsub("SPI_135_27_5_", "", names(SPIlists)[-1])) %>%
  filter(Date > "2019-12-31") %>%
  select(-Date) %>%
  group_by(smoothing) %>%
  summarize_if(is.numeric, .funs = list(m = mean,
                                        s = sd)) %>%
  gather("trait", "value", -smoothing) %>%
  separate(trait, into = c("trait", "statistic"), sep = "_") %>%
  spread(statistic, value) %>%
  mutate_if(is.numeric, papaja::printnum) %>%
  mutate(stat = paste0(m, " (", s, ")")) %>%
  select(smoothing, trait, stat) %>%
  spread(smoothing, stat) %>%
  select(trait, none, `3-day`, `7-day`, `14-day`) %>%
  kable(booktabs = T, caption = "Means and standard devaitions of traits across soothing.") %>%
  kableExtra::kable_styling()
```

Table S1: Means and standard devaitions of traits across soothing.

trait	none	3-day	7-day	14-day
Adaptability	49.53 (3.20)	49.53 (1.79)	49.54 (1.22)	49.56 (0.84)
Agree	49.02 (3.79)	49.00 (2.02)	49.00 (1.22)	48.99 (0.85)
Anxiety	50.23 (2.86)	50.23 (1.66)	50.23 (1.17)	50.21 (0.92)
ArtAppreciation	50.21 (2.94)	50.19 (1.79)	50.19 (1.23)	50.19 (0.90)
AttentionSeeking	50.00 (3.30)	49.99 (1.80)	49.97 (1.20)	49.96 (0.88)
Authoritarianism	50.02 (3.28)	50.04 (1.92)	50.04 (1.20)	50.04 (0.84)
Charisma	50.32 (3.04)	50.32 (1.70)	50.31 (1.27)	50.32 (1.00)
Compassion	50.62 (2.99)	50.63 (1.60)	50.64 (1.06)	50.65 (0.76)
Conformity	50.25 (3.05)	50.24 (1.79)	50.22 (1.21)	50.23 (0.81)
Consc	50.06 (4.10)	50.07 (2.46)	50.07 (1.63)	50.08 (1.20)
Conservatism	51.08 (2.99)	51.09 (1.76)	51.09 (1.25)	51.11 (0.96)
Creativity	50.36 (3.06)	50.36 (1.81)	50.37 (1.26)	50.37 (0.94)
EasyGoingness	50.44 (2.81)	50.44 (1.63)	50.45 (1.05)	50.44 (0.70)
EmotionalExpressiveness	50.55 (3.03)	50.55 (1.69)	50.54 (1.14)	50.52 (0.88)
EmotionalStability	49.10 (2.87)	49.09 (1.65)	49.09 (1.09)	49.09 (0.80)
Extra	49.87 (3.75)	49.86 (2.26)	49.85 (1.73)	49.86 (1.42)
Honesty	50.28 (3.06)	50.28 (1.67)	50.28 (1.06)	50.27 (0.73)
Humor	49.13 (3.25)	49.14 (1.93)	49.14 (1.26)	49.15 (0.98)
Impulsivity	50.62 (3.04)	50.62 (1.61)	50.63 (1.06)	50.64 (0.72)
Industry	49.90 (3.00)	49.91 (1.72)	49.90 (1.20)	49.91 (0.86)
Intellect	49.38 (3.10)	49.37 (1.92)	49.36 (1.31)	49.35 (0.90)
Introspection	50.93 (2.88)	50.92 (1.75)	50.91 (1.15)	50.90 (0.82)
Irritability	50.32 (3.19)	50.31 (1.92)	50.32 (1.29)	50.29 (0.88)
Neuro	50.53 (3.55)	50.54 (2.07)	50.54 (1.41)	50.52 (1.06)
Open	49.48 (3.89)	49.47 (2.34)	49.48 (1.55)	49.48 (1.00)
Order	50.27 (2.97)	50.28 (1.79)	50.26 (1.15)	50.27 (0.81)
Perfectionism	50.16 (3.11)	50.17 (1.86)	50.18 (1.20)	50.18 (0.86)
SelfControl	48.97 (3.00)	48.94 (1.76)	48.92 (1.21)	48.90 (0.81)
SensationSeeking	49.20 (2.98)	49.20 (1.72)	49.20 (1.14)	49.23 (0.88)
Sociability	48.92 (2.76)	48.91 (1.66)	48.90 (1.17)	48.90 (0.90)
Trust	48.59 (3.04)	48.57 (1.62)	48.56 (0.97)	48.55 (0.70)
WellBeing	49.42 (3.09)	49.41 (1.76)	49.40 (1.24)	49.41 (0.92)

```r
source(here("scripts/correlations.R"))

allcors = all_sets %>%
  filter(year == "Current_all") %>%
  select(smoothing, personality_ci) %>%
  mutate(personality_ci = map(personality_ci, matrix2df)) %>%
  unnest(cols = c(personality_ci)) %>%
  mutate_at(vars(lower, r, upper), papaja::printnum) %>%
  mutate(r = case_when(
    p < .05 ~ paste0(r, "*"),
    TRUE ~ r
  )) %>%
  mutate(value = paste0(r, " [", lower, ", ", upper, "]")) %>%
  separate(vars, into = c("trait", "financial"), sep = "-") %>%
  select(smoothing, trait, financial, value) %>%
  mutate(
 trait = factor(trait,
                  levels = c(
