Data prep script 3: Importing and combining ERP data

Template Rmd

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Contents

About

This script filter and scores the self-report data from BUDS study: Bullying, Unsupportive family/peers, Discrimination, and Social feedback study using data from PREDICT project collaboration between Northwestern (PI: Shankman) and Columbia (PI: Auerbach).

Get Setup

Clear everything & set width

```
knitr::opts_chunk$set(set.seed(312), echo=TRUE, results='hide', message=FALSE)

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

Load Libraries

Get the Working Directory

Load data

ADI

Import Area Deprivation Index data

A note on the ADI: "Why are some block groups missing ADI ranks? When a Census Block Group falls into one or more of the suppression criteria mentioned above the ADI rank is replaced with a code describing the suppression reason. Three possible codes will appear in the ADI field: PH for suppression due to low population and/or housing, GQ for suppression due to a high group quarters population, and PH-GQ for suppression due to both types of suppression criteria. A code of KVM designates block groups without an ADI due to Key Missing Variables, stemming from missing data in the source ACS data." https://www.neighborhoodatlas.medicine.wisc.edu/#faq-anchor

N = are missing data due to one of these fields, and an additional are missing data due to bad addresses.

Compute grand average by ADI median split

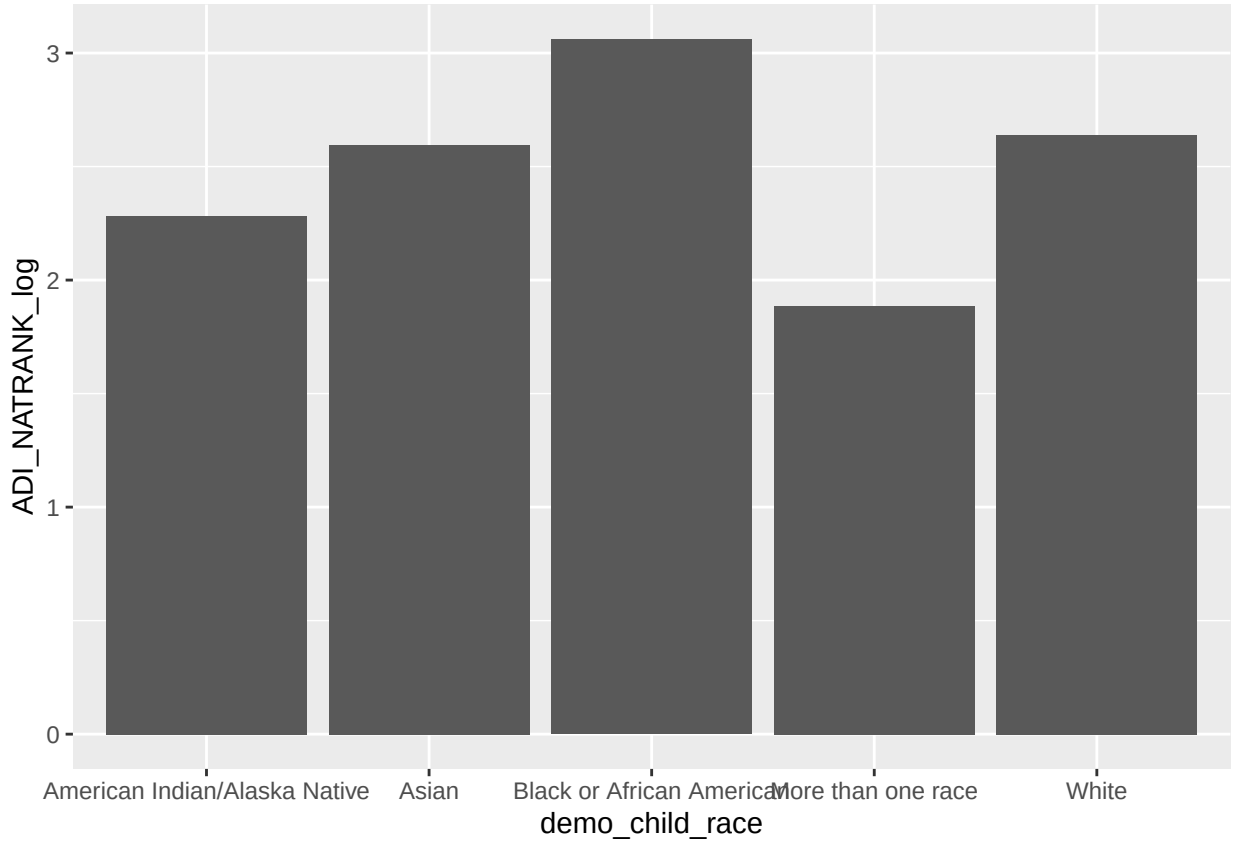
Compute scalp topography by ADI median split

Race/Ethnicity and ADI

```
anova(lm(formula = ADI_NATRANK_log ~ Racial_minority, data =df_250450_fz))
anova(lm(formula = ADI_NATRANK_log ~ Racial_majority, data =df_250450_fz))
anova(lm(formula = ADI_NATRANK_log ~ demo_child_hispanic, data =df_250450_fz))

anova(lm(formula = ADI_NATRANK_log ~ demo_child_race, data =df_250450_fz))

anova(lm(formula = ADI_NATRANK_log ~ demo_child_race, data = filter(df_250450_fz, demo_child_race=="Whi
              demo_child_race=="Asian" |
              demo_child_race=="American Indian/Alaska Native" |
              demo_child_race=="Black or African American" |
              demo_child_race=="More than one race")))

ggplot(filter(df_250450_fz, demo_child_race=="White" |
              demo_child_race=="Asian" |
              demo_child_race=="American Indian/Alaska Native" |
              demo_child_race=="Black or African American" |
              demo_child_race=="More than one race"), aes(x=demo_child_race, y=ADI_NATRANK_log)) +
  geom_bar(stat = "summary", fun.y = "median")
```

```
## Warning in geom_bar(stat = "summary", fun.y = "median"): Ignoring unknown
## parameters: `fun.y`
```

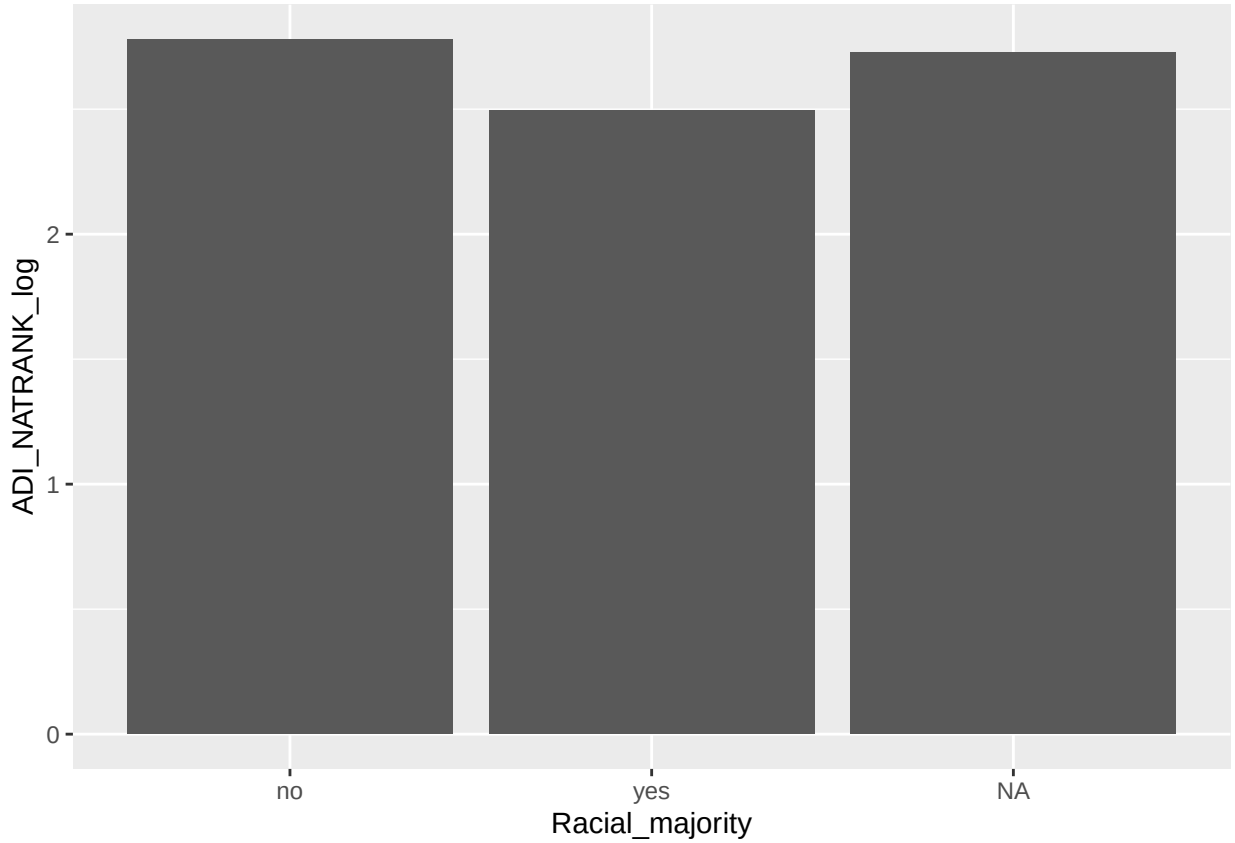
```
## Warning: Removed 38 rows containing non-finite values (`stat_summary()`).
```




```
ggplot(df_250450_fz, aes(x=Racial_majority, y=ADI_NATRANK_log)) +
  geom_bar(stat = "summary", fun.y = "median")
```

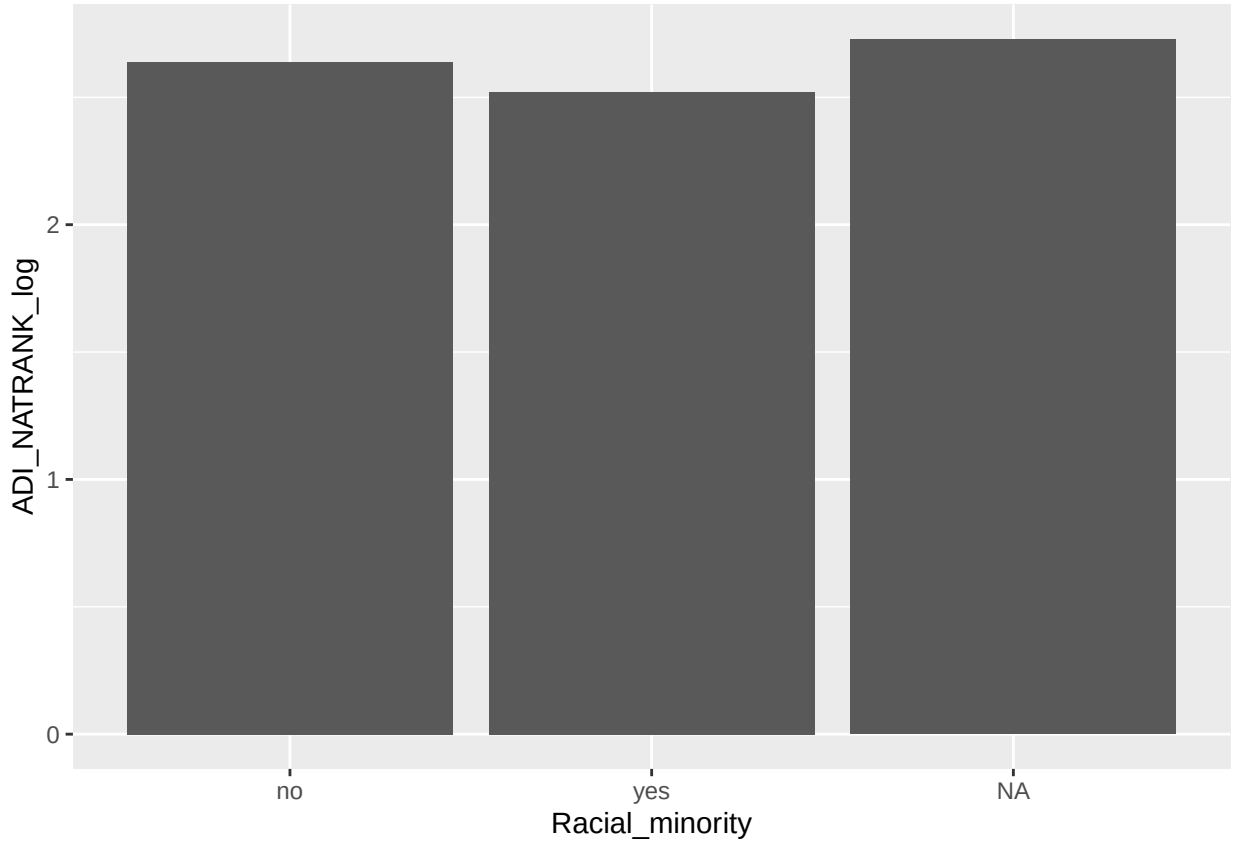
```
## Warning in geom_bar(stat = "summary", fun.y = "median"): Ignoring unknown
## parameters: `fun.y`
```

```
## Warning: Removed 48 rows containing non-finite values (`stat_summary()`).
```



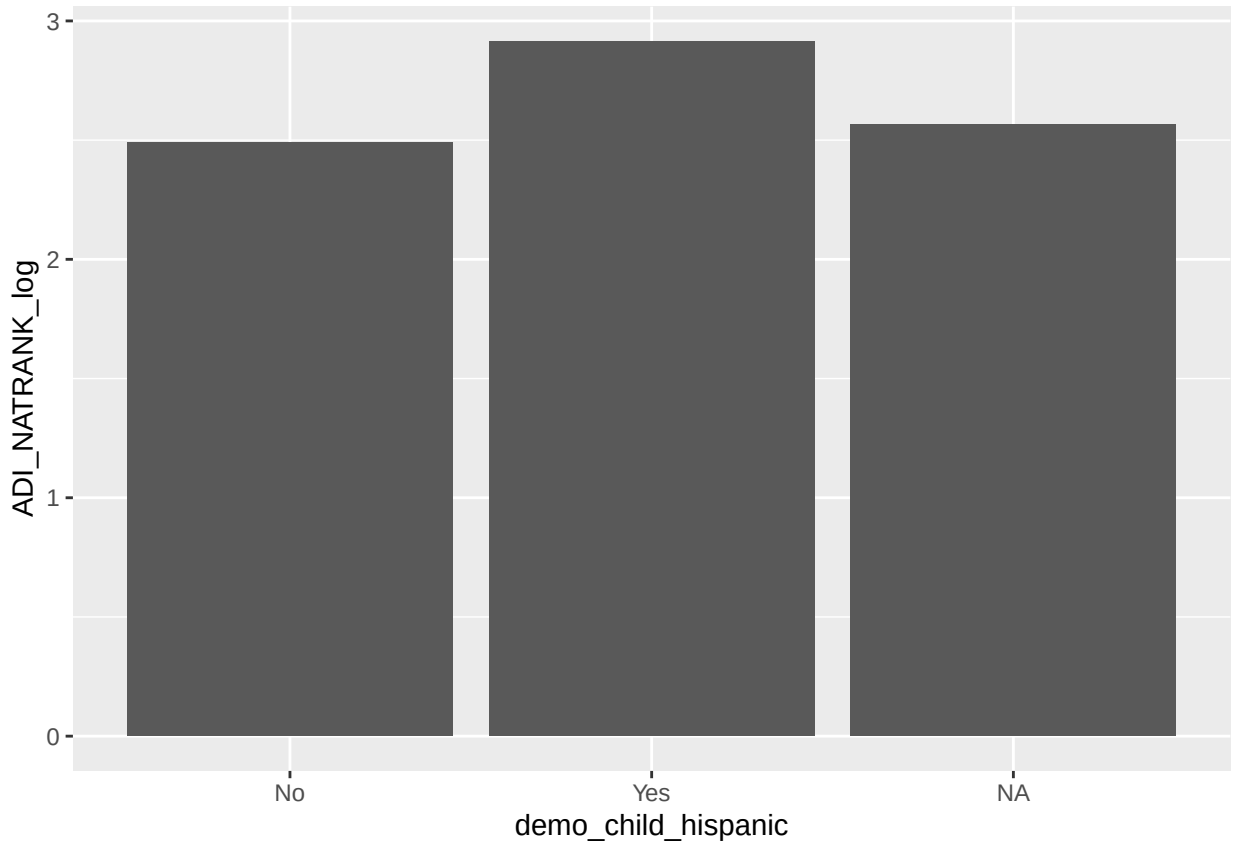

```
ggplot(df_250450_fz, aes(x=Racial_minority, y=ADI_NATRANK_log)) +
  geom_bar(stat = "summary", fun.y = "median")
```

```
## Warning in geom_bar(stat = "summary", fun.y = "median"): Ignoring unknown parameters: ‘fun.y‘
## Removed 48 rows containing non-finite values (‘stat_summary()‘).
```




```
ggplot(df_250450_fz, aes(x=demo_child_hispanic, y=ADI_NATRANK_log)) +
  geom_bar(stat = "summary", fun.y = "median")
```

