Data prep script 2: Importing ERP data

Template Rmd

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Contents

About

This script imports and merges the self-report data from the Flanker task of the State-Trait study

1. Get Setup

1.1. Clear everything & set width

```
options(width=80, Ncpus = 6) #Set width
rm(list=ls())      #Remove everything from environment
cat("\014")        #Clear Console
```

1.2. Load Libraries

```
  # renv::restore()     #restore environment
  library(knitr)       #allows rmarkdown files
  library(haven)       #helps import stata
  library(questionr)   #allows lookfor function
  library(MASS)        #calculate residualized scores
  library(tidyverse)   #plotting/cleaning, etc.
  library(broom)       #nice statistical output
  library(here)        #nice file paths
  library(expss)       #labeling variables/values
  library(psych)       #used for statistical analyses
  library(workflowr)   #helps with workflow
```

1.3. Get the Working Directory

```
  here()
```

```
## [1] "/Users/brentrappaport/Documents/temp_files/DDM/work"
```

1.4. Set seed

```
    set.seed(312)    #Set seed
```

1.5 Load Data

Remember to immediately rename and remove. Avoid overwriting old data.

```
here::i_am("work/management/data01_LDDM.Rmd")
```

```
## here() starts at /Users/brentrappaport/Documents/temp_files/DDM
```

```
LDDM_cleaning02_DDM1 <- read.csv(here("DDM_Results/Block_Based_Day1/Flanker_StTr_S1_Blocks_acc_avtz_DO_v
LDDM_cleaning02_DDM1$ID <- LDDM_cleaning02_DDM1$id

LDDM_cleaning02_DDM2 <- read.csv(here("DDM_Results/Block_Based_Day2/Flanker_StTr_S2_Blocks_DO_v.csv"))
LDDM_cleaning02_DDM2$ID <- LDDM_cleaning02_DDM2$id

LDDM_cleaning02_DDM3 <- read.csv(here("DDM_Results/Block_Based_Day3/Day3_Block11_Alternative_Models.csv
LDDM_cleaning02_DDM3$ID <- LDDM_cleaning02_DDM3$id

LDDM_cleaning02_frac_prak_latency <- read.csv(here("eeg_processing/erppath/frac_peak_latency_p3_200800.
LDDM_cleaning02_frac_prak_latency <- LDDM_cleaning02_frac_prak_latency %>%
  rename_with(~paste0(., "_fpl"), contains("bin"))

LDDM_cleaning02_mean_amplitude_ERN_CRN_080 <- read.csv(here("eeg_processing/erppath/mean_amplitude_ERN_
```

```
LDDM_cleaning02_mean_amplitude_ERN_CRN_080 <- LDDM_cleaning02_mean_amplitude_ERN_CRN_080 %>%
  rename_with(~paste0(., "_080"), contains("bin"))

LDDM_cleaning02_mean_amplitude_ERN_CRN_0100 <- read.csv(here("eeg_processing/erppath/mean_amplitude_ERN
LDDM_cleaning02_mean_amplitude_ERN_CRN_0100 <- LDDM_cleaning02_mean_amplitude_ERN_CRN_0100 %>%
  rename_with(~paste0(., "_0100"), contains("bin"))

# Merge all ERP measurements together (P3 onset, Error amplitude, Correct amplitude)
LDDM_cleaning02_erp <- LDDM_cleaning02_frac_prak_latency %>%
  left_join(LDDM_cleaning02_mean_amplitude_ERN_CRN_080, by=c('ID','Session')) %>%
  left_join(LDDM_cleaning02_mean_amplitude_ERN_CRN_0100, by=c('ID','Session'))

# Merge all three days of DDM data with ERP data
LDDM_cleaning02 <- LDDM_cleaning02_DDM1 %>%
  left_join(LDDM_cleaning02_DDM2, by='ID') %>%
  left_join(LDDM_cleaning02_DDM3, by='ID') %>%
  left_join(LDDM_cleaning02_erp, by='ID')

save(LDDM_cleaning02, file=here("work/data/LDDM_cleaning02.RData"))
```

1.5.1 Non-DMM Flanker behavioral RT

```
LDDM_cleaning02_rt <- read_sav(here("work/data/STTR_master_6.6.18_clean_ERN_PE_LPPbehav.sav"))
LDDM_cleaning02_rt <-  LDDM_cleaning02_rt %>%
  select("ID",matches("Correct|Errors")) %>%
  select(-matches('neut|mut|erot'))
save(LDDM_cleaning02_rt, file=here("work/data/LDDM_cleaning02_rt.RData"))
```

1. Select only days 1 and 2 and 3

```
LDDM_cleaning03 <- LDDM_cleaning02

colnames(LDDM_cleaning03) <- sub('bin5_|bin7_|bin3_|bin4_', '', colnames(LDDM_cleaning03))
colnames(LDDM_cleaning03) <- sub('Congruent_arrow_followed_by_correct', 'Congruent', colnames(LDDM_clea
colnames(LDDM_cleaning03) <- sub('Incongruent_arrow_followed_by_correct', 'Incongruent', colnames(LDDM_
colnames(LDDM_cleaning03) <- sub('__', '_', colnames(LDDM_cleaning03))


LDDM_cleaning03_d1 <- LDDM_cleaning03 %>%
  filter(Session==1)

LDDM_cleaning03_d2 <- LDDM_cleaning03 %>%
  filter(Session==2)

LDDM_cleaning03_d3 <- LDDM_cleaning03 %>%
  filter(Session==3)
```

3. Create residualized scores

```
electrodes_list <- c("FZ","CZ","FCZ","CPZ","PZ","POZ")
time_windows <- c("080","0100")
sessions <- c(1,2,3)

# Calculate residualized ERN and difference score ERN (for verification of direction)
for (ex in electrodes_list[1:3]){
  for (tw in time_windows){
    for (days in sessions)
    eval(parse(text=paste0('LDDM_cleaning03_d',days,'$',ex,'_ERN_',tw,' <- stdres(lm(Error_',ex,'_',tw,
    eval(parse(text=paste0('LDDM_cleaning03_d',days,'$',ex,'_ERN_diff',tw,' <- LDDM_cleaning03_d',days,
  }
}

# Calculate residualized P3 onset
for (ex in electrodes_list[4:6]){
      for (days in sessions) {
        eval(parse(text=paste0('LDDM_cleaning03_d',days,'$',ex,'_P3_onset_incon <- stdres(lm(Incongruen
        eval(parse(text=paste0('LDDM_cleaning03_d',days,'$',ex,'_P3_onset_con <- stdres(lm(Congruent_',
      }
}
```

4. Closing out

In this step, go ahead and close out of the file and quit R without saving the work space.

```
save(LDDM_cleaning03, file=here("work/data/LDDM_cleaning03.RData"))
save(LDDM_cleaning03_d1, file=here("work/data/LDDM_cleaning03_d1.RData"))
save(LDDM_cleaning03_d2, file=here("work/data/LDDM_cleaning03_d2.RData"))
save(LDDM_cleaning03_d3, file=here("work/data/LDDM_cleaning03_d3.RData"))

   # renv::snapshot()   #Take a snapshot of environment
```