                    "Extra", "Scblt", "SnstS", "AttnS", "Chrsm", "Humor", "EsyGn",
                    "Agree", "Cmpss", "Hnsty", "Trust",
                    "Consc", "Indst", "Impls", "Order", "Prfct", "SlfCn",
                    "Neuro", "Anxty", "EmtnS", "Irrtb", "EmtnE", "Adptb", "WllBn",
                    "Open", "Intll", "Crtvt", "Athrt", "ArtAp", "Intrs", "Cnfrm", "Cnsrv"
                  ),
                  labels = c(
                    "Extraversion", "Sociability", "Sensation Seeking", "Attention Seeking", "Charisma
                    "Agreeableness", "Compassion", "Honesty", "Trust",
                    "Conscientiousness", "Industry", "Impulsivity", "Order", "Perfectionism", "Self Co
                    "Neuroticism", "Anxiety", "Emotional Stability", "Irritability", "Emotional Expres
                    "Openness", "Intellect", "Creativity", "Authoritarianism", "Art Appreciation", "In
         financial = factor(financial,
                           levels = c("SP500", "VIX", "trsry", "nw_cs", "nw_dt"),
                           labels = c("S&P 500", "VIX", "Treasury Yields (10 yr)", "Covid cases", "Cov
  spread(financial, value)
```

```r
allcors %>%
  filter(smoothing == 0) %>%
  select(-smoothing) %>%
  kable(booktabs = T,
        caption = "Correlations of daily traits (no smoothing) with key daily outcomes. * indicate p <
  landscape() %>%
  kableExtra::kable_styling(font_size = 9)
```

Table S2: Correlations of daily traits (no smoothing) with key daily outcomes. * indicate p < .05

trait	S&P 500	VIX	Treasury Yields (10 yr)	Covid cases	Covid deaths
Extraversion	-0.15* [-0.27, -0.03]	0.06 [-0.06, 0.19]	0.03 [-0.10, 0.15]	-0.13* [-0.23, -0.03]	-0.11* [-0.21, 0.00]
Sociability	-0.13* [-0.25, 0.00]	0.05 [-0.07, 0.17]	0.05 [-0.08, 0.17]	-0.06 [-0.16, 0.04]	-0.06 [-0.16, 0.04]
Sensation Seeking	-0.10 [-0.22, 0.02]	0.14* [0.02, 0.26]	-0.06 [-0.19, 0.06]	-0.03 [-0.13, 0.07]	0.03 [-0.07, 0.14]
Attention Seeking	0.00 [-0.12, 0.13]	-0.02 [-0.14, 0.11]	-0.01 [-0.14, 0.11]	0.01 [-0.10, 0.11]	0.01 [-0.10, 0.11]
Charisma	-0.17* [-0.29, -0.05]	0.09 [-0.04, 0.21]	-0.01 [-0.14, 0.11]	-0.18* [-0.28, -0.08]	-0.16* [-0.26, -0.06]
Humor	-0.15* [-0.27, -0.03]	0.10 [-0.02, 0.22]	0.01 [-0.12, 0.13]	-0.15* [-0.25, -0.05]	-0.03 [-0.13, 0.07]
Easy Goingness	0.05 [-0.08, 0.17]	0.01 [-0.11, 0.14]	-0.05 [-0.18, 0.07]	0.06 [-0.04, 0.16]	0.06 [-0.04, 0.16]
Agreeableness	-0.07 [-0.19, 0.06]	0.00 [-0.12, 0.12]	-0.02 [-0.14, 0.11]	-0.06 [-0.16, 0.04]	-0.05 [-0.15, 0.06]
Compassion	-0.08 [-0.20, 0.04]	0.02 [-0.10, 0.15]	-0.09 [-0.21, 0.04]	-0.10 [-0.20, 0.00]	-0.07 [-0.17, 0.03]
Honesty	-0.10 [-0.22, 0.02]	0.05 [-0.08, 0.17]	-0.01 [-0.13, 0.12]	-0.09 [-0.19, 0.02]	-0.07 [-0.17, 0.03]
Trust	0.00 [-0.13, 0.12]	-0.11 [-0.23, 0.02]	0.05 [-0.08, 0.17]	-0.01 [-0.12, 0.09]	0.02 [-0.08, 0.12]
Conscientiousness	-0.14* [-0.26, -0.02]	0.05 [-0.07, 0.18]	0.06 [-0.06, 0.19]	-0.16* [-0.26, -0.06]	-0.18* [-0.27, -0.08]
Industry	-0.07 [-0.19, 0.05]	0.02 [-0.10, 0.14]	0.05 [-0.07, 0.18]	-0.13* [-0.23, -0.03]	-0.15* [-0.25, -0.05]
Impulsivity	0.05 [-0.08, 0.17]	-0.01 [-0.13, 0.11]	-0.05 [-0.18, 0.07]	0.04 [-0.06, 0.14]	0.10 [0.00, 0.20]
Order	-0.09 [-0.22, 0.03]	0.04 [-0.08, 0.17]	0.03 [-0.09, 0.15]	-0.10 [-0.20, 0.01]	-0.14* [-0.24, -0.04]
Perfectionism	-0.13* [-0.25, -0.01]	0.06 [-0.07, 0.18]	0.07 [-0.06, 0.19]	-0.12* [-0.22, -0.02]	-0.08 [-0.18, 0.03]
Self Control	-0.06 [-0.18, 0.07]	0.02 [-0.10, 0.14]	0.05 [-0.08, 0.17]	-0.04 [-0.14, 0.07]	-0.01 [-0.11, 0.09]