```
## Warning in geom_bar(stat = "summary", fun.y = "median"): Ignoring unknown parameters: `fun.y`
## Removed 48 rows containing non-finite values (`stat_summary()`).
```

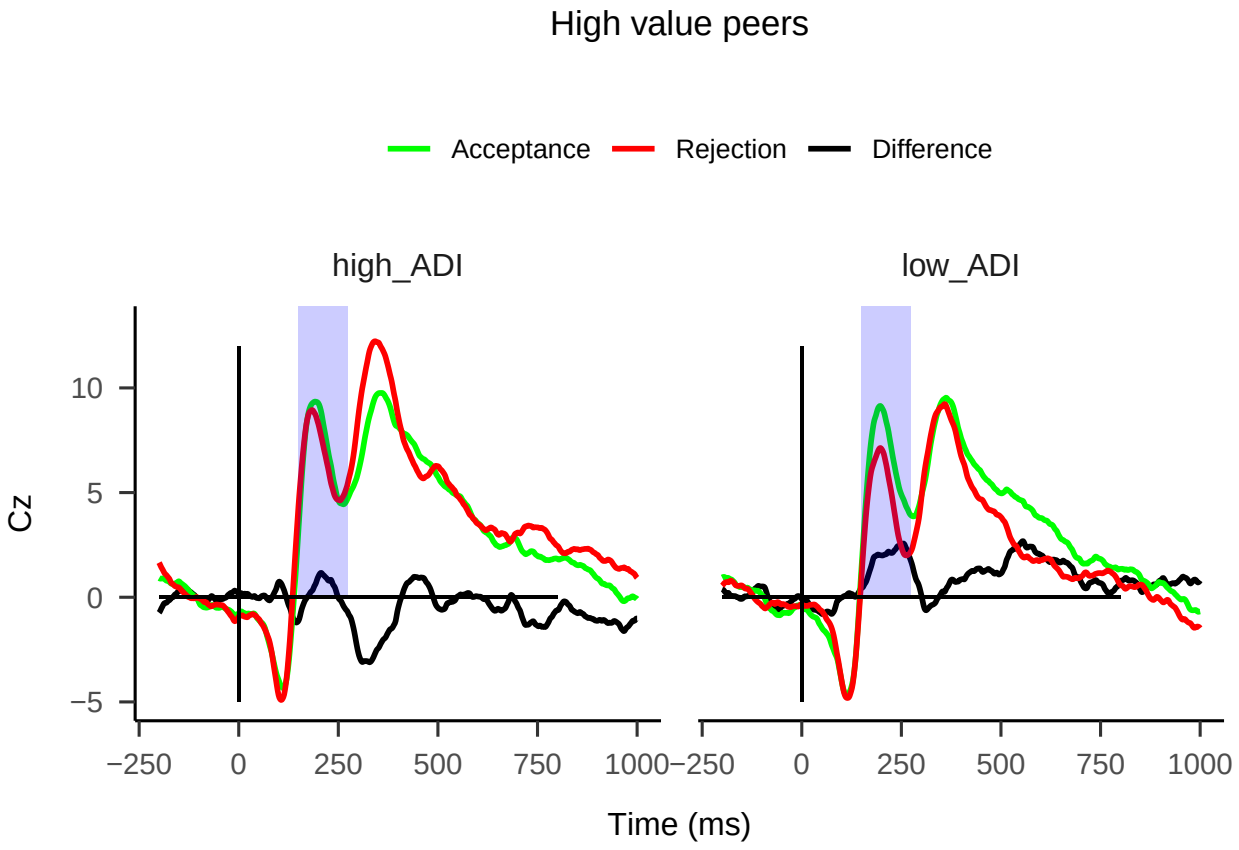


Plots

Grand average

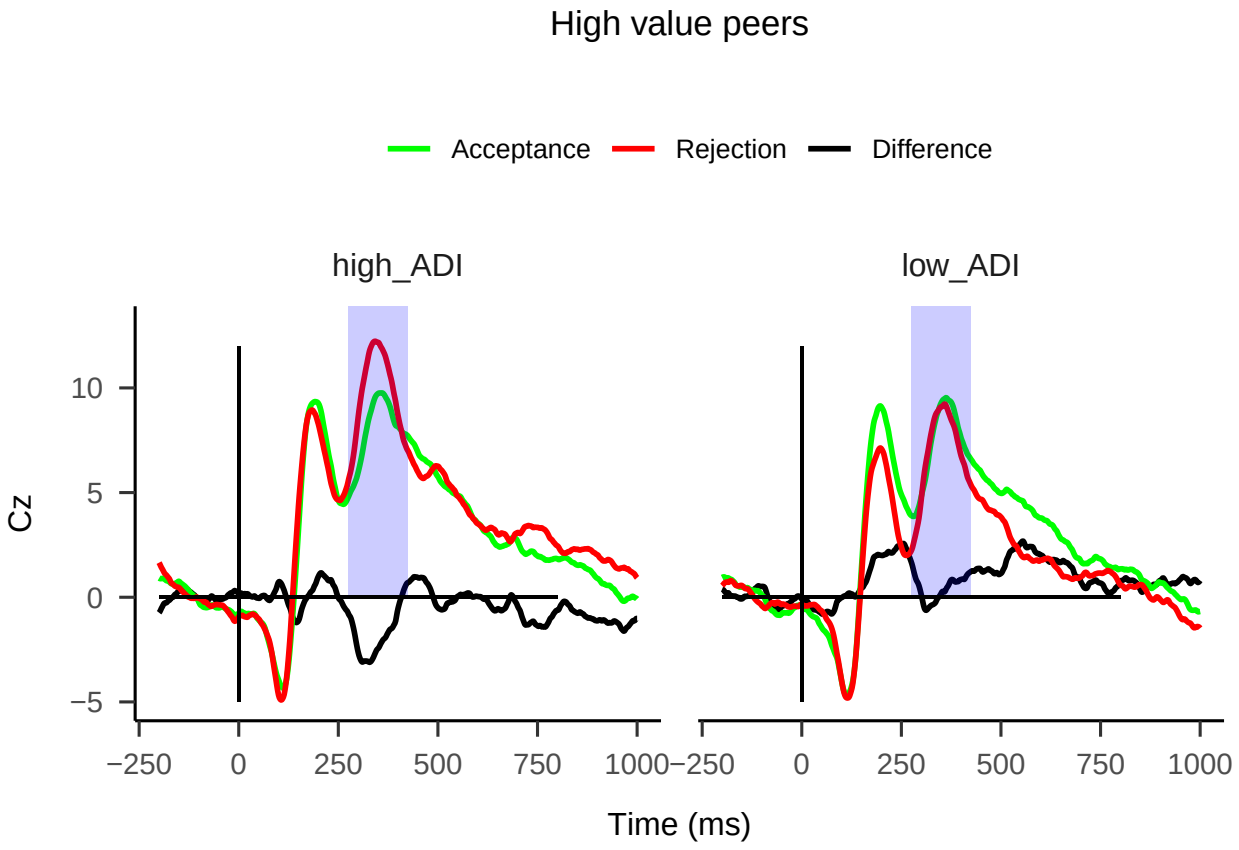
```
ggplot(data=filter(df_ga_Cz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej" | Condition=="AA_AR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 1000) +
  ylim( -5, 13) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=150, xmax=275, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=12), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Acc_Acc","Acc_Rej","AA_AR"),
                     values=c("Acc_Acc"="green", "AA_AR"="black", "Acc_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Cz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1497 rows containing missing values (‘geom_line()‘).
```



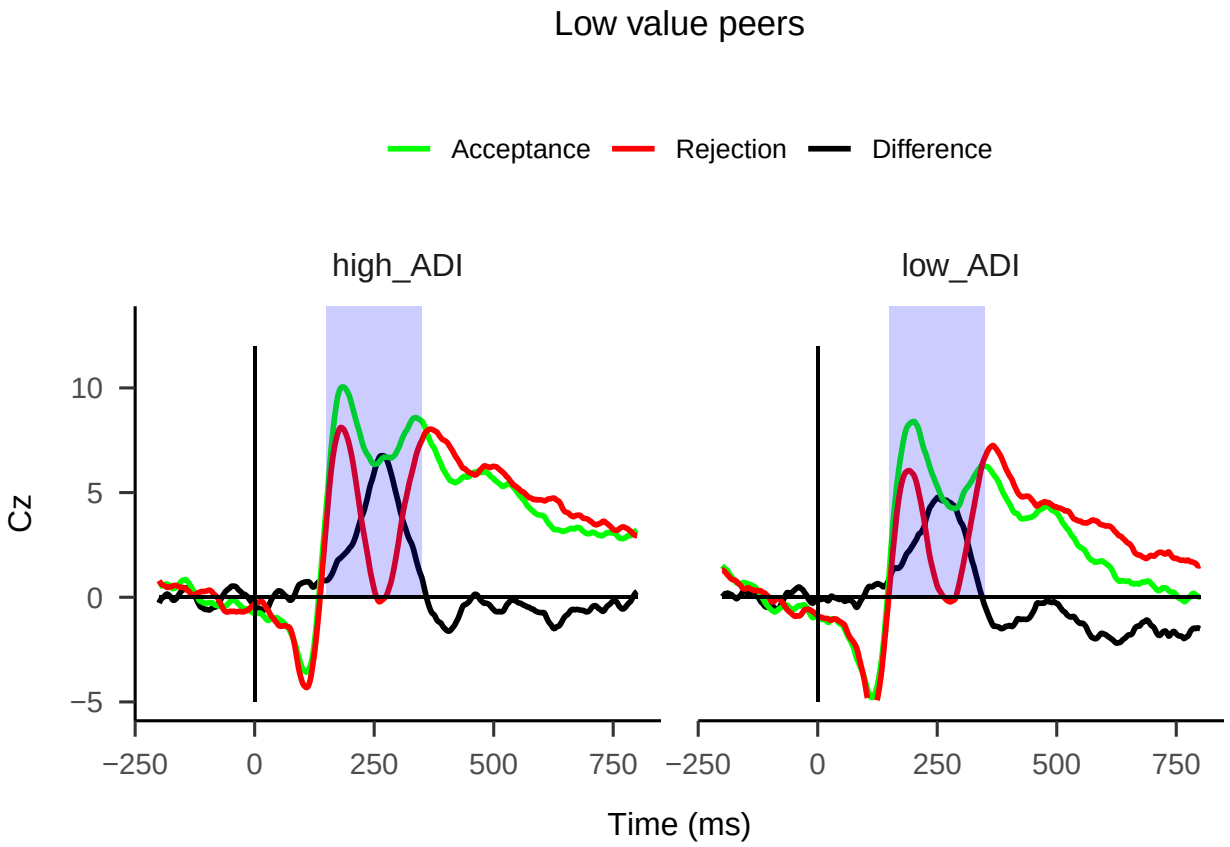

```
ggplot(data=filter(df_ga_Cz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej" | Condition=="AA_AR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 1000) +
  ylim( -5, 13) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=275, xmax=425, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=12), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Acc_Acc","Acc_Rej","AA_AR"),
                     values=c("Acc_Acc"="green", "AA_AR"="black", "Acc_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Cz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1497 rows containing missing values (`geom_line()`).
```



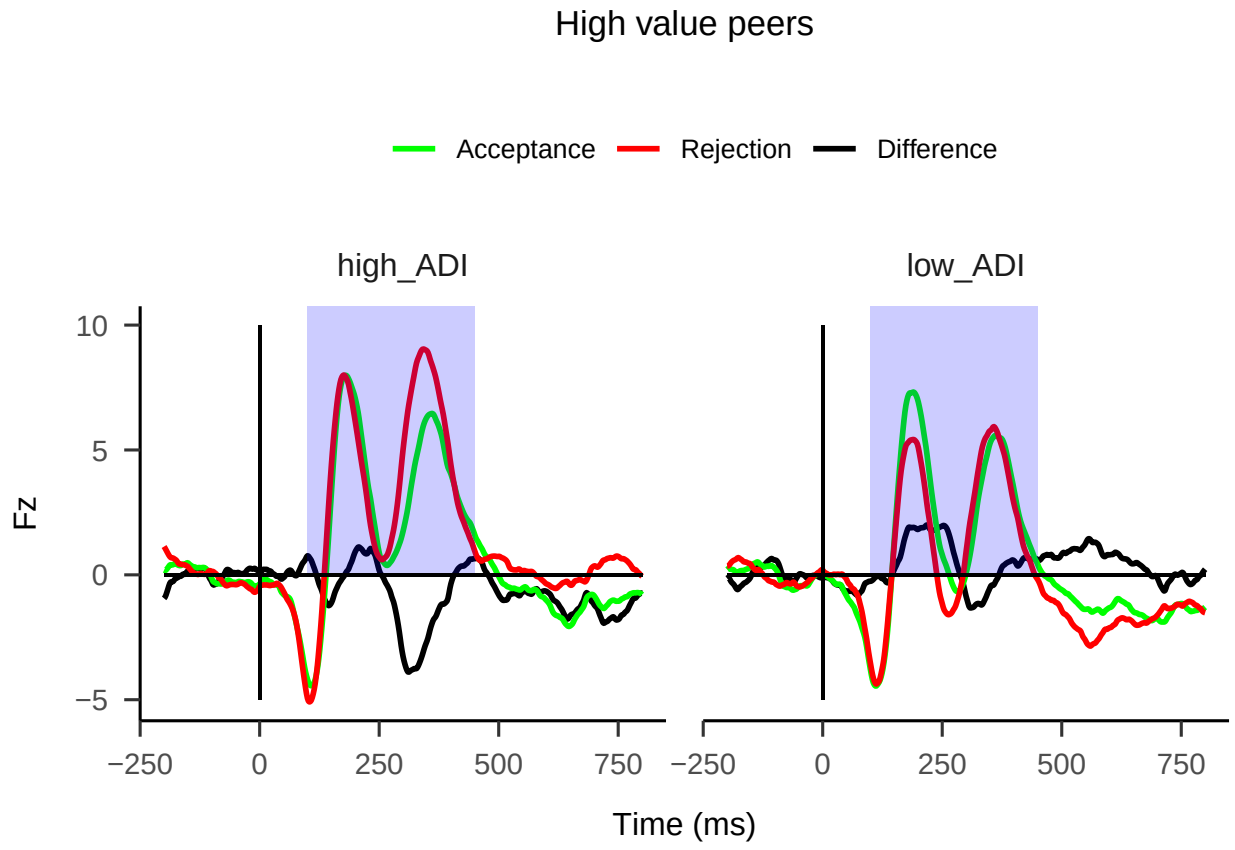

```
ggplot(data=filter(df_ga_Cz_adi_wide, Condition=="Rej_Acc" | Condition=="Rej_Rej" | Condition=="RA_RR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 800) +
  ylim( -5, 13) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=150, xmax=350, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=12), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Rej_Acc","Rej_Rej","RA_RR"),
                     values=c("Rej_Acc"="green", "RA_RR"="black", "Rej_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Cz", title="Low value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1797 rows containing missing values (`geom_line()`).
```



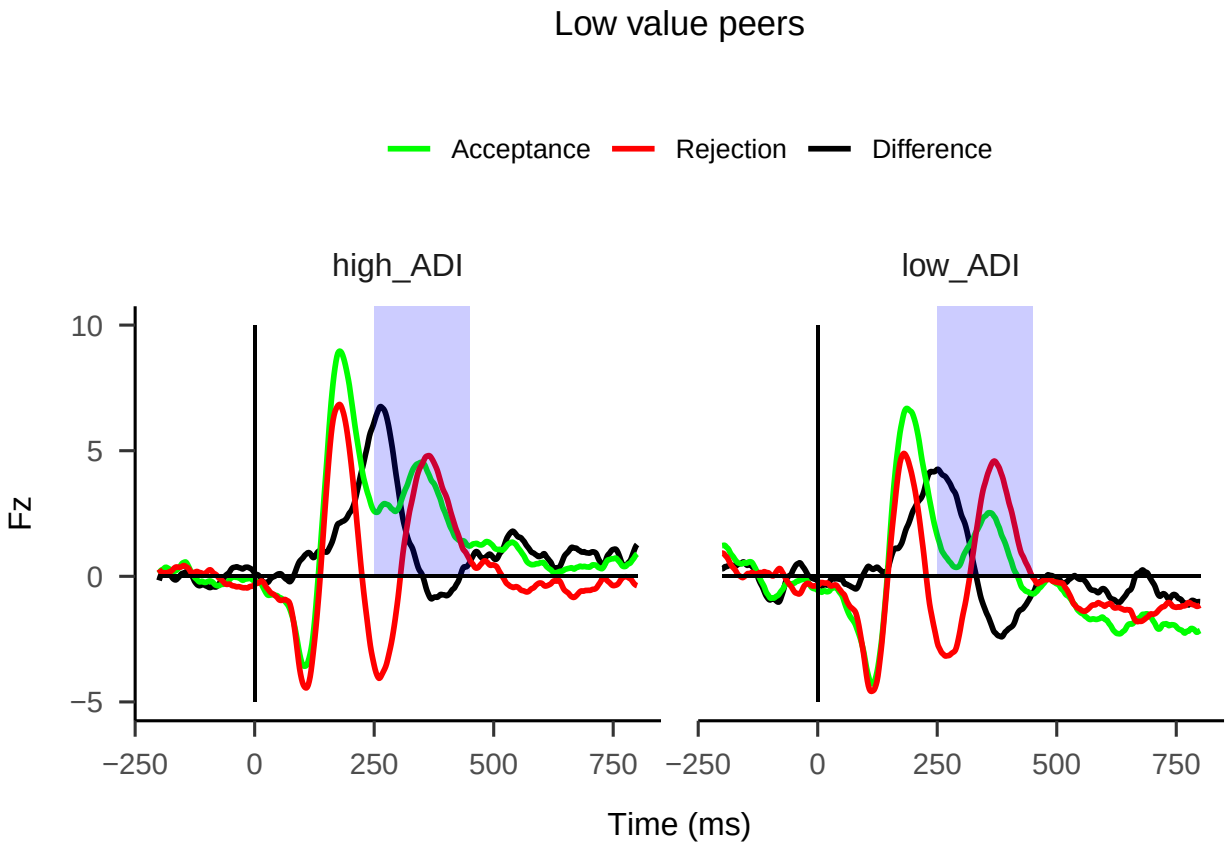