Neuroticism	0.15* [0.03, 0.27]	-0.03 [-0.15, 0.09]	-0.19* [-0.30, -0.07]	0.21* [0.11, 0.30]	0.16* [0.06, 0.26]
Anxiety	0.19* [0.07, 0.30]	-0.09 [-0.21, 0.03]	-0.06 [-0.18, 0.06]	0.21* [0.11, 0.30]	0.11* [0.01, 0.21]
Emotional Stability	-0.08 [-0.20, 0.04]	0.03 [-0.10, 0.15]	0.10 [-0.03, 0.22]	-0.17* [-0.27, -0.07]	-0.14* [-0.24, -0.04]
Irritability	0.12* [0.00, 0.24]	-0.11 [-0.23, 0.01]	-0.10 [-0.22, 0.03]	0.14* [0.04, 0.24]	0.14* [0.04, 0.24]
Emotional Expressiveness	-0.08 [-0.20, 0.04]	-0.01 [-0.13, 0.11]	0.05 [-0.07, 0.17]	-0.10* [-0.20, 0.00]	-0.11* [-0.21, -0.01]
Adaptability	-0.15* [-0.27, -0.03]	0.13* [0.01, 0.25]	-0.03 [-0.15, 0.09]	-0.13* [-0.23, -0.03]	-0.07 [-0.17, 0.03]
Well Being	-0.18* [-0.29, -0.06]	0.09 [-0.04, 0.21]	0.08 [-0.04, 0.20]	-0.21* [-0.30, -0.11]	-0.16* [-0.26, -0.06]
Openness	-0.09 [-0.22, 0.03]	0.06 [-0.06, 0.19]	0.04 [-0.09, 0.16]	-0.05 [-0.15, 0.05]	-0.02 [-0.12, 0.08]
Intellect	-0.11 [-0.23, 0.02]	0.06 [-0.06, 0.19]	0.00 [-0.12, 0.13]	-0.09 [-0.19, 0.01]	-0.06 [-0.16, 0.04]
Creativity	-0.16* [-0.28, -0.04]	0.10 [-0.02, 0.22]	0.02 [-0.10, 0.15]	-0.16* [-0.26, -0.06]	-0.13* [-0.23, -0.03]
Authoritarianism	-0.06 [-0.18, 0.07]	-0.03 [-0.15, 0.09]	0.09 [-0.04, 0.21]	-0.16* [-0.25, -0.05]	-0.16* [-0.25, -0.05]
Art Appreciation	-0.06 [-0.18, 0.07]	0.07 [-0.05, 0.19]	-0.18* [-0.29, -0.05]	-0.02 [-0.12, 0.09]	0.05 [-0.05, 0.16]
Introspection	-0.02 [-0.14, 0.10]	-0.01 [-0.14, 0.11]	0.04 [-0.08, 0.17]	-0.03 [-0.13, 0.07]	-0.01 [-0.11, 0.09]
Conformity	0.01 [-0.11, 0.13]	0.01 [-0.11, 0.13]	0.00 [-0.12, 0.12]	-0.04 [-0.14, 0.07]	-0.04 [-0.14, 0.06]
Conservatism	-0.18* [-0.30, -0.06]	0.12 [-0.01, 0.24]	0.03 [-0.10, 0.15]	-0.17* [-0.27, -0.07]	-0.16* [-0.26, -0.06]

```
allcors %>%
  filter(smoothing == 3) %>%
  select(-smoothing) %>%
   kable(booktabs = T,
        caption = "Correlations of daily traits (3-day smoothing) with key daily outcomes. * indicate p
  landscape() %>%
  kableExtra::kable_styling(font_size = 9)
```

Table S3: Correlations of daily traits (3-day smoothing) with key daily outcomes. * indicate p < .05

trait	S&P 500	VIX	Treasury Yields (10 yr)	Covid cases	Covid deaths
Extraversion	-0.30* [-0.41, -0.18]	0.21* [0.09, 0.32]	-0.01 [-0.13, 0.12]	-0.21* [-0.31, -0.11]	-0.17* [-0.27, -0.07]
Sociability	-0.19* [-0.31, -0.07]	0.15* [0.02, 0.27]	0.05 [-0.07, 0.17]	-0.10 [-0.20, 0.00]	-0.09 [-0.19, 0.01]
Sensation Seeking	-0.31* [-0.41, -0.19]	0.30* [0.18, 0.41]	-0.09 [-0.21, 0.04]	-0.08 [-0.18, 0.03]	0.04 [-0.06, 0.14]
Attention Seeking	-0.06 [-0.18, 0.06]	0.03 [-0.09, 0.15]	0.01 [-0.11, 0.13]	0.01 [-0.10, 0.11]	0.00 [-0.10, 0.10]
Charisma	-0.35* [-0.45, -0.23]	0.23* [0.11, 0.34]	-0.03 [-0.15, 0.10]	-0.33* [-0.41, -0.23]	-0.29* [-0.38, -0.19]
Humor	-0.30* [-0.41, -0.18]	0.22* [0.10, 0.33]	0.02 [-0.10, 0.14]	-0.26* [-0.35, -0.16]	-0.05 [-0.15, 0.05]
Easy Goingness	0.07 [-0.05, 0.20]	-0.03 [-0.15, 0.10]	-0.07 [-0.20, 0.05]	0.12* [0.01, 0.22]	0.12* [0.02, 0.22]
Agreeableness	-0.10 [-0.22, 0.02]	0.06 [-0.07, 0.18]	-0.09 [-0.21, 0.04]	-0.10 [-0.20, 0.00]	-0.06 [-0.16, 0.04]
Compassion	-0.16* [-0.28, -0.04]	0.11 [-0.01, 0.23]	-0.18* [-0.30, -0.06]	-0.17* [-0.27, -0.07]	-0.10 [-0.20, 0.00]
Honesty	-0.15* [-0.27, -0.03]	0.12* [0.00, 0.24]	-0.11 [-0.23, 0.02]	-0.14* [-0.24, -0.04]	-0.12* [-0.22, -0.01]
Trust	-0.02 [-0.14, 0.10]	-0.11 [-0.23, 0.01]	0.04 [-0.09, 0.16]	-0.02 [-0.12, 0.08]	0.05 [-0.06, 0.15]
Conscientiousness	-0.13* [-0.25, 0.00]	0.03 [-0.09, 0.16]	0.13* [0.01, 0.25]	-0.26* [-0.35, -0.16]	-0.28* [-0.37, -0.18]