```
ggplot(data=filter(df_ga_Fz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej" | Condition=="AA_AR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 800) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=100, xmax=450, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=10), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Acc_Acc","Acc_Rej","AA_AR"),
                     values=c("Acc_Acc"="green", "AA_AR"="black", "Acc_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Fz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1797 rows containing missing values (`geom_line()`).
```



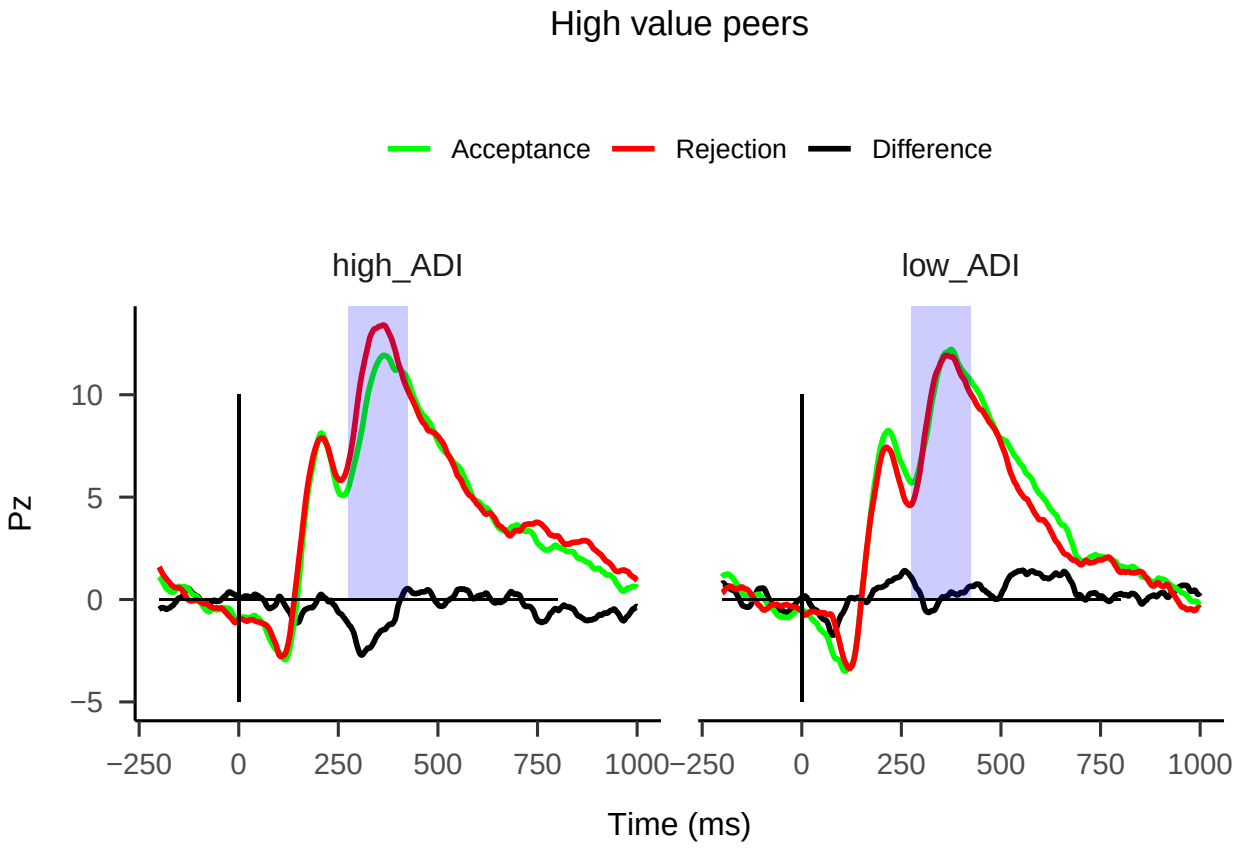

```
ggplot(data=filter(df_ga_Fz_adi_wide, Condition=="Rej_Acc" | Condition=="Rej_Rej" | Condition=="RA_RR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 800) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=250, xmax=450, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=10), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Rej_Acc","Rej_Rej","RA_RR"),
                     values=c("Rej_Acc"="green", "RA_RR"="black", "Rej_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Fz", title="Low value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1797 rows containing missing values (`geom_line()`).
```



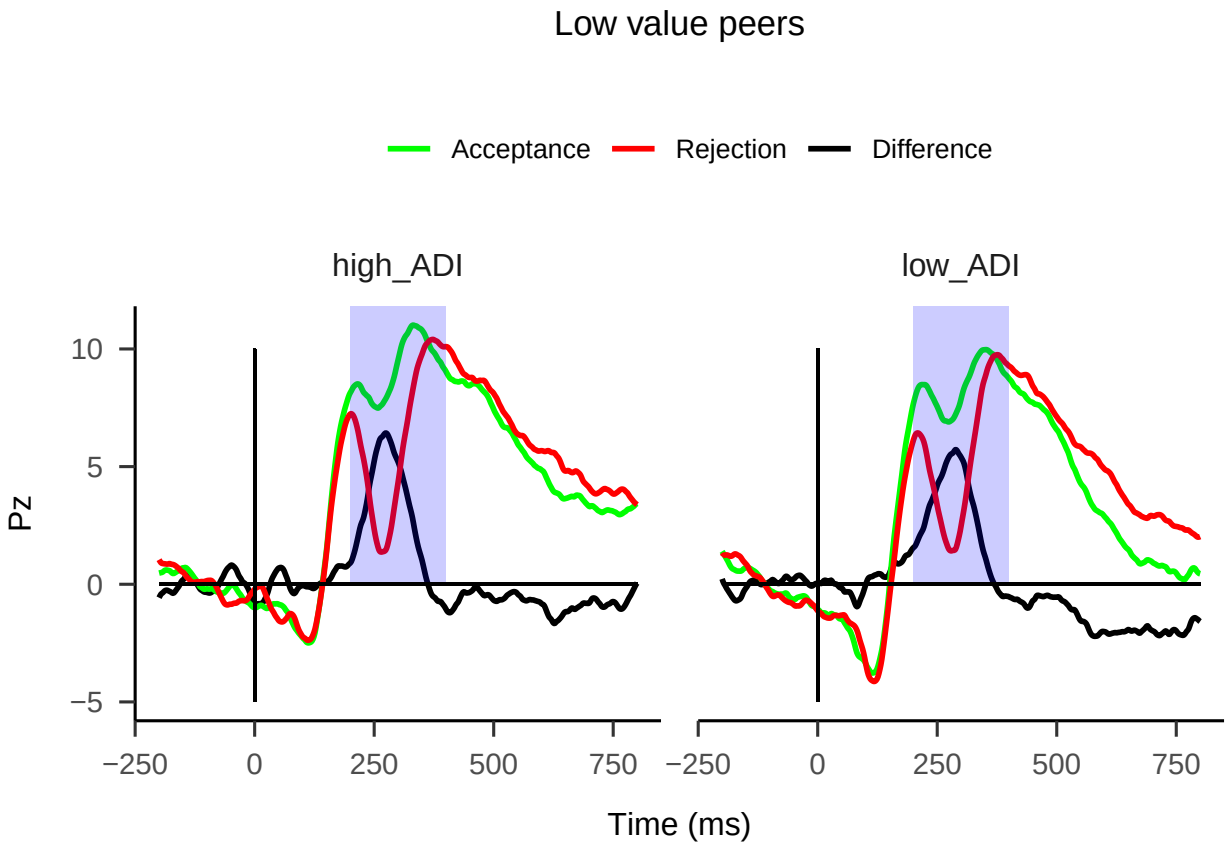

```
ggplot(data=filter(df_ga_Pz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej" | Condition=="AA_AR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 1000) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=275, xmax=425, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=10), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Acc_Acc","Acc_Rej","AA_AR"),
                     values=c("Acc_Acc"="green", "AA_AR"="black", "Acc_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Pz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1497 rows containing missing values (`geom_line()`).
```




```
ggplot(data=filter(df_ga_Pz_adi_wide, Condition=="Rej_Acc" | Condition=="Rej_Rej" | Condition=="RA_RR")
  facet_wrap(~ adi_median_split) +
  xlim(-200, 800) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=200, xmax=400, ymin=0, ymax=Inf, alpha=0.2, fill="blue") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=10), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  scale_color_manual(breaks=c("Rej_Acc","Rej_Rej","RA_RR"),
                     values=c("Rej_Acc"="green", "RA_RR"="black", "Rej_Rej"="red"),
                     labels=c("Acceptance","Rejection","Difference"), name=NULL) +
  labs(x="Time (ms)", y="Pz", title="Low value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

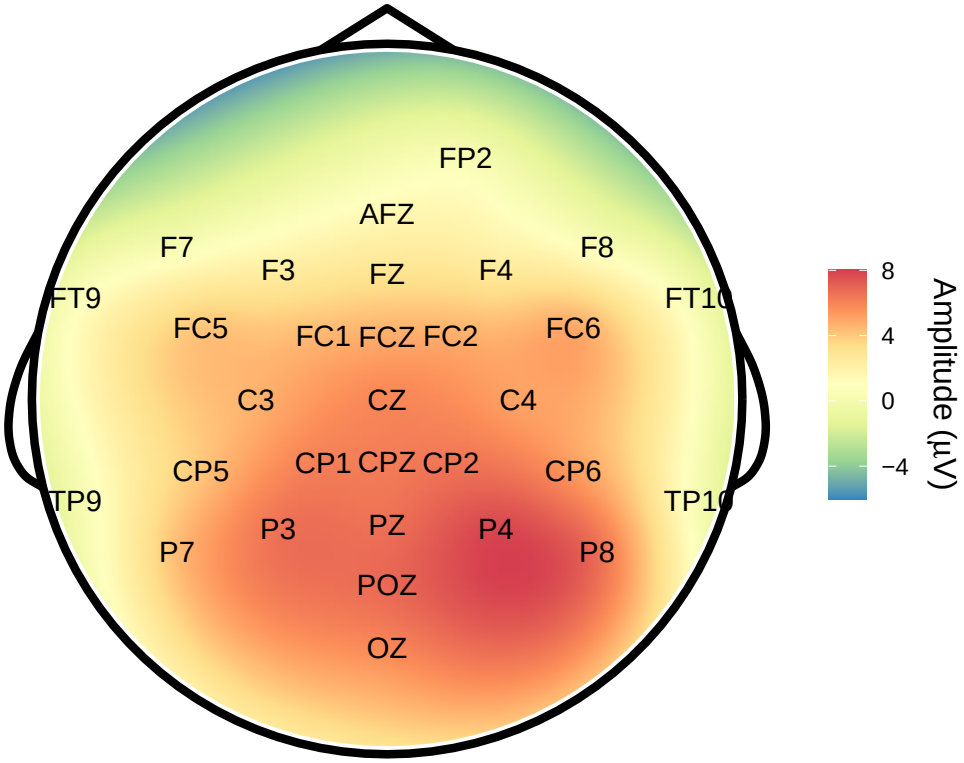
```
## Warning: Removed 1797 rows containing missing values (`geom_line()`).
```



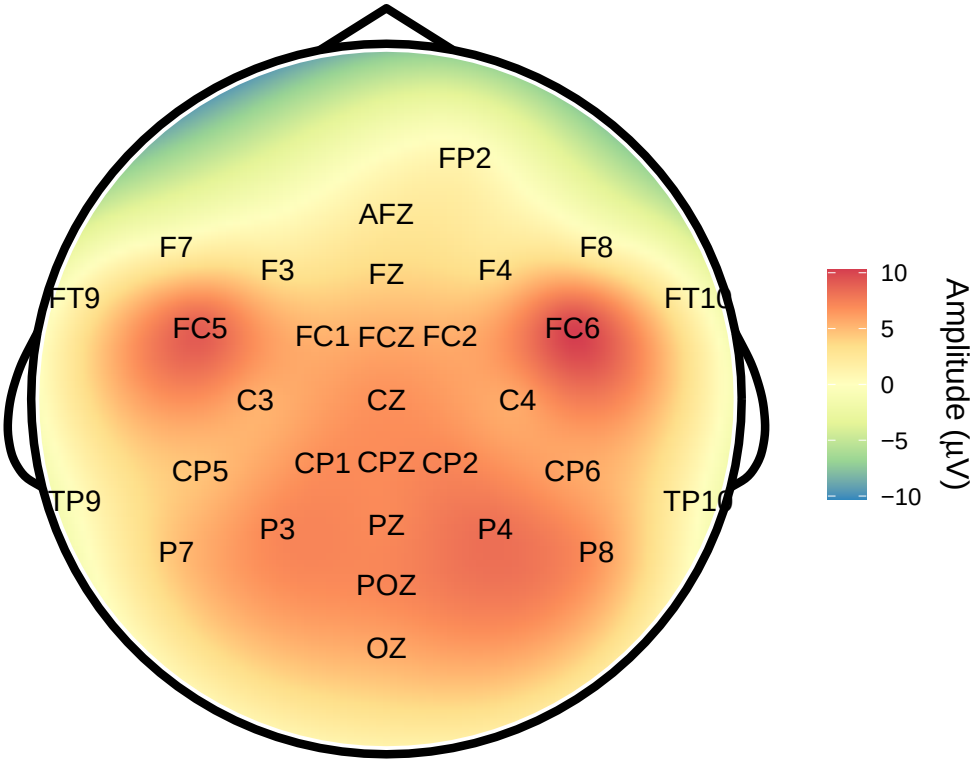
High ADI participants show an enhanced P300 to high value rejection relative to acceptance.

Plot scalp topographies

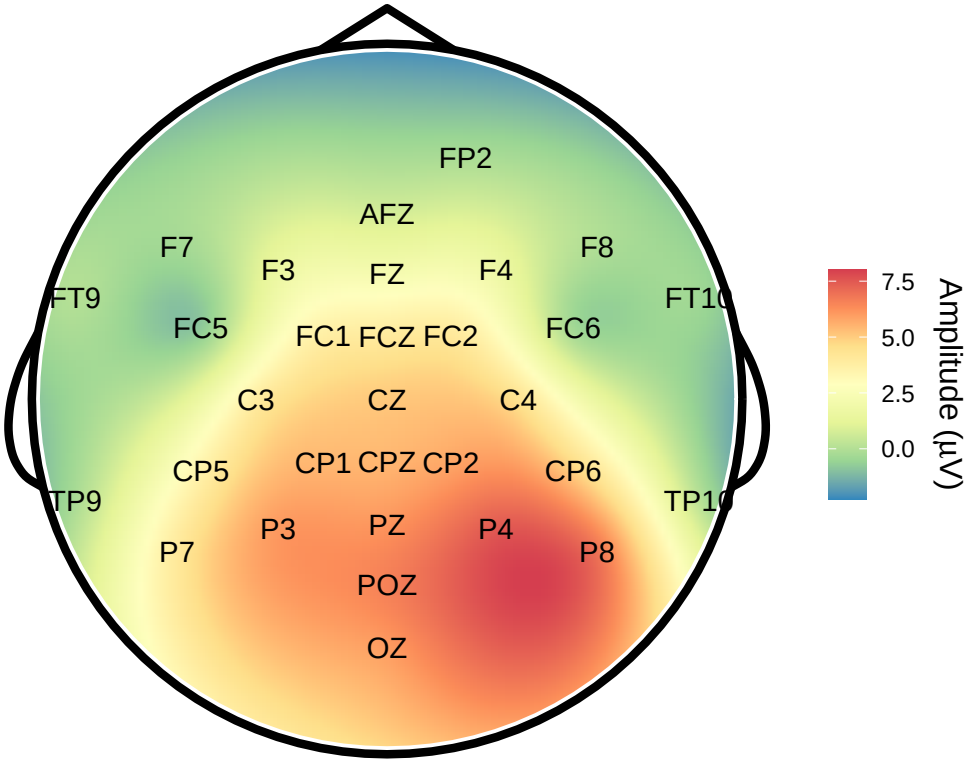
```
topoplot(eeg.map_for_plotting_adi_150350, palette="Spectral", chanLocs=chanlocs, contour=FALSE, interp_
```



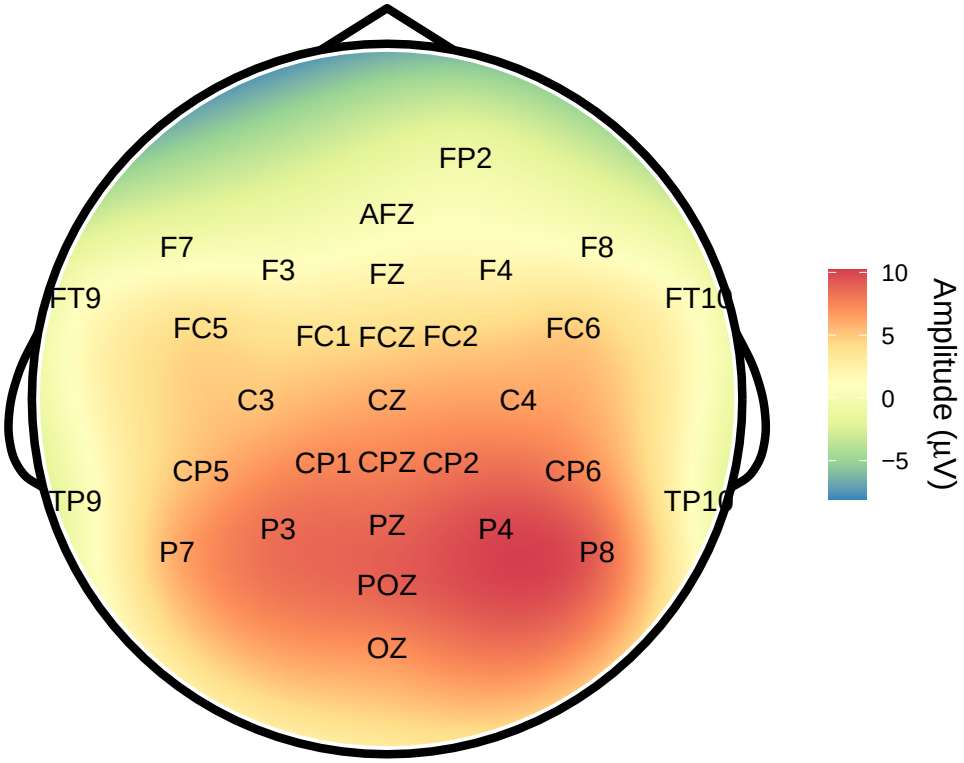

```
topoplot(filter(eeg.map_for_plotting_adi_150350, adi_median_split=="high_ADI"), palette="Spectral", cha
```



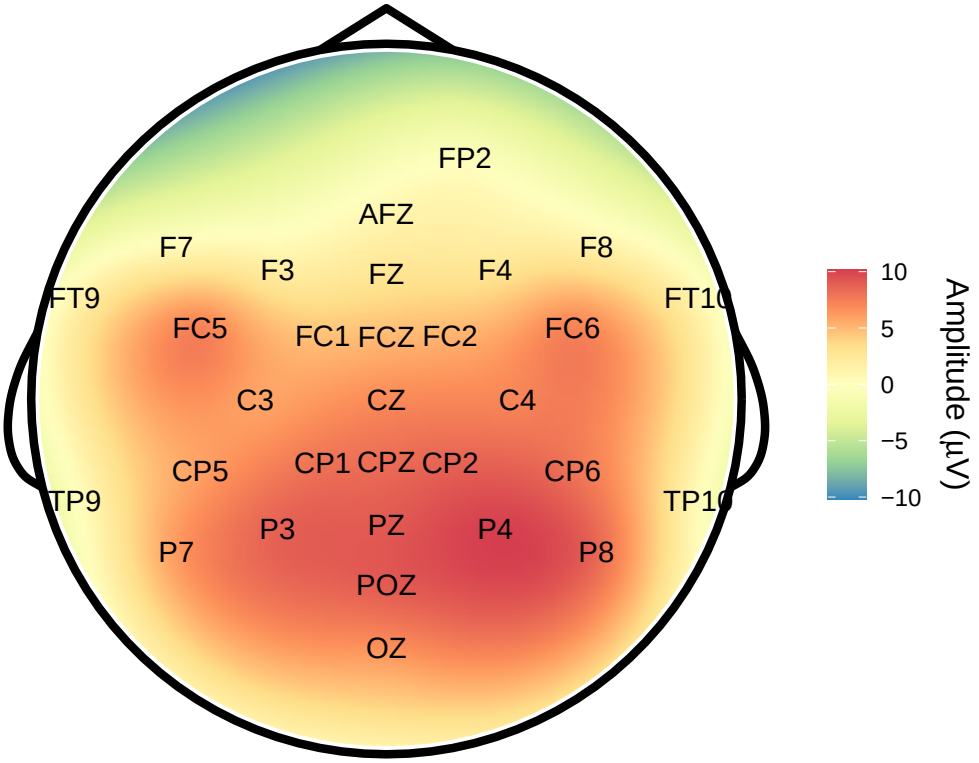

```
topoplot(filter(eeg.map_for_plotting_adi_150350, adi_median_split=="low_ADI"), palette="Spectral", chanl
```



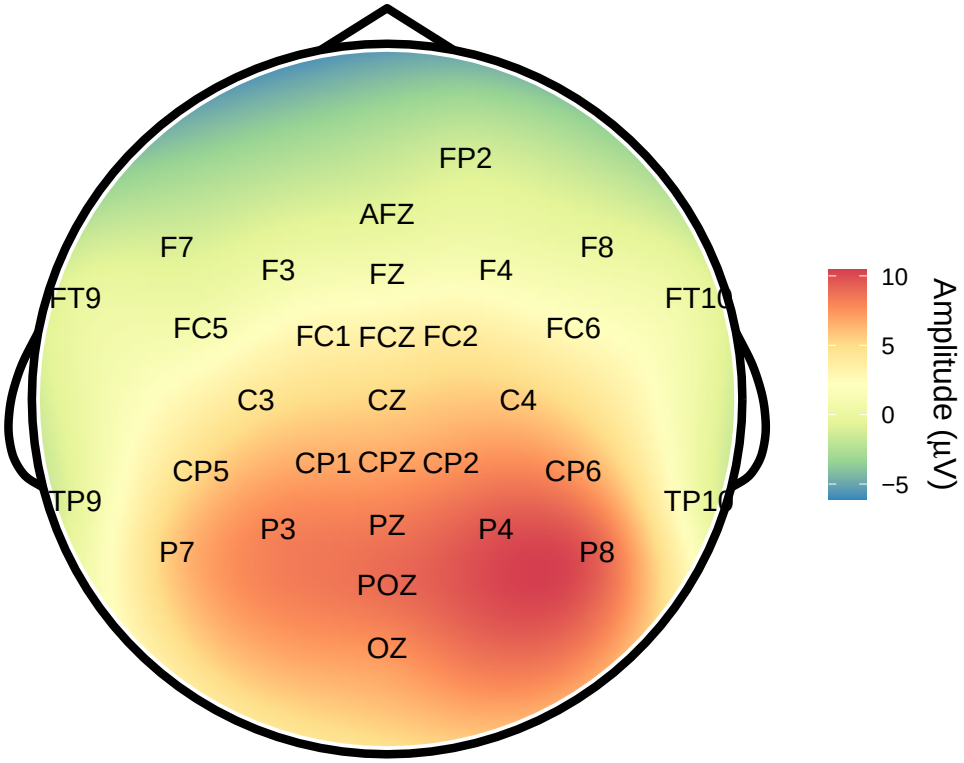

```
topoplot(eeg.map_for_plotting_adi_250500, palette="Spectral", chanLocs=chanlocs, contour=FALSE, interp_
```



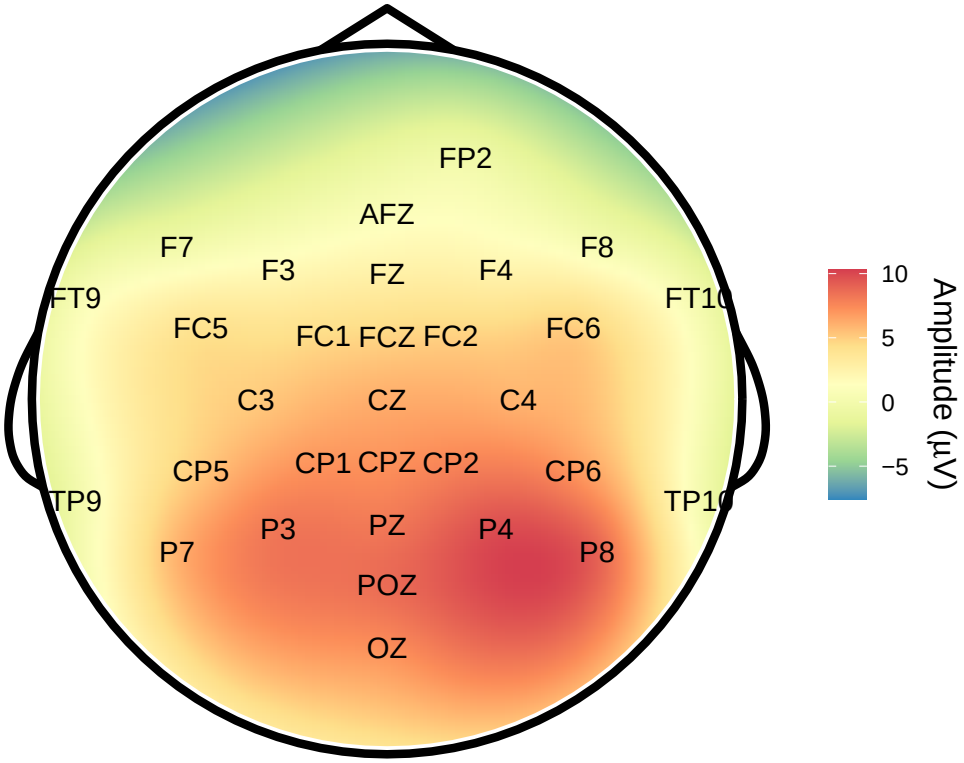

```
topoplot(filter(eeg.map_for_plotting_adi_250500, adi_median_split=="high_ADI"), palette="Spectral", cha
```



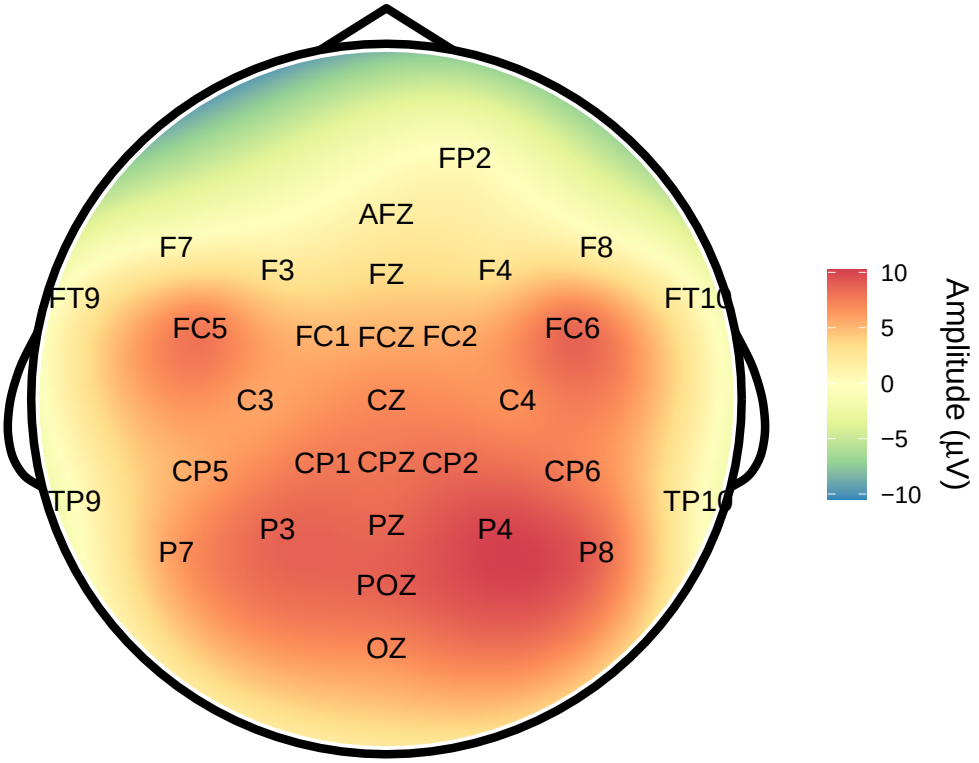

```
topoplot(filter(eeg.map_for_plotting_adi_250500, adi_median_split=="low_ADI"), palette="Spectral", chanl
```



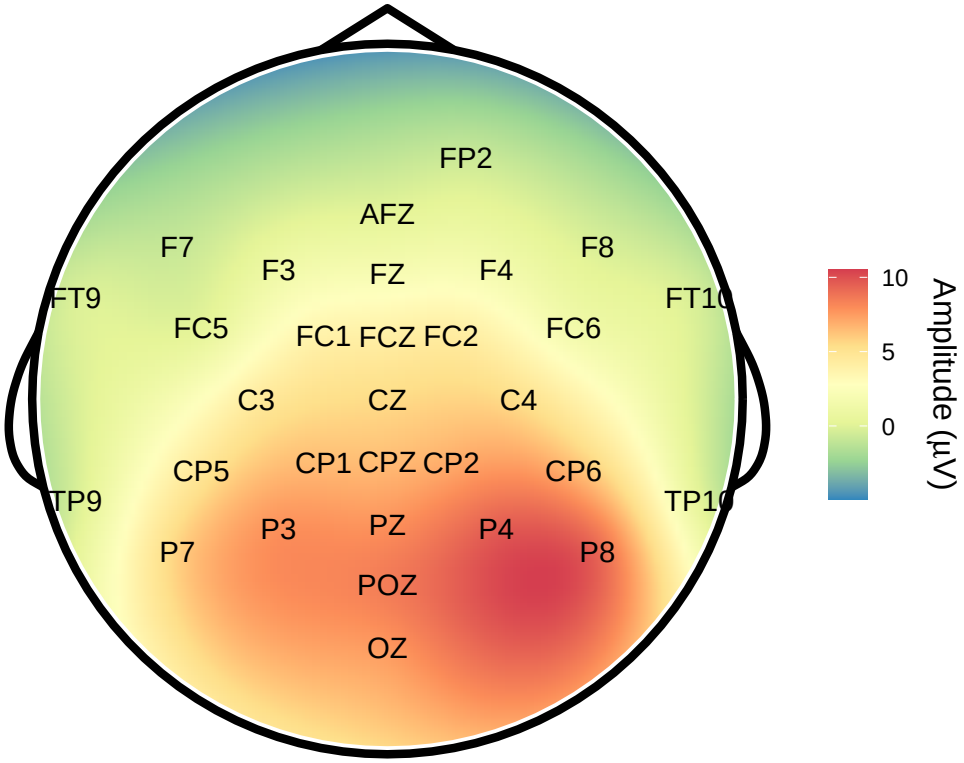

```
topoplot(eeg.map_for_plotting_adi_200400, palette="Spectral", chanLocs=chanlocs, contour=FALSE, interp_
```



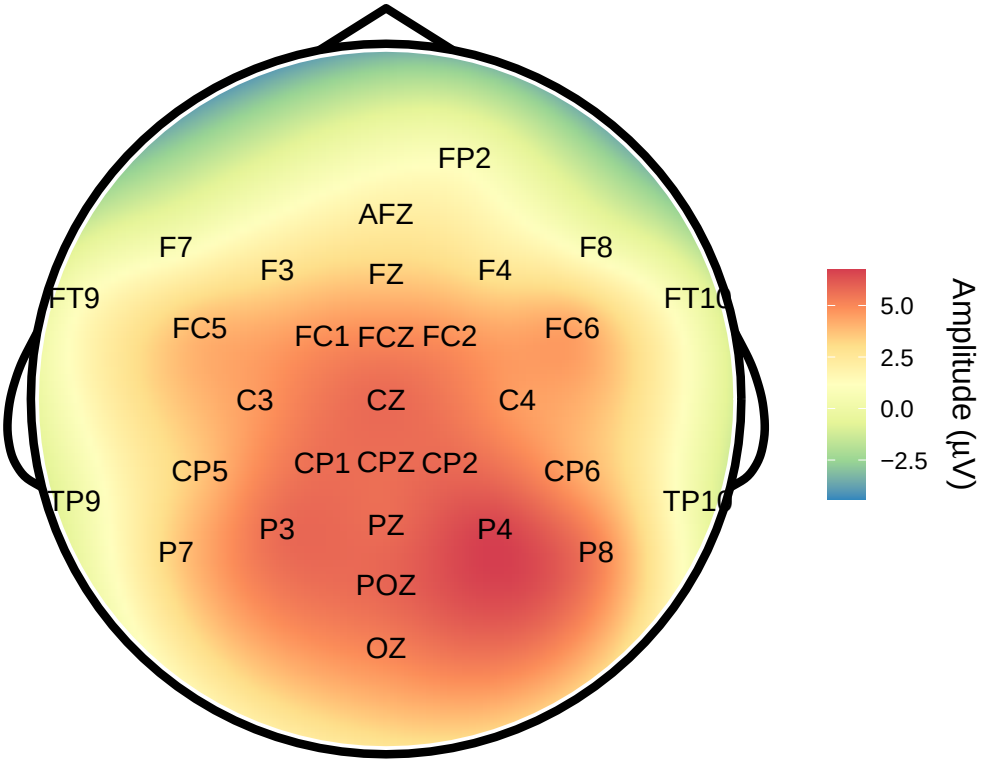

```
topoplot(filter(eeg.map_for_plotting_adi_200400, adi_median_split=="high_ADI"), palette="Spectral", cha
```