Industry	-0.05 [-0.17, 0.07]	-0.02 [-0.14, 0.10]	0.15* [0.03, 0.27]	-0.21* [-0.31, -0.11]	-0.25* [-0.34, -0.15]
Impulsivity	-0.04 [-0.16, 0.08]	0.06 [-0.06, 0.19]	-0.10 [-0.22, 0.03]	0.08 [-0.02, 0.18]	0.18* [0.08, 0.28]
Order	-0.03 [-0.15, 0.10]	0.01 [-0.11, 0.13]	0.08 [-0.04, 0.20]	-0.15* [-0.24, -0.04]	-0.23* [-0.32, -0.13]
Perfectionism	-0.17* [-0.29, -0.05]	0.06 [-0.06, 0.18]	0.10 [-0.03, 0.22]	-0.20* [-0.30, -0.10]	-0.12* [-0.22, -0.02]
Self Control	-0.02 [-0.14, 0.10]	0.00 [-0.13, 0.12]	0.03 [-0.10, 0.15]	-0.07 [-0.17, 0.03]	-0.01 [-0.12, 0.09]
Neuroticism	0.23* [0.11, 0.35]	-0.05 [-0.17, 0.08]	-0.22* [-0.34, -0.10]	0.38* [0.29, 0.46]	0.31* [0.21, 0.40]
Anxiety	0.34* [0.22, 0.44]	-0.17* [-0.29, -0.05]	-0.09 [-0.21, 0.04]	0.37* [0.27, 0.45]	0.22* [0.12, 0.31]
Emotional Stability	-0.11 [-0.23, 0.01]	-0.01 [-0.14, 0.11]	0.17* [0.04, 0.28]	-0.32* [-0.41, -0.23]	-0.29* [-0.38, -0.19]
Irritability	0.15* [0.02, 0.26]	-0.10 [-0.22, 0.02]	-0.12 [-0.24, 0.01]	0.24* [0.14, 0.34]	0.25* [0.16, 0.35]
Emotional Expressiveness	-0.13* [-0.25, -0.01]	0.01 [-0.11, 0.13]	0.07 [-0.06, 0.19]	-0.16* [-0.26, -0.06]	-0.17* [-0.27, -0.07]
Adaptability	-0.27* [-0.38, -0.15]	0.19* [0.06, 0.30]	0.01 [-0.12, 0.13]	-0.25* [-0.34, -0.15]	-0.14* [-0.24, -0.04]
Well Being	-0.28* [-0.39, -0.17]	0.13* [0.00, 0.25]	0.07 [-0.05, 0.20]	-0.37* [-0.45, -0.27]	-0.29* [-0.38, -0.19]
Openness	-0.16* [-0.28, -0.04]	0.11 [-0.01, 0.23]	0.05 [-0.08, 0.17]	-0.09 [-0.19, 0.02]	-0.02 [-0.13, 0.08]
Intellect	-0.17* [-0.29, -0.05]	0.12 [-0.01, 0.23]	-0.02 [-0.14, 0.11]	-0.14* [-0.24, -0.04]	-0.10* [-0.20, 0.00]
Creativity	-0.24* [-0.36, -0.12]	0.14* [0.02, 0.26]	0.07 [-0.05, 0.20]	-0.26* [-0.36, -0.17]	-0.22* [-0.31, -0.12]
Authoritarianism	-0.04 [-0.17, 0.08]	-0.08 [-0.20, 0.04]	0.17* [0.05, 0.29]	-0.25* [-0.34, -0.15]	-0.25* [-0.34, -0.15]
Art Appreciation	-0.10 [-0.22, 0.02]	0.16* [0.03, 0.27]	-0.27* [-0.38, -0.15]	-0.01 [-0.11, 0.09]	0.11* [0.01, 0.21]
Introspection	-0.04 [-0.16, 0.09]	-0.02 [-0.15, 0.10]	0.12 [0.00, 0.24]	-0.05 [-0.15, 0.05]	-0.01 [-0.11, 0.09]
Conformity	0.04 [-0.09, 0.16]	0.03 [-0.10, 0.15]	0.01 [-0.12, 0.13]	-0.04 [-0.15, 0.06]	-0.04 [-0.14, 0.06]
Conservatism	-0.26* [-0.37, -0.14]	0.13* [0.01, 0.25]	0.18* [0.05, 0.29]	-0.29* [-0.38, -0.19]	-0.27* [-0.36, -0.17]

```
allcors %>%
  filter(smoothing == 14) %>%
  select(-smoothing) %>%
   kable(booktabs = T,
        caption = "Correlations of daily traits (14-day smoothing) with key daily outcomes. * indicate p
  landscape() %>%
  kableExtra::kable_styling(font_size = 9)
```

Table S4: Correlations of daily traits (14-day smoothing) with key daily outcomes. * indicate $p < .05$

trait	S&P 500	VIX	Treasury Yields (10 yr)	Covid cases	Covid deaths
Extraversion	-0.50* [-0.59, -0.41]	0.38* [0.27, 0.48]	-0.17* [-0.28, -0.04]	-0.22* [-0.31, -0.12]	-0.07 [-0.17, 0.04]
Sociability	-0.39* [-0.49, -0.28]	0.34* [0.22, 0.44]	-0.14* [-0.26, -0.02]	-0.06 [-0.16, 0.05]	0.07 [-0.04, 0.17]
Sensation Seeking	-0.55* [-0.63, -0.46]	0.43* [0.33, 0.53]	-0.14* [-0.26, -0.02]	-0.19* [-0.28, -0.09]	0.05 [-0.05, 0.15]
Attention Seeking	-0.16* [-0.27, -0.03]	0.12* [0.00, 0.24]	-0.14* [-0.26, -0.02]	0.04 [-0.06, 0.14]	0.11* [0.01, 0.21]
Charisma	-0.53* [-0.62, -0.44]	0.38* [0.27, 0.48]	-0.05 [-0.17, 0.08]	-0.40* [-0.49, -0.31]	-0.30* [-0.39, -0.20]
Humor	-0.70* [-0.76, -0.63]	0.51* [0.41, 0.59]	-0.11 [-0.23, 0.02]	-0.44* [-0.52, -0.35]	-0.02 [-0.12, 0.08]
Easy Goingness	0.43* [0.32, 0.53]	-0.36* [-0.47, -0.25]	-0.11 [-0.23, 0.02]	0.29* [0.19, 0.38]	0.20* [0.10, 0.30]
Agreeableness	-0.28* [-0.39, -0.16]	0.09 [-0.03, 0.21]	-0.05 [-0.17, 0.08]	-0.14* [-0.23, -0.03]	0.03 [-0.07, 0.13]
Compassion	-0.35* [-0.45, -0.24]	0.15* [0.02, 0.27]	-0.15* [-0.27, -0.03]	-0.31* [-0.40, -0.22]	-0.12* [-0.22, -0.02]
Honesty	-0.25* [-0.36, -0.13]	0.25* [0.13, 0.36]	-0.18* [-0.29, -0.05]	-0.23* [-0.32, -0.13]	-0.17* [-0.27, -0.07]
Trust	-0.10 [-0.22, 0.02]	-0.19* [-0.31, -0.07]	0.11 [-0.01, 0.23]	-0.01 [-0.11, 0.10]	0.19* [0.09, 0.29]
Conscientiousness	-0.52* [-0.60, -0.42]	0.39* [0.28, 0.49]	0.04 [-0.08, 0.17]	-0.47* [-0.55, -0.39]	-0.41* [-0.49, -0.32]
Industry	-0.27* [-0.38, -0.15]	0.16* [0.03, 0.28]	0.19* [0.07, 0.31]	-0.34* [-0.43, -0.25]	-0.36* [-0.44, -0.27]
Impulsivity	-0.03 [-0.16, 0.09]	0.01 [-0.11, 0.14]	-0.02 [-0.15, 0.10]	0.14* [0.04, 0.24]	0.31* [0.21, 0.40]
Order	-0.39* [-0.49, -0.28]	0.41* [0.30, 0.51]	-0.10 [-0.22, 0.02]	-0.26* [-0.35, -0.16]	-0.37* [-0.45, -0.27]
Perfectionism	-0.54* [-0.62, -0.44]	0.32* [0.20, 0.42]	0.12* [0.00, 0.24]	-0.46* [-0.54, -0.38]	-0.24* [-0.33, -0.14]
Self Control	-0.30* [-0.41, -0.19]	0.35* [0.24, 0.45]	-0.11 [-0.23, 0.02]	-0.21* [-0.31, -0.11]	0.02 [-0.08, 0.12]
Neuroticism	0.49* [0.39, 0.57]	-0.13* [-0.25, -0.01]	-0.40* [-0.50, -0.29]	0.70* [0.65, 0.75]	0.55* [0.48, 0.62]
Anxiety	0.55* [0.46, 0.63]	-0.23* [-0.35, -0.11]	-0.20* [-0.32, -0.08]	0.64* [0.57, 0.70]	0.39* [0.30, 0.47]
Emotional Stability	-0.27* [-0.38, -0.15]	0.08 [-0.05, 0.20]	0.23* [0.11, 0.34]	-0.65* [-0.71, -0.59]	-0.56* [-0.62, -0.48]
Irritability	0.42* [0.31, 0.52]	-0.34* [-0.44, -0.23]	-0.19* [-0.31, -0.07]	0.43* [0.34, 0.51]	0.45* [0.36, 0.53]
Emotional Expressiveness	-0.36* [-0.46, -0.25]	0.13* [0.01, 0.25]	-0.02 [-0.15, 0.10]	-0.26* [-0.35, -0.16]	-0.22* [-0.31, -0.12]
Adaptability	-0.59* [-0.66, -0.50]	0.39* [0.28, 0.49]	0.14* [0.02, 0.26]	-0.49* [-0.57, -0.41]	-0.32* [-0.41, -0.23]
Well Being	-0.52* [-0.61, -0.43]	0.29* [0.17, 0.40]	0.10 [-0.03, 0.22]	-0.57* [-0.64, -0.50]	-0.38* [-0.46, -0.29]
Openness	-0.32* [-0.42, -0.20]	0.07 [-0.05, 0.19]	0.22* [0.09, 0.33]	-0.24* [-0.33, -0.14]	-0.13* [-0.22, -0.02]
Intellect	-0.38* [-0.48, -0.27]	0.23* [0.11, 0.34]	0.01 [-0.11, 0.14]	-0.37* [-0.45, -0.28]	-0.26* [-0.35, -0.16]
Creativity	-0.42* [-0.52, -0.31]	0.18* [0.05, 0.29]	0.22* [0.10, 0.34]	-0.47* [-0.55, -0.39]	-0.39* [-0.47, -0.30]
Authoritarianism	-0.25* [-0.36, -0.13]	0.05 [-0.07, 0.17]	0.33* [0.21, 0.43]	-0.46* [-0.54, -0.37]	-0.42* [-0.50, -0.33]
Art Appreciation	-0.04 [-0.16, 0.08]	0.06 [-0.06, 0.18]	-0.46* [-0.55, -0.36]	0.01 [-0.09, 0.11]	0.23* [0.13, 0.32]
Introspection	-0.09 [-0.21, 0.04]	-0.13* [-0.25, -0.01]	0.26* [0.15, 0.38]	-0.11* [-0.21, 0.00]	-0.05 [-0.15, 0.05]
Conformity	0.05 [-0.07, 0.18]	0.05 [-0.07, 0.17]	-0.10 [-0.22, 0.02]	-0.05 [-0.15, 0.05]	0.03 [-0.07, 0.13]
Conservatism	-0.43* [-0.52, -0.32]	0.28* [0.17, 0.39]	0.29* [0.17, 0.40]	-0.46* [-0.53, -0.37]	-0.39* [-0.47, -0.30]

5 Additional analyses

5.1 Personality change due to events

Our primary trait change analysis focused on the onset of the pandemic (national emergency declared on March 13). However, as was suggested during peer review, other events may have also impacted personality, if only temporarily. We present here the trends of our preregistered traits (Neuroticism and associated narrow traits), as well as Sociability.

```
source(here("scripts/function_twotimes.R"))
trait_timeline_2(Neuro)
```

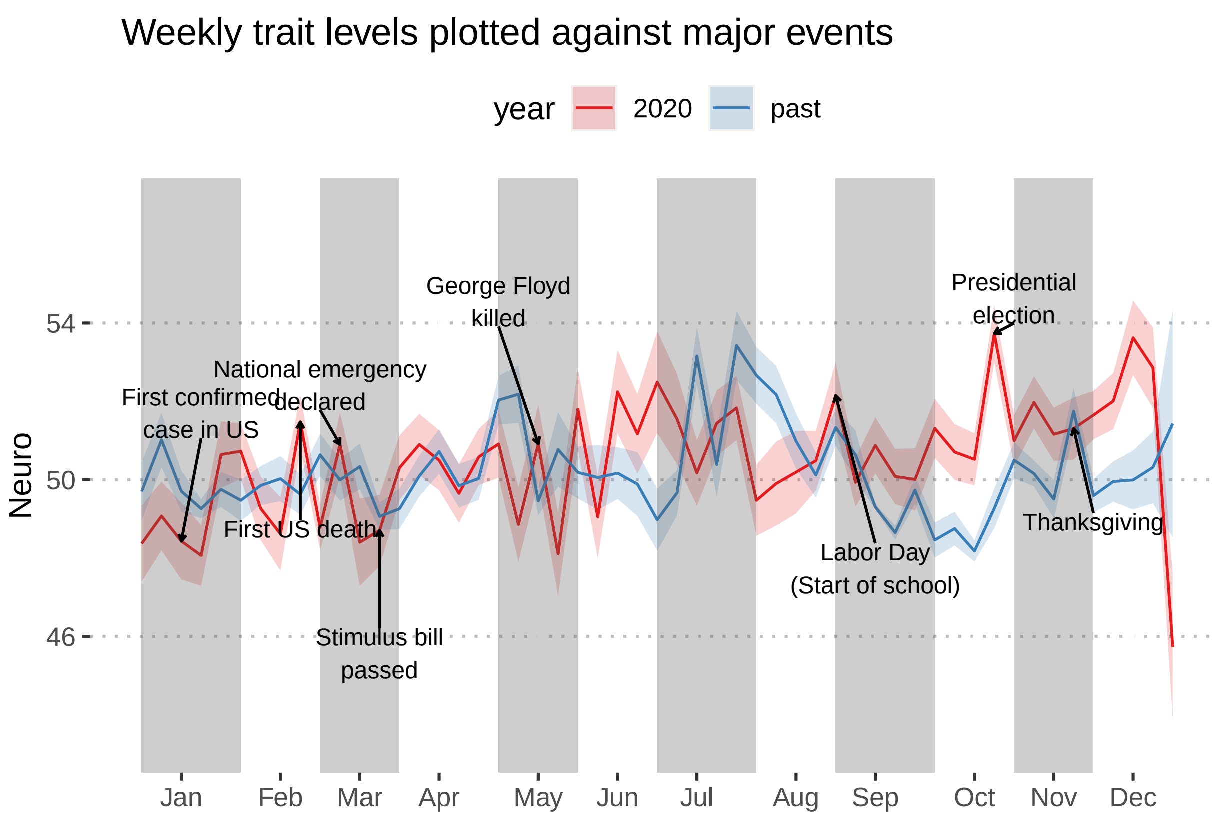

Figure S14: Weekly trend of neuroticism over year.