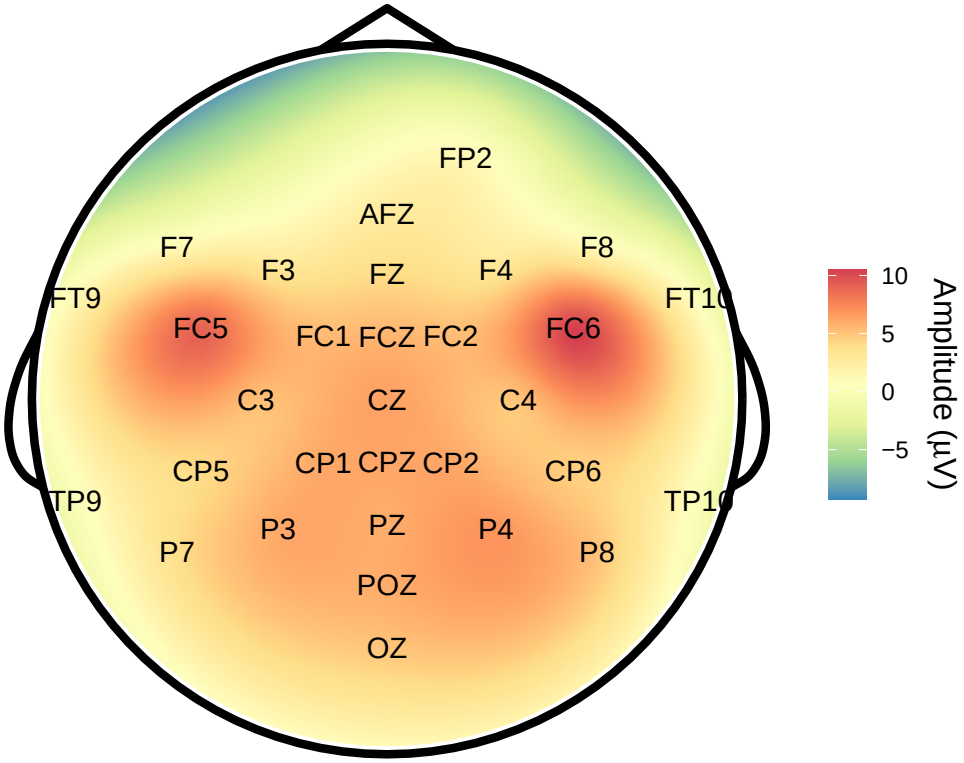

```
topoplot(filter(eeg.map_for_plotting_adi_200400, adi_median_split=="low_ADI"), palette="Spectral", chanl
```



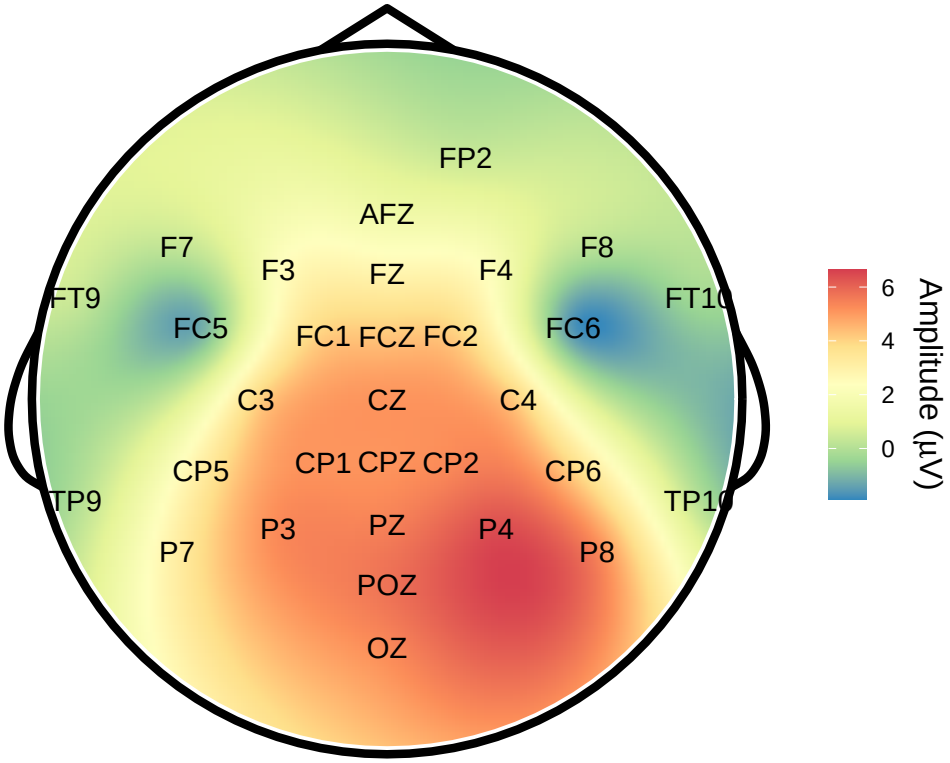

```
topoplot(eeg.map_for_plotting_adi_150275, palette="Spectral", chanLocs=chanlocs, contour=FALSE, interp_
```



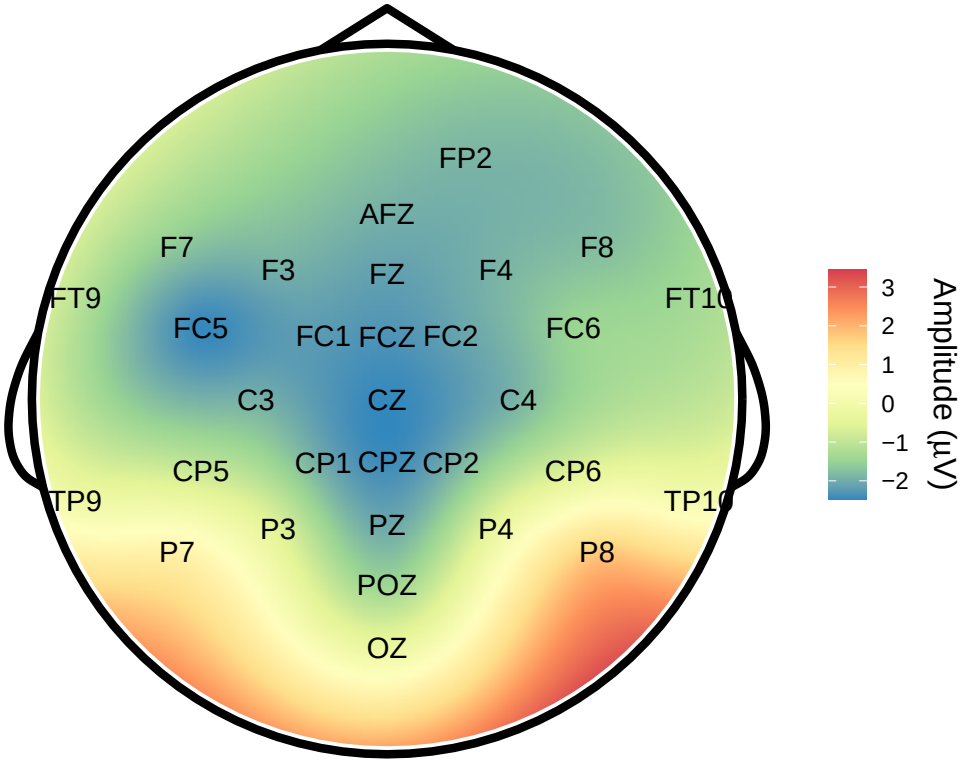

```
topoplot(filter(eeg.map_for_plotting_adi_150275, adi_median_split=="high_ADI"), palette="Spectral", cha
```



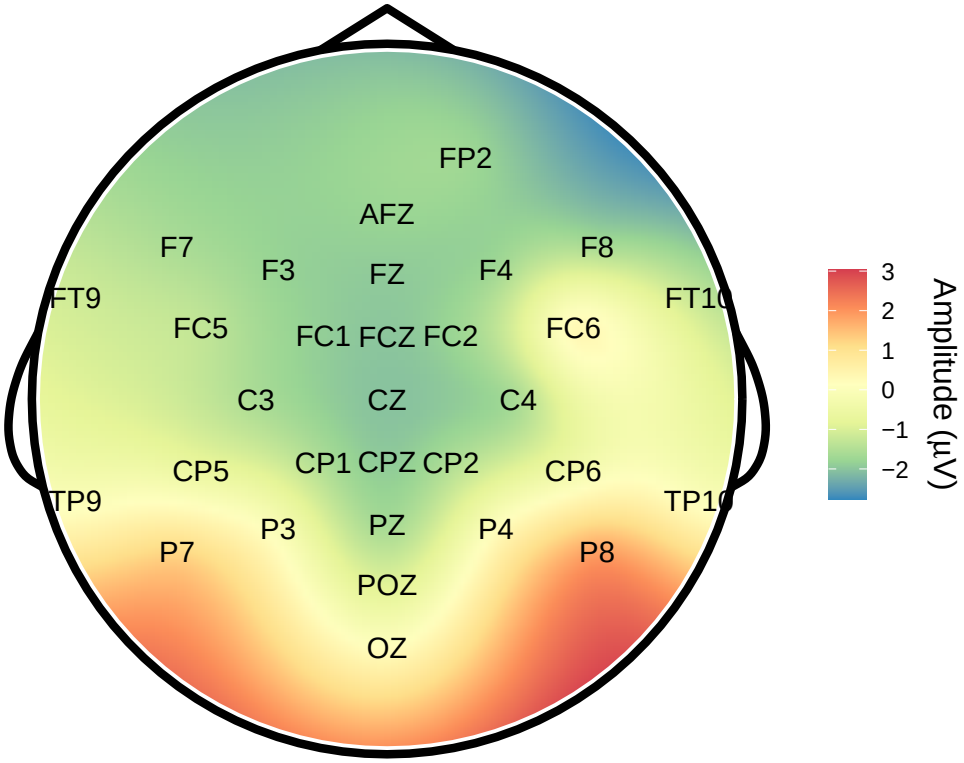

```
topoplot(filter(eeg.map_for_plotting_adi_150275, adi_median_split=="low_ADI"), palette="Spectral", chanl
```



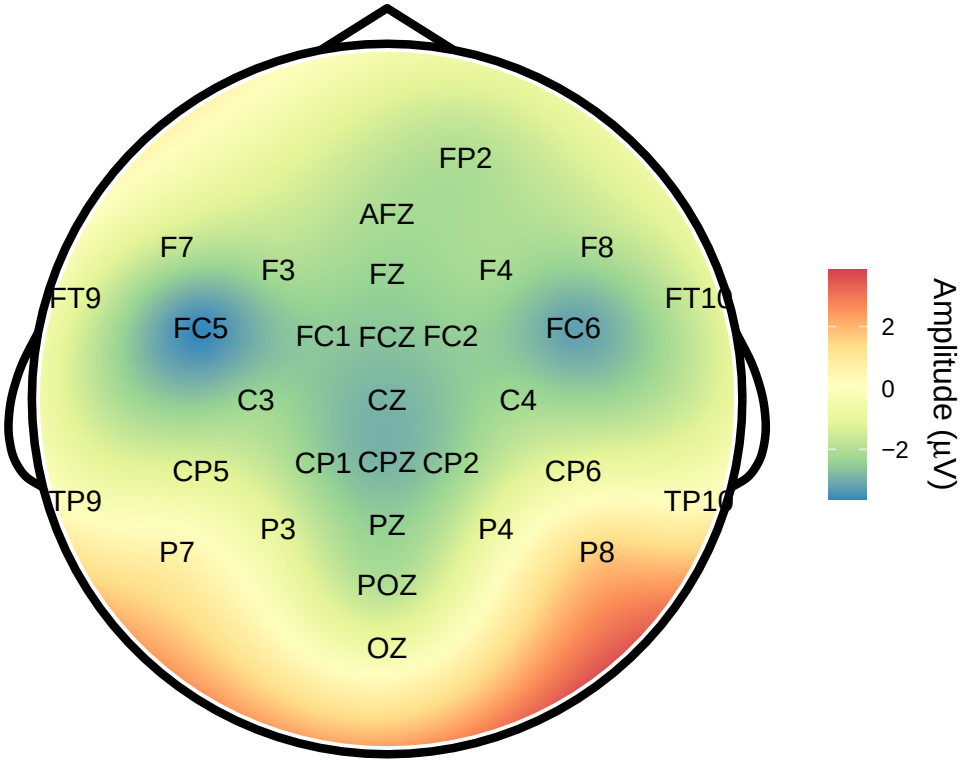

```
topoplot(eeg.map_for_plotting_adi_50150, palette="Spectral", chanLocs=chanlocs, contour=FALSE, interp_li
```




```
topoplot(filter(eeg.map_for_plotting_adi_50150, adi_median_split=="high_ADI"), palette="Spectral", chanl
```




```
topoplot(filter(eeg.map_for_plotting_adi_50150, adi_median_split=="low_ADI"), palette="Spectral", chanL
```



STRAIN

```
load(here("data/BUDS_cleaning02_with_strain.RData"))
BUDS_cleaning02_with_strain$ID <- as.integer(as.character(BUDS_cleaning02_with_strain$id_1_i))

df_275425_pooled_strain <- df_275425_pooled %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_275425_cz_strain <- df_275425_cz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_150350_cz_strain <- df_150350_cz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_250450_fz_strain <- df_250450_fz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_200400_pz_strain <- df_200400_pz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_150275_cz_strain <- df_150275_cz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")
```

```
df_50150_cz_strain <- df_50150_cz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

# df_4001000_pz_strain <- df_4001000_pz %>%
#   full_join(BUDS_cleaning02_with_strain, by="ID")
#
# df_6001500_pz_strain <- df_6001500_pz %>%
#   full_join(BUDS_cleaning02_with_strain, by="ID")

df_150350_cz_long_strain <- df_150350_cz_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")

df_200400_pz_long_strain <- df_200400_pz_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")

df_250450_fz_long_strain <- df_250450_fz_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")

df_275425_pooled_long_strain <- df_275425_pooled_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")

df_275425_cz_long_strain <- df_275425_cz_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")

df_150275_cz_long_strain <- df_150275_cz_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")

df_50150_cz_long_strain <- df_50150_cz_long %>%
  full_join(BUDS_cleaning02_with_strain, by="ID", relationship = "many-to-many")
```

Stressors and ADI

```
STRAIN_scales <- c("StressCT", "StressTH", "EvntCT", "DiffCT", "EvntTH", "DiffTH", "RecTotCT", "RecTotTH

for (p in STRAIN_scales) {
  for (data in c("df_150350_cz_strain")) {
  for (comp in c("ADI_NATRANK_log_z")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$call)
                             print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
  }}}

# Domain: Reproduction
lm(formula = ADI_NATRANK_log_z ~ DREvntTH, data = df_150350_cz_strain)
lm(formula = ADI_NATRANK_log_z ~ DRAllTH, data = df_150350_cz_strain)

# Characteristic: Entrapment
lm(formula = ADI_NATRANK_log_z ~ CEEvntCT, data = df_150350_cz_strain)

# Characteristic: Role Change/Reversal
lm(formula = ADI_NATRANK_log_z ~ CRDiffCT, data = df_150350_cz_strain)
lm(formula = ADI_NATRANK_log_z ~ CRAllCT, data = df_150350_cz_strain)
```

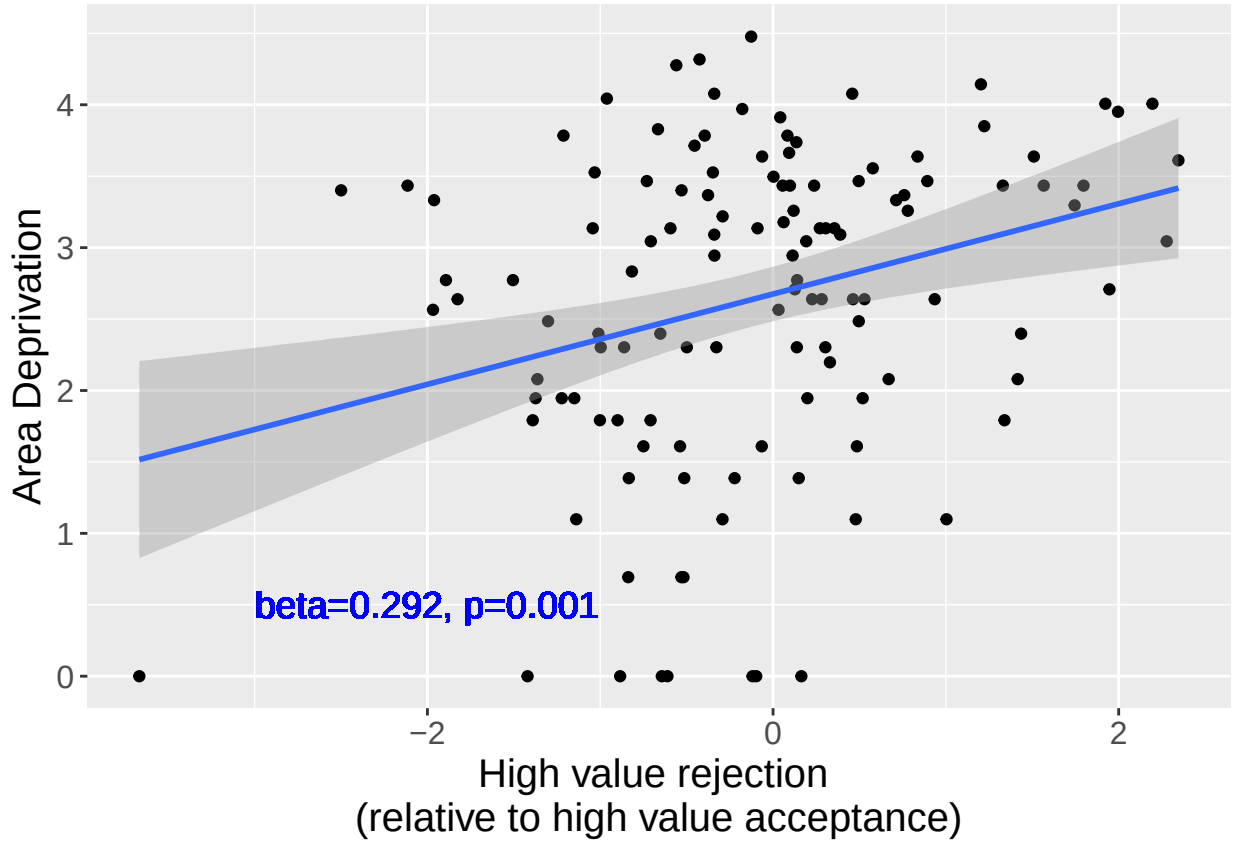
```r
lm(formula = ADI_NATRANK_log_z ~ CRDiffTH, data = df_150350_cz_strain)
lm(formula = ADI_NATRANK_log_z ~ CRAllTH, data = df_150350_cz_strain)

# Housing related stressors
lm(formula = ADI_NATRANK_log_z ~ DHEvntCT, data = df_150350_cz_strain)
lm(formula = ADI_NATRANK_log_z ~ DHAllCT, data = df_150350_cz_strain)
lm(formula = ADI_NATRANK_log_z ~ DHEvntTH, data = df_150350_cz_strain)

# Domain: Treatment/Health - Count of Chronic Difficulties
lm(formula = ADI_NATRANK_log_z ~ DTDiffCT, data = df_150350_cz_strain)

summary(lm(AR_AA ~ ADI_NATRANK_log_z + StressCT + StressTH + Age + Sex, df_150350_cz_strain))
summary(lm(AR_AA ~ ADI_NATRANK_log_z + StressCT + StressTH + Age + Sex, df_250450_fz_strain))
summary(lm(AR_AA ~ ADI_NATRANK_log_z + StressCT + StressTH + Age + Sex, df_200400_pz_strain))

for (p in STRAIN_scales) {
  for (data in c("df_150350_cz_strain","df_250450_fz_strain","df_200400_pz_strain")) {
  for (comp in c("RR_RA")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$call)
                             print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
  }}}

lm(formula = AR_AA ~ DMDiffCT, data = df_250450_fz_strain)
lm(formula = AR_AA ~ DMDiffTH, data = df_250450_fz_strain)
lm(formula = AR_AA ~ DGEvntCT, data = df_200400_pz_strain)
```