```
trait_timeline_2(Irritability)
```

```
trait_timeline_2(Anxiety)
```

```
ggsave(here("figures/Figure2.eps"),
       width = 8, height = 4)
```

```
trait_timeline_2(Impulsivity)
```

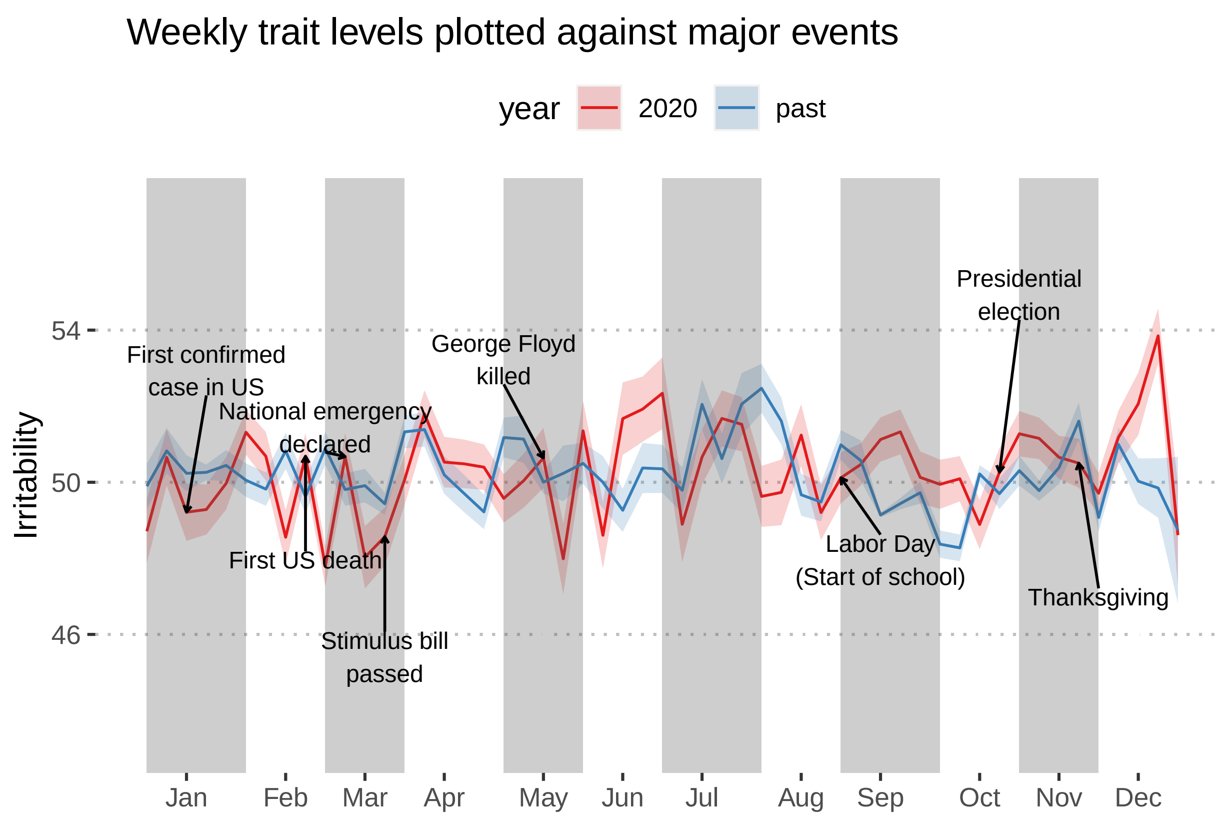

Figure S15: Weekly trend of Irritability over year.

```
trait_timeline_2(EmotionalExpressiveness)
```

```
trait_timeline_2(EmotionalStability)
```

```
trait_timeline_2(Sociability)
```

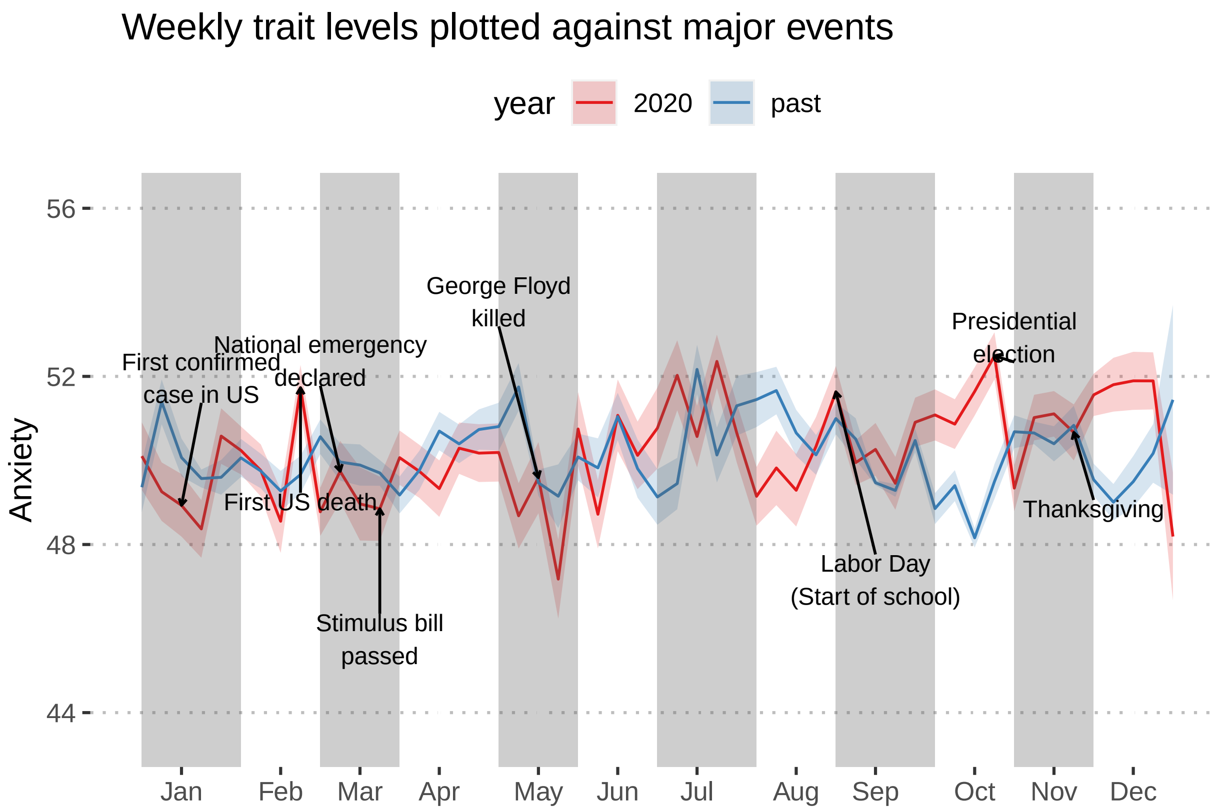

Figure S16: Weekly trend of Anxiety over year.

References

1. Condon, D. M. The SAPA Personality Inventory: An empirically-derived, hierarchically-organized self-report personality assessment model. *PsyArXiv* 1–444 (2018) doi:10.31234/osf.io/sc4p9.