Significant regression results

```r
# Response to rejection relative to acceptance from high value peers is consistently related to ADI acr
ggplot(df_150350_cz, aes(x=AR_AA, y=ADI_NATRANK_log)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=-2, y=.5, color="blue", size=5, label=paste0("beta=",
       round(tidy(lm(formula = ADI_NATRANK_log_z ~ AR_AA, data = df_150350_cz))[2,c(2)],3),
       ", p=",
       round(tidy(lm(formula = ADI_NATRANK_log_z ~ AR_AA, data = df_150350_cz))[2,c(5)],3))) +
  labs(x="High value rejection \n(relative to high value acceptance)",
       y="Area Deprivation") +
  theme(text=element_text(size=15))
```

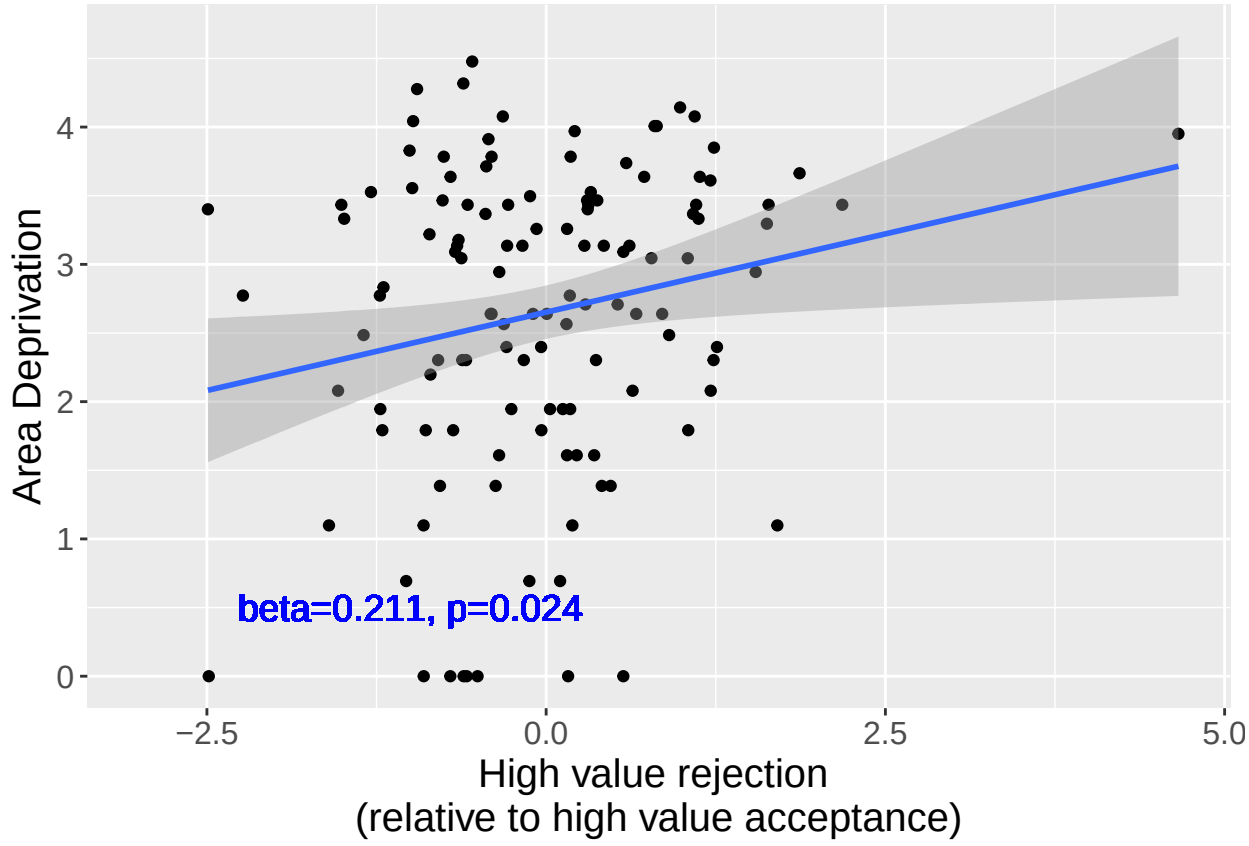
```
## Warning: Removed 68 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 68 rows containing missing values (`geom_point()`).
```



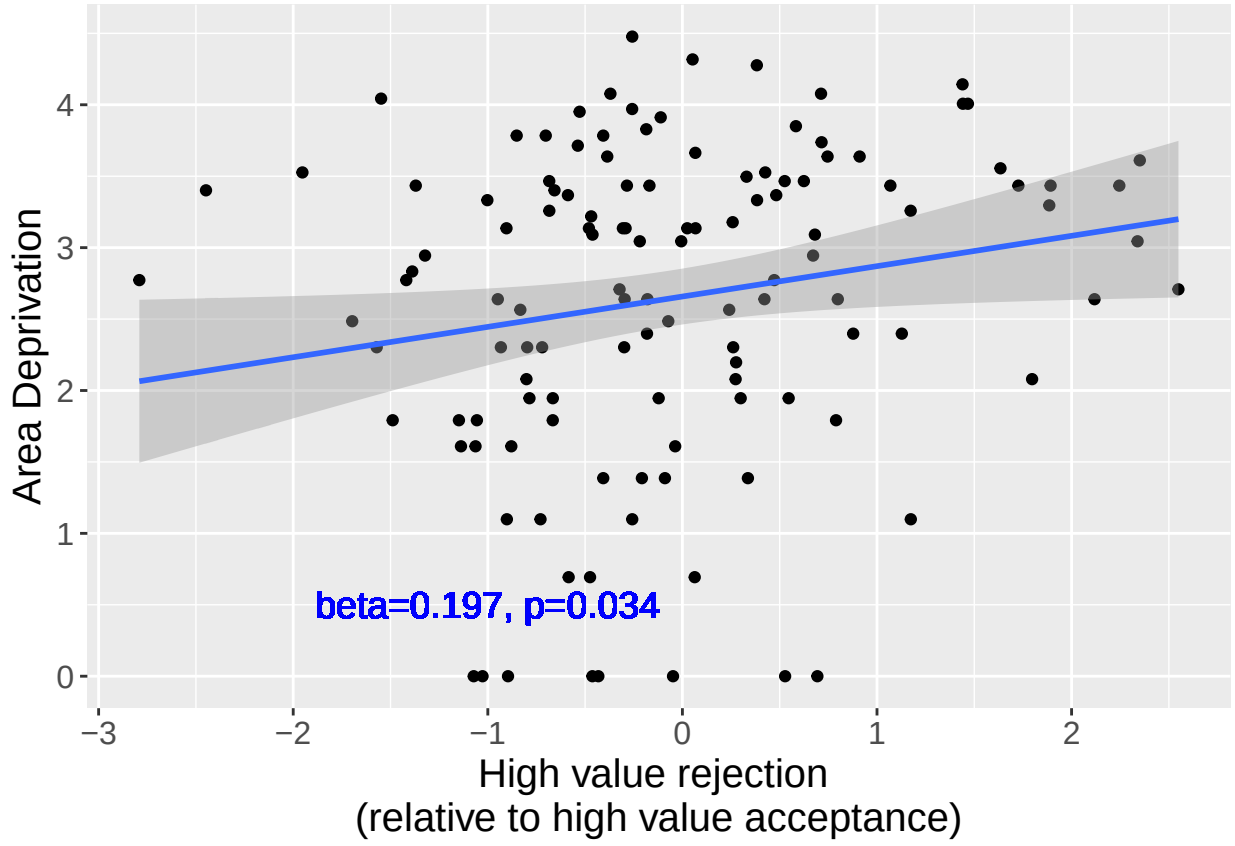

```
ggplot(df_250450_fz, aes(x=AR_AA, y=ADI_NATRANK_log)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=-1, y=.5, color="blue", size=5, label=paste0("beta=",
       round(tidy(lm(formula = ADI_NATRANK_log_z ~ AR_AA, data = df_250450_fz))[2,c(2)],3),
       ", p=",
       round(tidy(lm(formula = ADI_NATRANK_log_z ~ AR_AA, data = df_250450_fz))[2,c(5)],3))) +
    labs(x="High value rejection \n(relative to high value acceptance)",
       y="Area Deprivation") +
  theme(text=element_text(size=15))
```

```
## Warning: Removed 68 rows containing non-finite values (`stat_smooth()`).
## Removed 68 rows containing missing values (`geom_point()`).
```




```
ggplot(df_200400_pz, aes(x=AR_AA, y=ADI_NATRANK_log)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=-1, y=.5, color="blue", size=5, label=paste0("beta=",
        round(tidy(lm(formula = ADI_NATRANK_log_z ~ AR_AA, data = df_200400_pz))[2,c(2)],3),
        ", p=",
        round(tidy(lm(formula = ADI_NATRANK_log_z ~ AR_AA, data = df_200400_pz))[2,c(5)],3))) +
    labs(x="High value rejection \n(relative to high value acceptance)",
        y="Area Deprivation") +
  theme(text=element_text(size=15))
```

```
## Warning: Removed 68 rows containing non-finite values (`stat_smooth()`).
## Removed 68 rows containing missing values (`geom_point()`).
```



Interactions

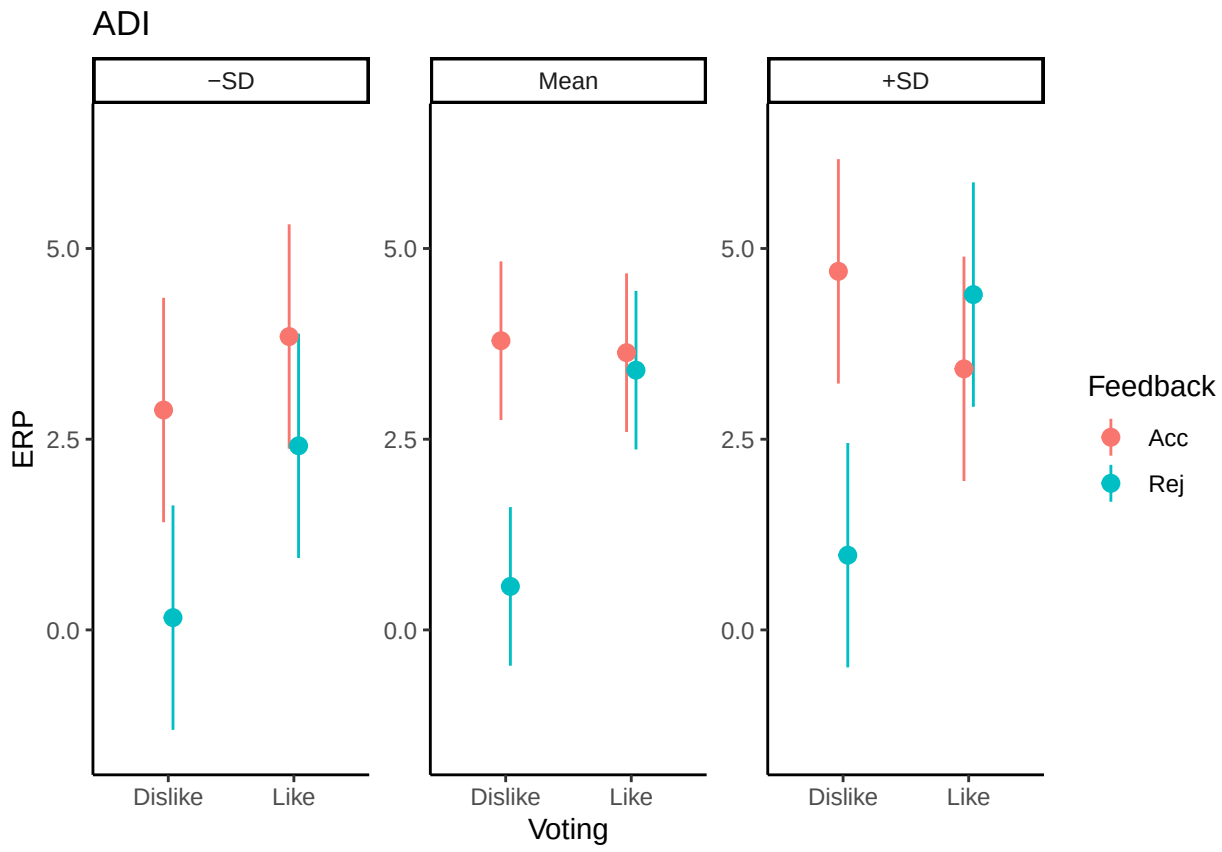
ADI

```
lmer_adi_interaction_table <- function(data) {
  new_model <- data.frame(model = c("Both","Like","Dislike"),
                          beta = NA,
                          p = NA)
new_model$beta <- c(broom.mixed::tidy(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log_z + (1 | ID)
                    broom.mixed::tidy(lmer(formula = ERP ~ Feedback*ADI_NATRANK_log_z + (1 | ID), da

new_model$p <- c(broom.mixed::tidy(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log_z + (1 | ID), da
                    broom.mixed::tidy(lmer(formula = ERP ~ Feedback*ADI_NATRANK_log_z + (1 | ID), da
new_model
}
```

150-350 Cz

```
anova(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_150350_cz_long),
      lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (Feedback | ID), data = df_150350_cz_long))
anova(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_150350_cz_long),
```

```
      lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (Voting | ID), data = df_150350_cz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (Voting | ID), data = df_150350_cz_long))

bbmle::AICtab(lm(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log, data = df_150350_cz_long),
      lme4::lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_150350_cz_long, R

models_150350_cz_table <- lmer_adi_interaction_table(df_150350_cz_long)
models_150350_cz_table$component <- "150350_cz"

model_150350_cz <- lmer(formula = ERP ~ Voting*Feedback*ADI_NATRANK_log + (1 | ID), data = df_150350_cz_
plot_cap(
    model_150350_cz,
    condition = list(
              "Voting",
        "Feedback",
        "ADI_NATRANK_log" = "threenum")) +
  scale_y_continuous(limits=c(-1.5,6.5)) +
  labs(title="ADI") +
    theme_classic()
```

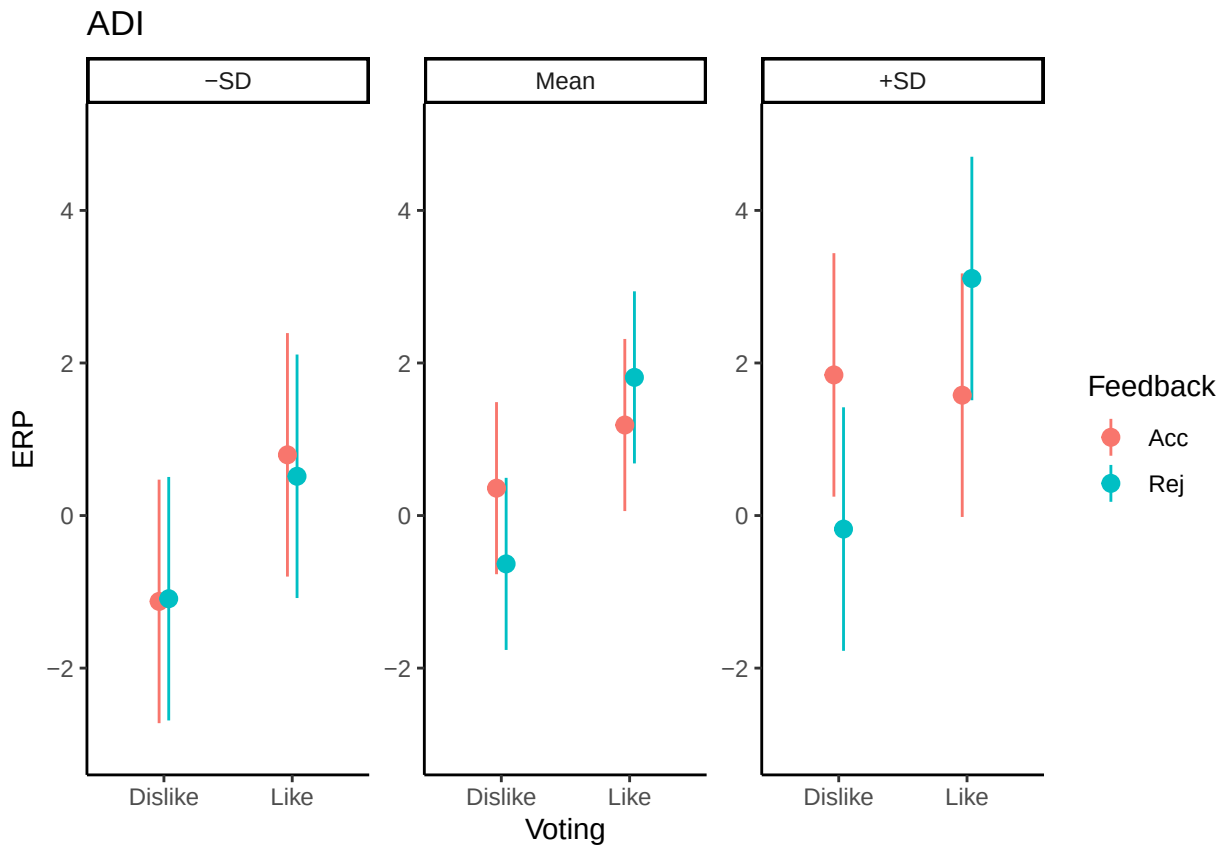


200-400 Pz

```
models_200400_pz_table <- lmer_adi_interaction_table(df_200400_pz_long)
models_200400_pz_table$component <- "200400_pz"
```

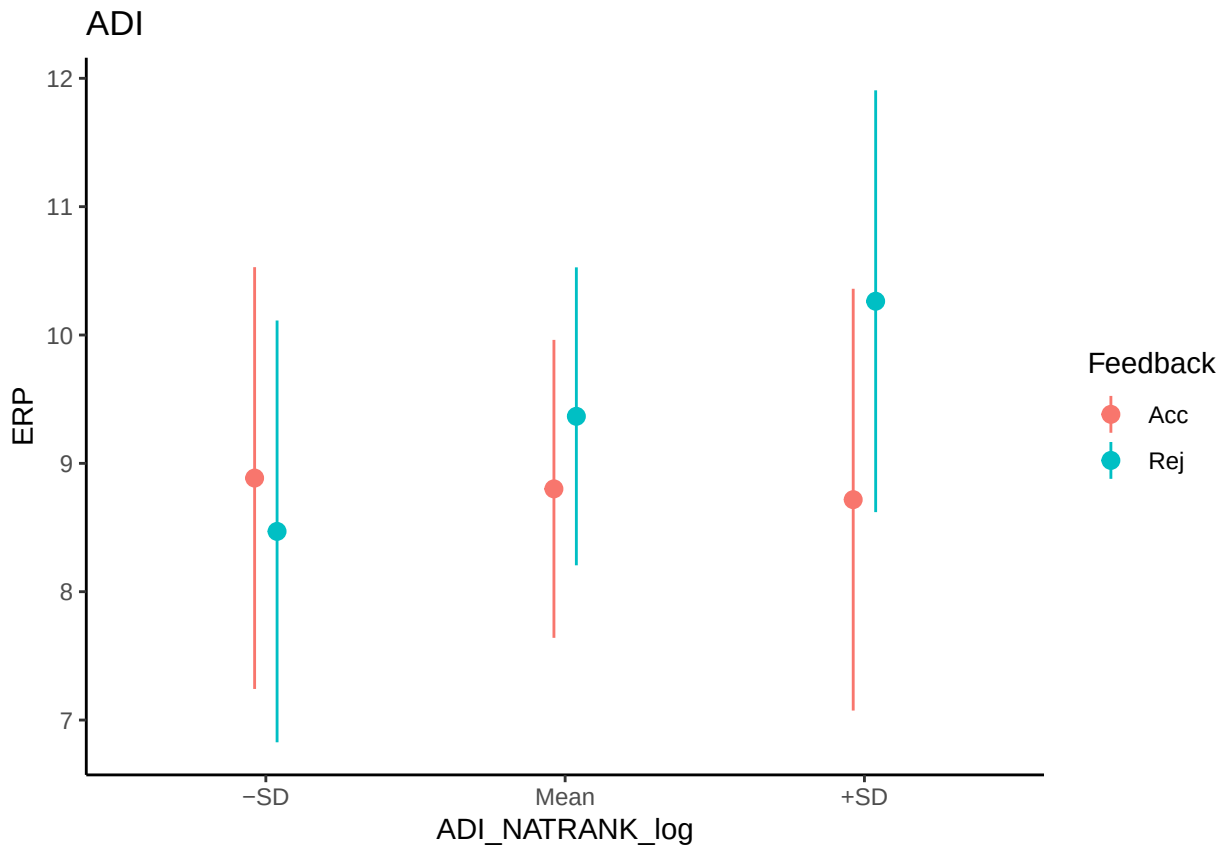
250-350 Fz

```
anova(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_250450_fz_long),
      lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (Feedback | ID), data = df_250450_fz_long))
anova(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_250450_fz_long),
      lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (Voting | ID), data = df_250450_fz_long))

bbmle::AICtab(lm(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log, data = df_250450_fz_long),
      lme4::lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_250450_fz_long,

models_250450_fz_table <- lmer_adi_interaction_table(df_250450_fz_long)
models_250450_fz_table$component <- "250450_fz"

model_250450_fz <- lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log + (1 | ID), data = df_250450_fz
plot_cap(
    model_250450_fz,
    condition = list(
        "Voting",
        "Feedback",
        "ADI_NATRANK_log" = "threenum")) +
  scale_y_continuous(limits=c(-3,5)) +
  labs(title="ADI") +
    theme_classic()
```



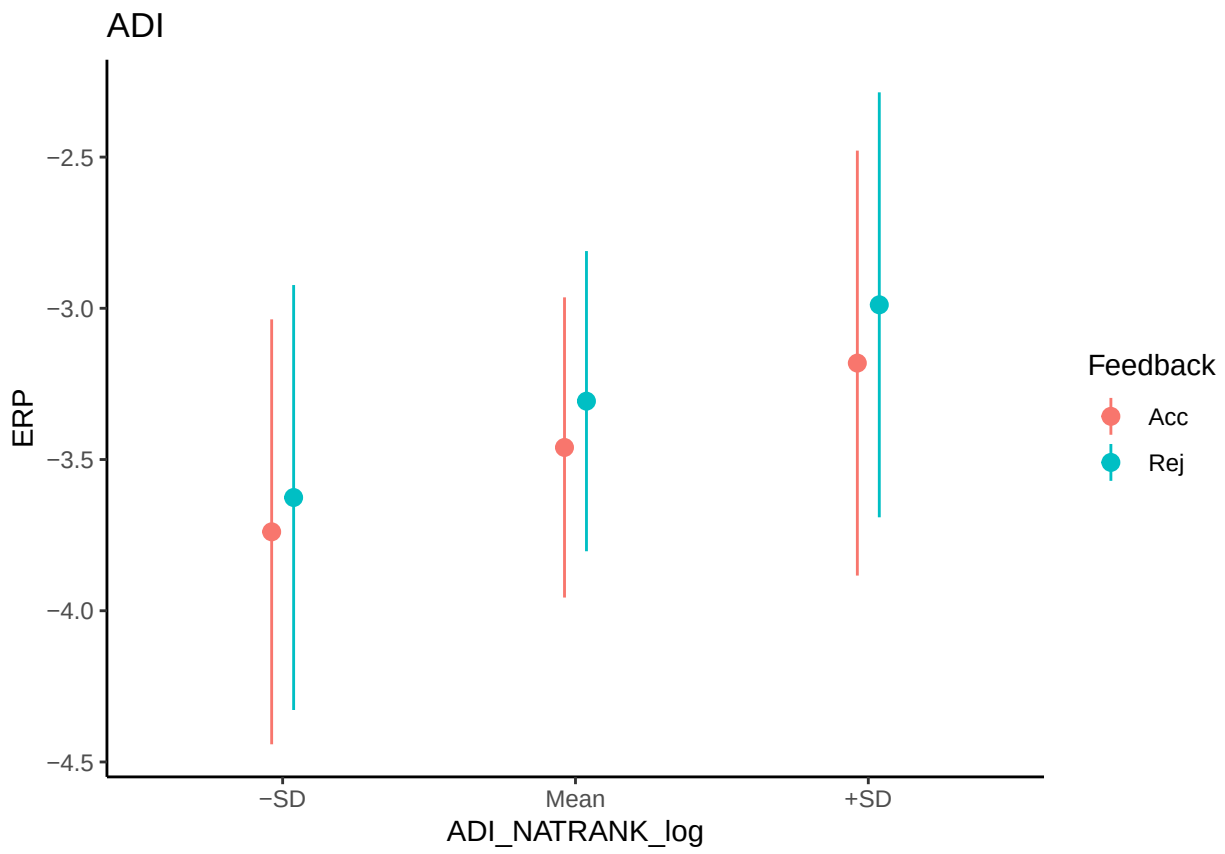
275-425 Pooled

```
models_275425_pooled_table <- lmer_adi_interaction_table(df_275425_pooled_long)
models_275425_pooled_table$component <- "275425_pooled"

model_275425_pooled <- lmer(formula = ERP ~ Feedback*ADI_NATRANK_log + (1 | ID), data = filter(df_27542
plot_cap(
    model_275425_pooled,
    condition = list(
      "ADI_NATRANK_log" = "threenum",
        "Feedback")) +
  # scale_y_continuous(limits=c(-3,5)) +
  labs(title="ADI") +
    theme_classic()
```



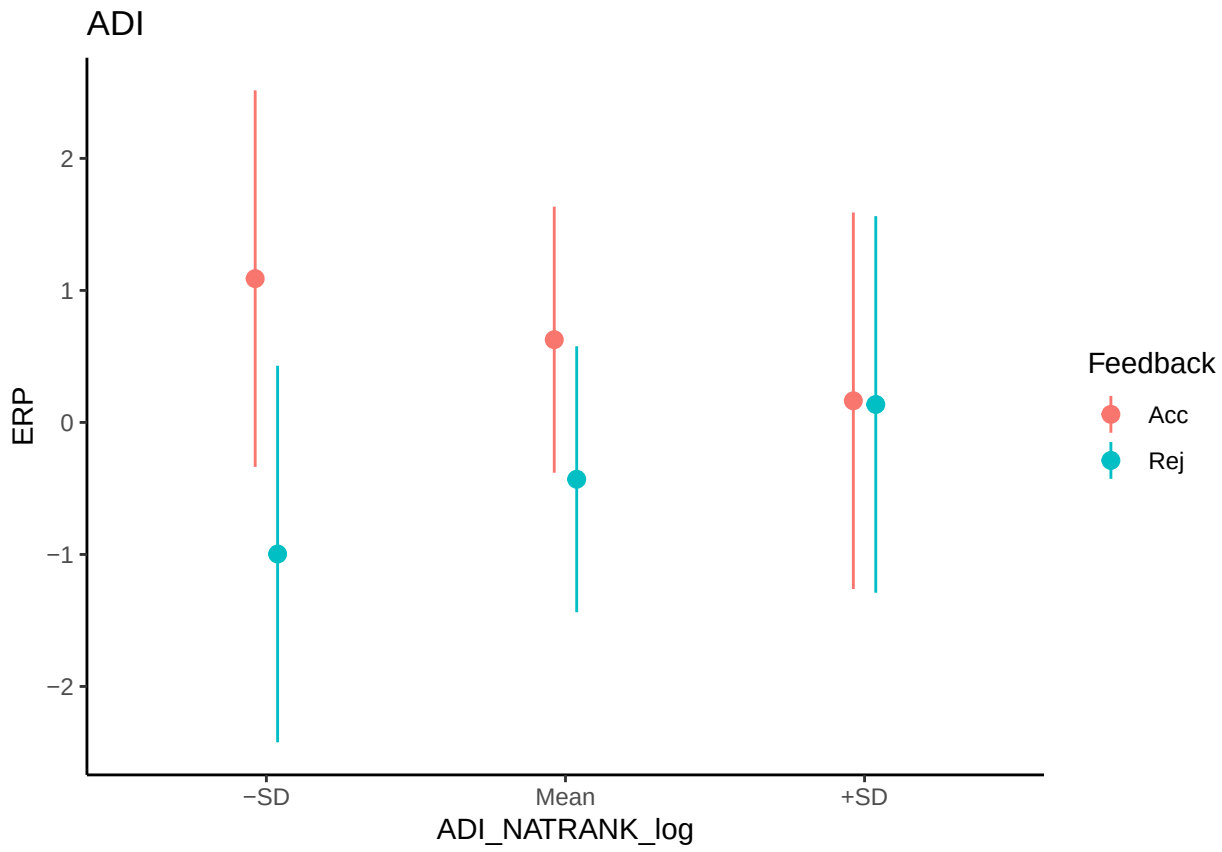
50-150 Cz

```
models_50150_cz_table <- lmer_adi_interaction_table(df_50150_cz_long)
models_50150_cz_table$component <- "50150_cz"

model_150275_cz <- lmer(formula = ERP ~ Feedback*ADI_NATRANK_log + (1 | ID), data = filter(df_50150_cz_l
plot_cap(
    model_150275_cz,
    condition = list(
      "ADI_NATRANK_log" = "threenum",
        "Feedback")) +
  # scale_y_continuous(limits=c(-3,5)) +
  labs(title="ADI") +
    theme_classic()
```



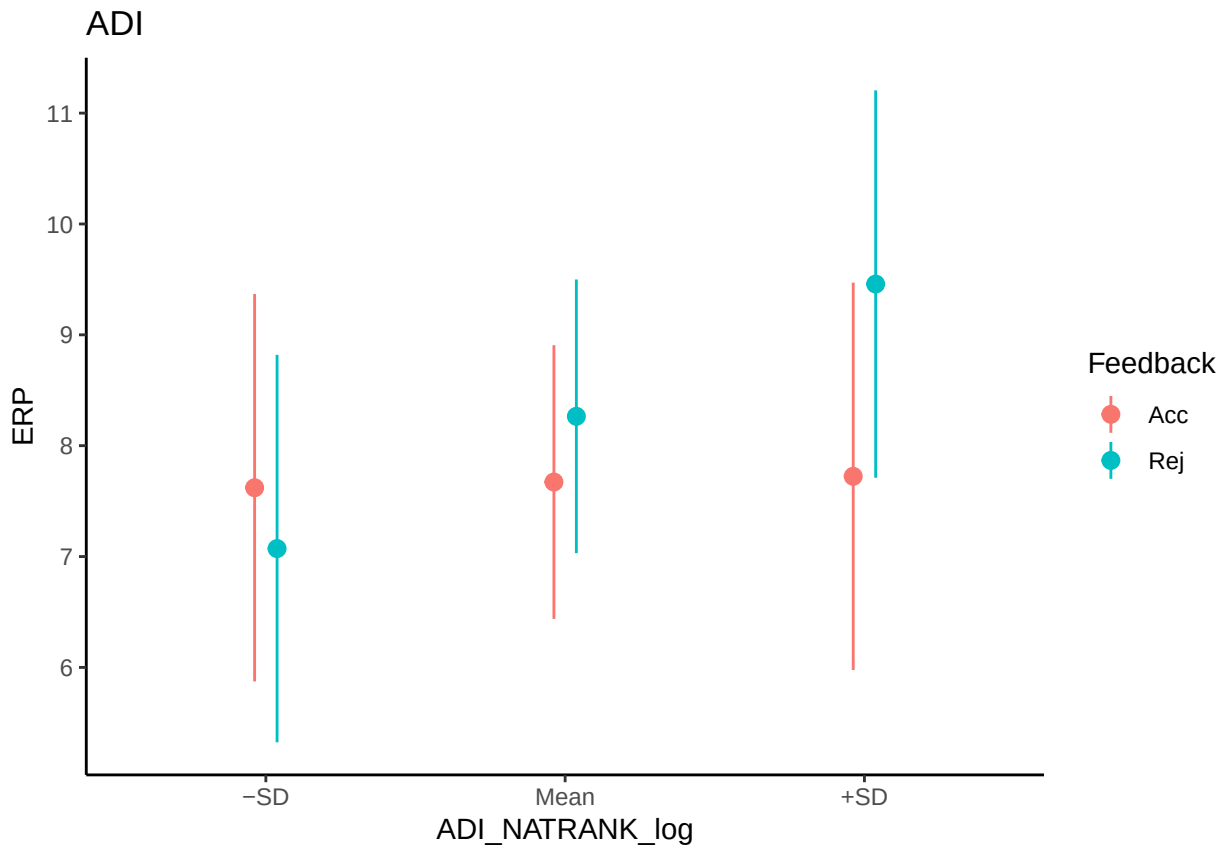
150-275 Cz

```
models_150275_cz_table <- lmer_adi_interaction_table(df_150275_cz_long)
models_150275_cz_table$component <- "150275_cz"

model_150275_cz <- lmer(formula = ERP ~ Feedback*ADI_NATRANK_log + (1 | ID), data = filter(df_150275_cz_
plot_cap(
    model_150275_cz,
    condition = list(
      "ADI_NATRANK_log" = "threenum",
        "Feedback")) +
  # scale_y_continuous(limits=c(-3,5)) +
  labs(title="ADI") +
    theme_classic()
```