2. Battaglia, M. P., Izrael, D., Hoaglin, D. C. & Frankel, M. R. Practical considerations in raking survey data. *Survey Practice* **2**, 1–10 (2009).
3. Deville, J.-C. & Särndal, C.-E. Calibration estimators in survey sampling. *Journal of the American statistical Association* **87**, 376–382 (1992).
4. US Census. Educational Attainment in the United States, 2019. (2019).

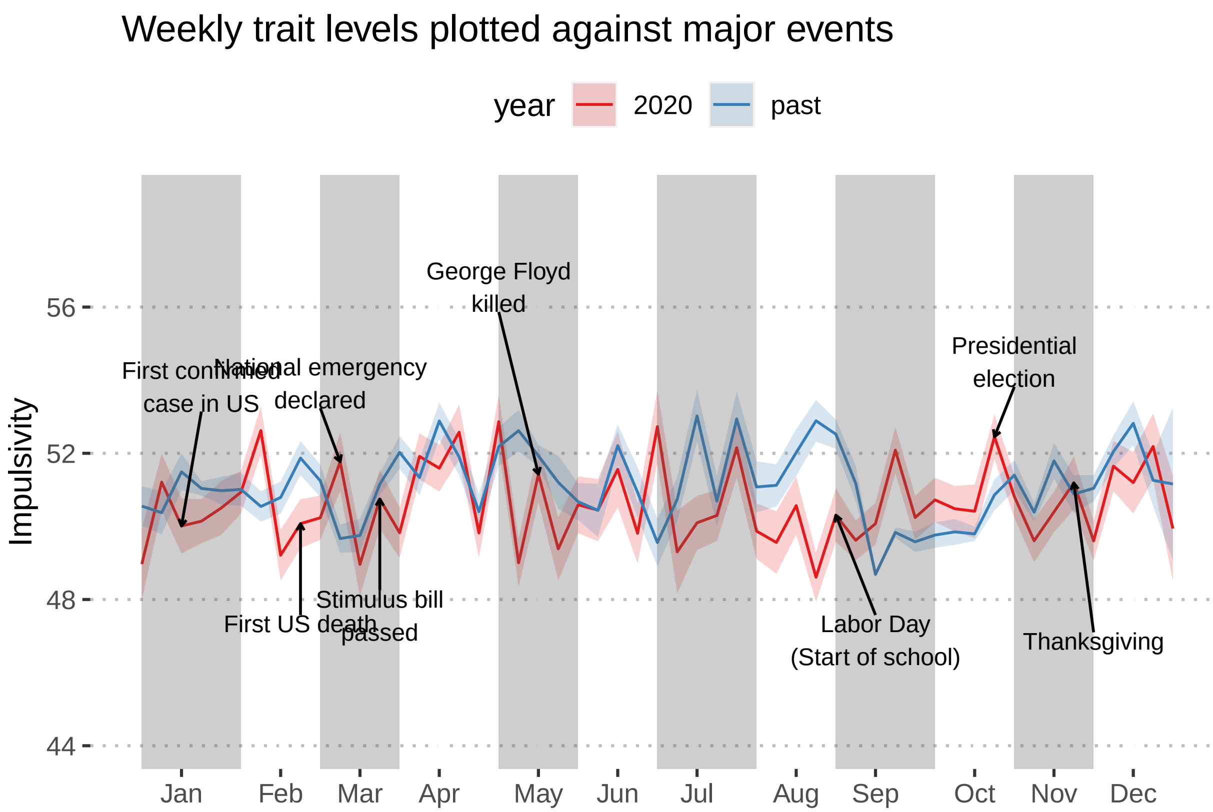

Figure S17: Weekly trend of Impulsivity over year.

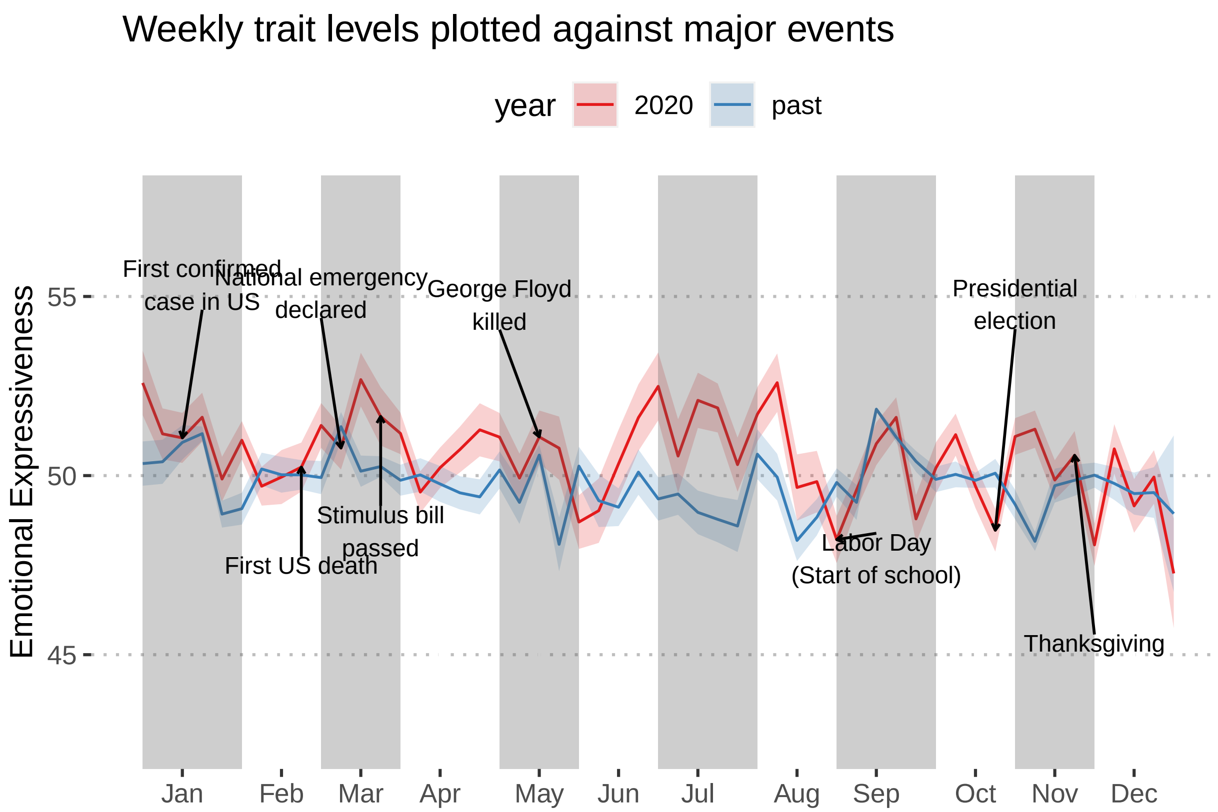

Figure S18: Weekly trend of Emotional Expressiveness over year.

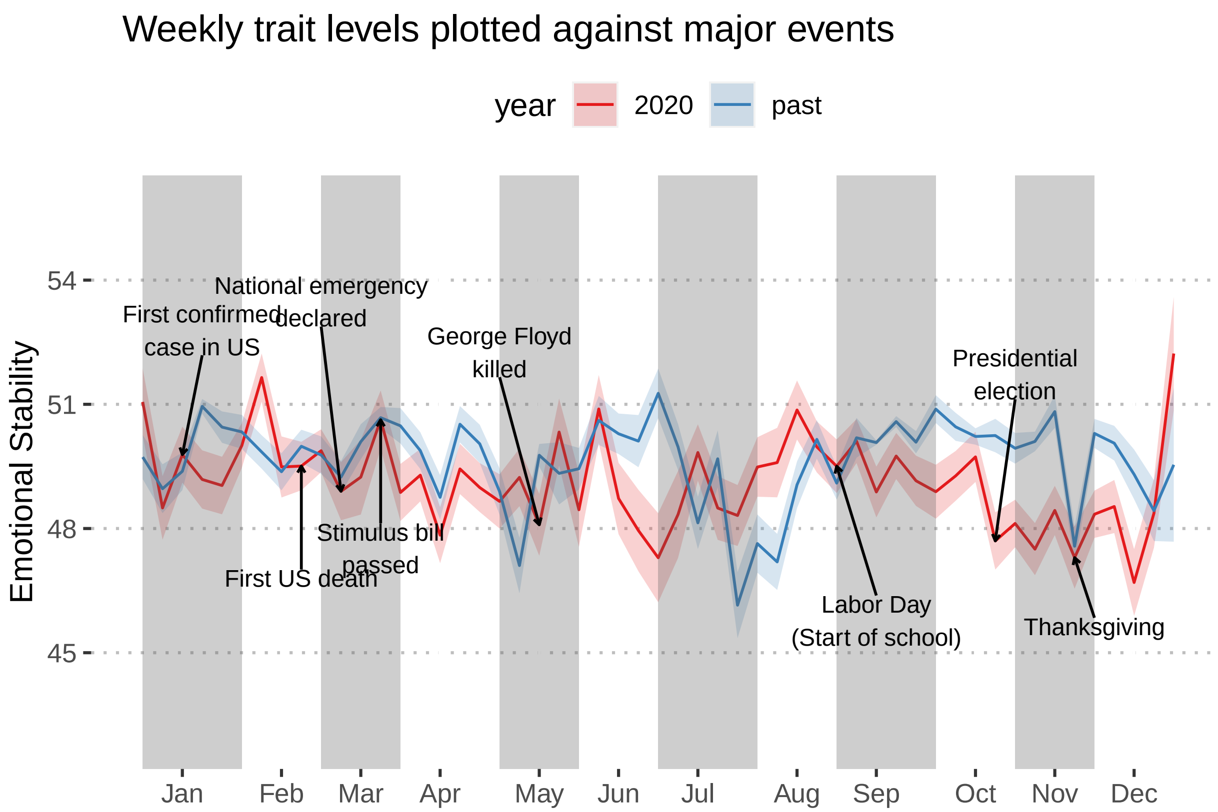

Figure S19: Weekly trend of Emotional Stablity over year.

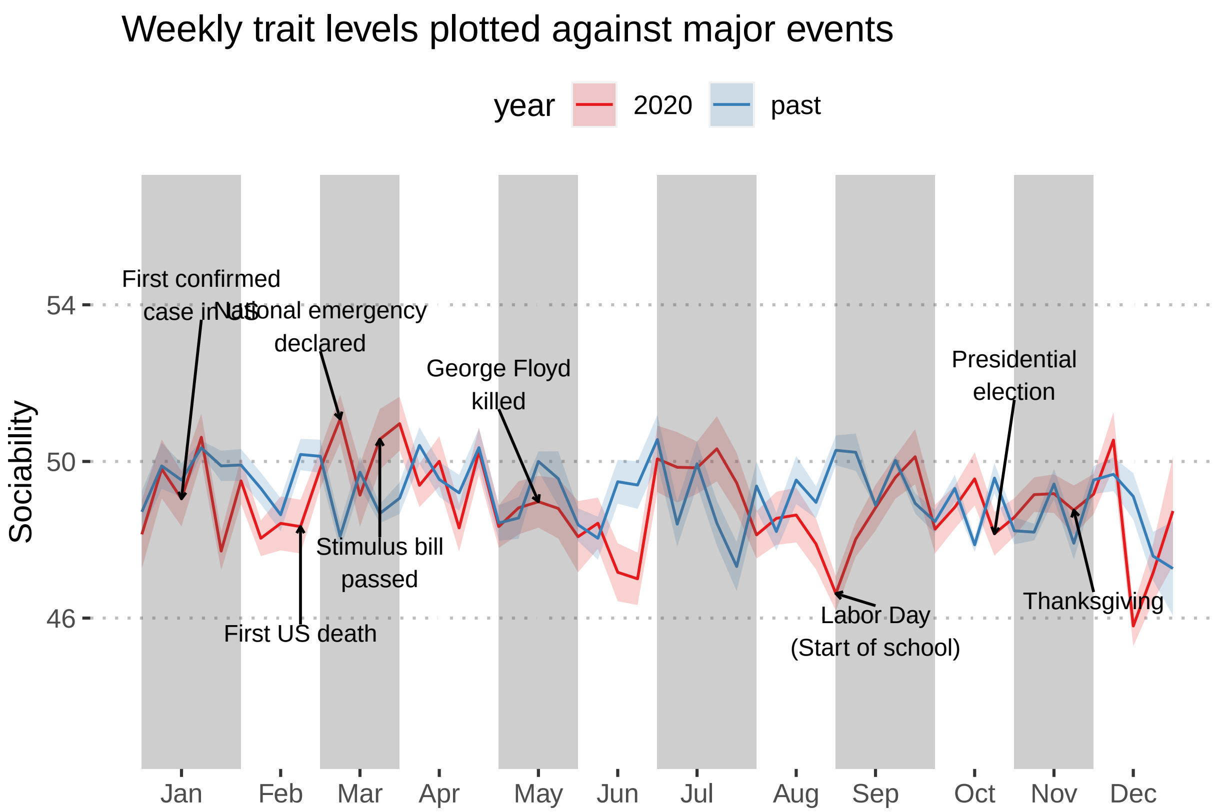

Figure S20: Weekly trend of Sociability over year.