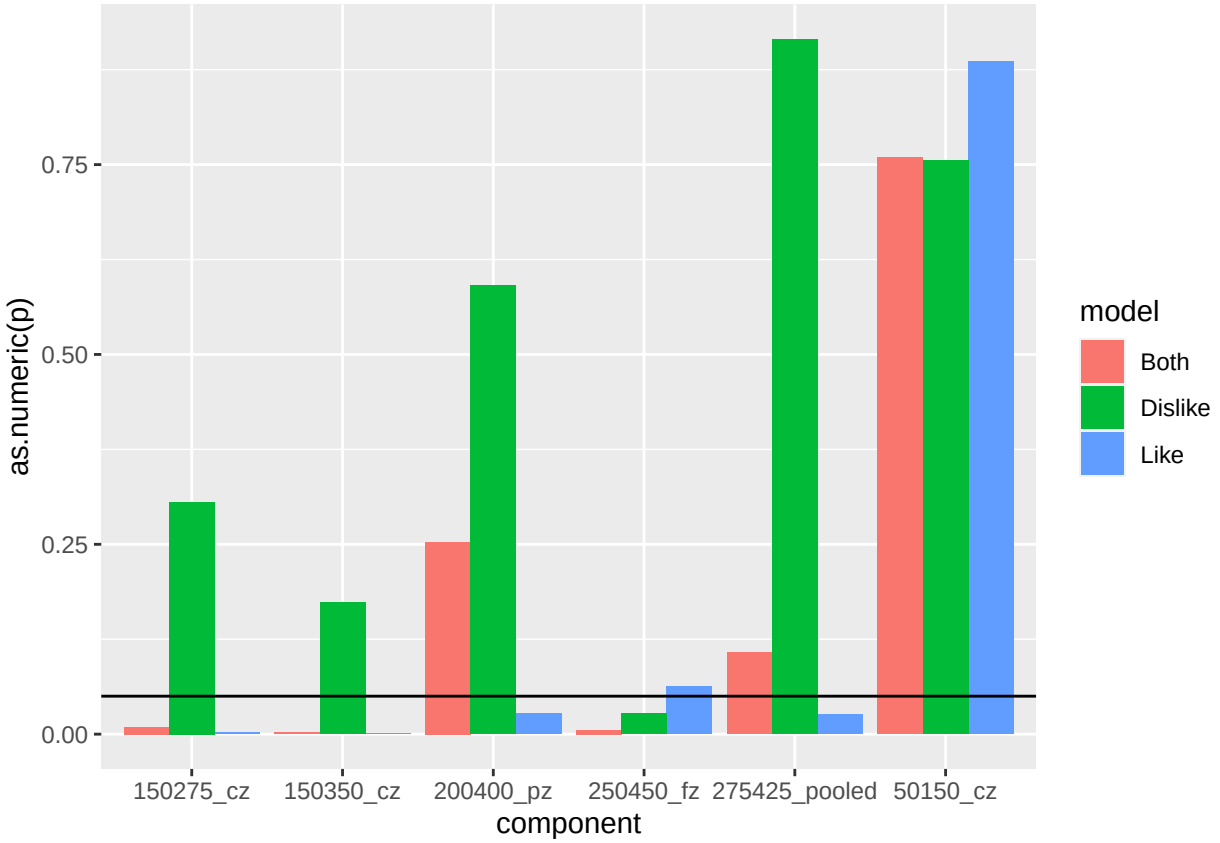
275-425 Cz

```
models_275425_cz_table <- lmer_adi_interaction_table(df_275425_cz_long)
models_275425_cz_table$component <- "275425_cz"

model_275425_cz <- lmer(formula = ERP ~ Feedback*ADI_NATRANK_log + (1 | ID), data = filter(df_275425_cz_
plot_cap(
    model_275425_cz,
    condition = list(
      "ADI_NATRANK_log" = "threenum",
        "Feedback")) +
  # scale_y_continuous(limits=c(-3,5)) +
  labs(title="ADI") +
    theme_classic()
```

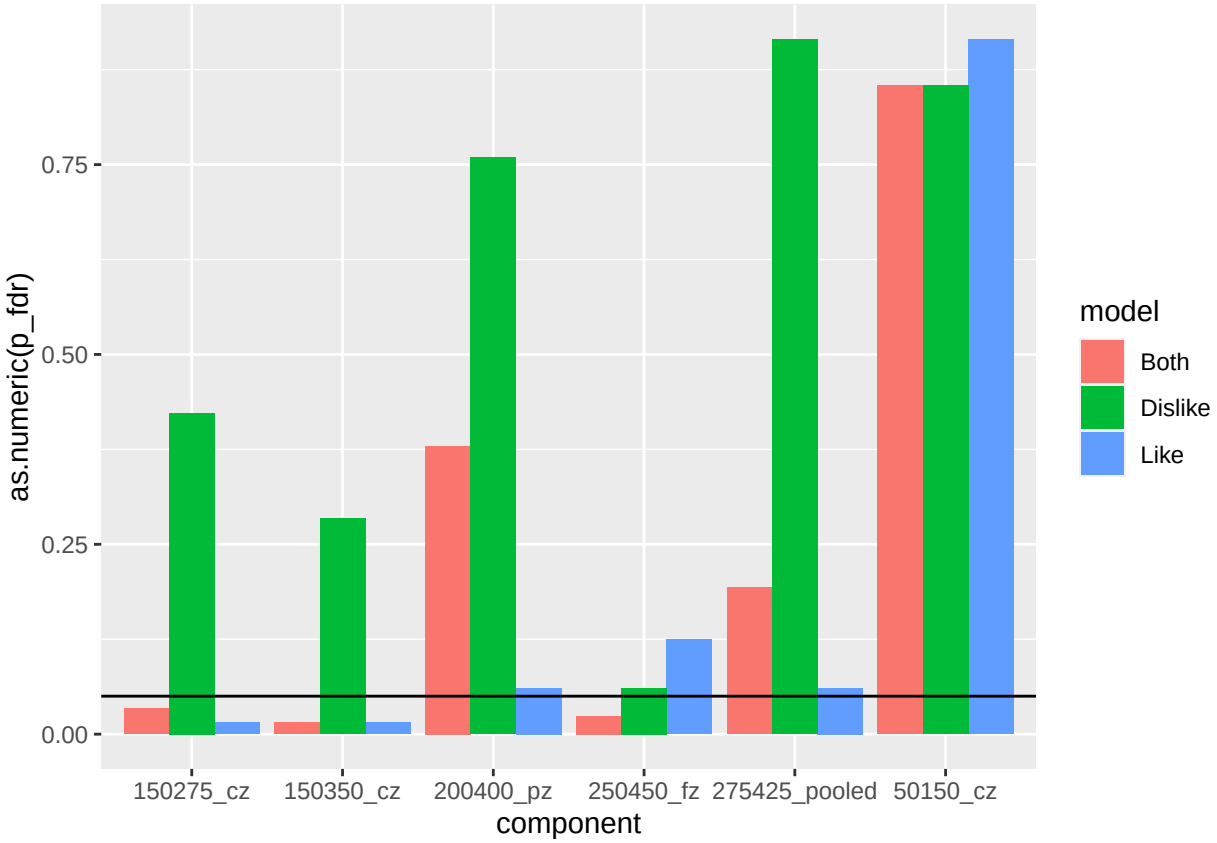


All components

```
models_table <- rbind(models_150275_cz_table, models_50150_cz_table, models_275425_pooled_table, models_
models_table$p_fdr <- p.adjust(models_table$p, method="fdr")

ggplot(models_table, aes(x=component, fill=model, y=as.numeric(p))) +
  geom_col(position="dodge") +
  geom_hline(yintercept=0.05)
```




```
ggplot(models_table, aes(x=component, fill=model, y=as.numeric(p_fdr))) +
  geom_col(position="dodge") +
  geom_hline(yintercept=0.05)
```



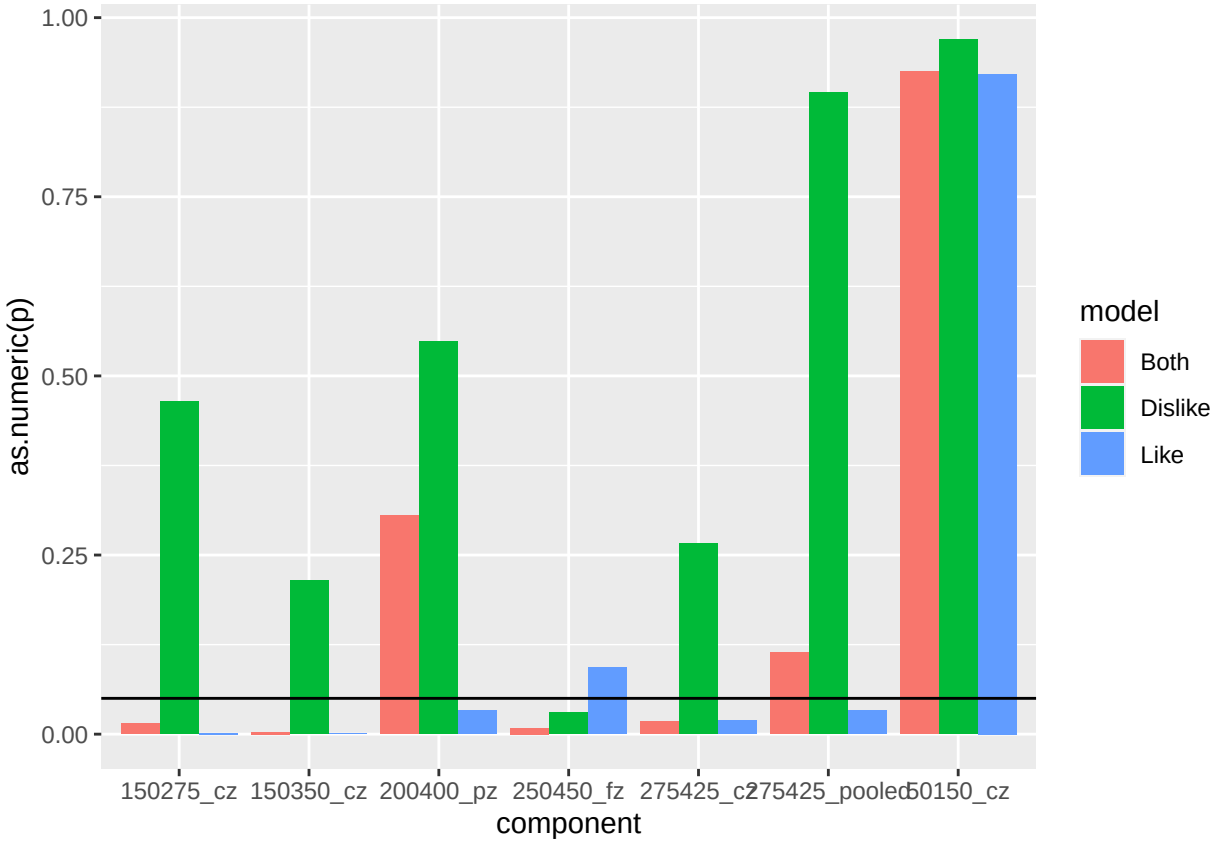
Lower ADI is higher SES

Race and Ethnicity

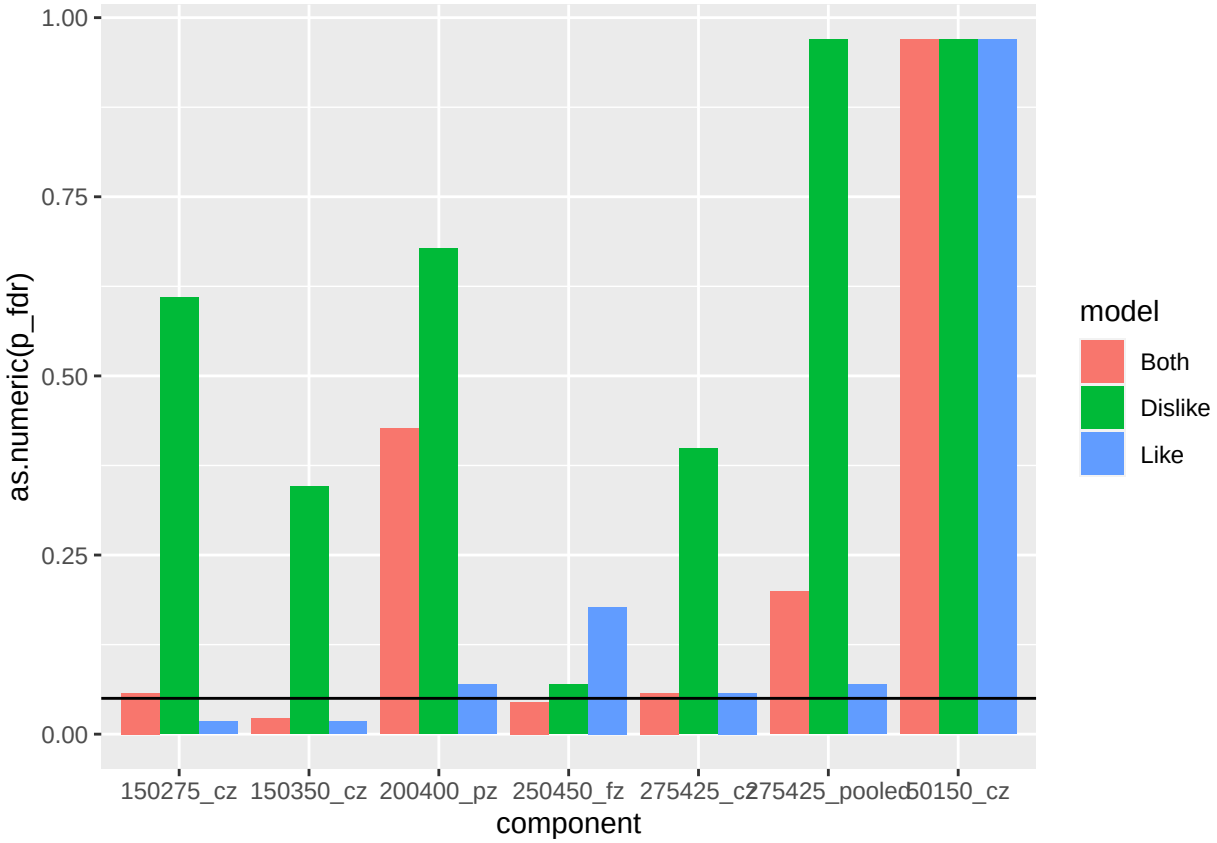
```
# 150-350 Cz
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_minority + (1 | ID), data = df_150350_cz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_majority + (1 | ID), data = df_150350_cz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*demo_child_hispanic + (1 | ID), data = df_150350_cz_long))

# 200-400 Pz
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_minority + (1 | ID), data = df_200400_pz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_majority + (1 | ID), data = df_200400_pz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*demo_child_hispanic + (1 | ID), data = df_200400_pz_long))

# 250-350 Fz
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_minority + (1 | ID), data = df_250450_fz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_majority + (1 | ID), data = df_250450_fz_long))
summary(lmer(formula = ERP ~ Feedback*Voting*demo_child_hispanic + (1 | ID), data = df_250450_fz_long))

# 275-425 Fz
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_minority + (1 | ID), data = df_275425_pooled_long))
summary(lmer(formula = ERP ~ Feedback*Voting*Racial_majority + (1 | ID), data = df_275425_pooled_long))
summary(lmer(formula = ERP ~ Feedback*Voting*demo_child_hispanic + (1 | ID), data = df_275425_pooled_lo
```

Covaring for age, sex, hispanic, stress, IDAS

```
lmer_adi_interaction_table_cov <- function(data, Component) {
  new_model <- data.frame(model = c("Both","Like","Dislike"),
                          beta = NA,
                          p = NA,
                         component = Component)
new_model$beta <- c(broom.mixed::tidy(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log_z + Age + Se
                    broom.mixed::tidy(lmer(formula = ERP ~ Feedback*ADI_NATRANK_log_z + Age + Sex + dem
                    broom.mixed::tidy(lmer(formula = ERP ~ Feedback*ADI_NATRANK_log_z + Age + Sex + dem

new_model$p <- c(broom.mixed::tidy(lmer(formula = ERP ~ Feedback*Voting*ADI_NATRANK_log_z + Age + Sex +
                    broom.mixed::tidy(lmer(formula = ERP ~ Feedback*ADI_NATRANK_log_z + Age + Sex + dem
                    broom.mixed::tidy(lmer(formula = ERP ~ Feedback*ADI_NATRANK_log_z + Age + Sex + dem
new_model
}

models_table_cov <- rbind(lmer_adi_interaction_table_cov(df_150275_cz_long_strain, "150275_cz"),
        lmer_adi_interaction_table_cov(df_50150_cz_long_strain, "50150_cz"),
        lmer_adi_interaction_table_cov(df_275425_cz_long_strain, "275425_cz"),
        lmer_adi_interaction_table_cov(df_275425_pooled_long_strain, "275425_pooled"),
        lmer_adi_interaction_table_cov(df_250450_fz_long_strain, "250450_fz"),
        lmer_adi_interaction_table_cov(df_200400_pz_long_strain, "200400_pz"),
        lmer_adi_interaction_table_cov(df_150350_cz_long_strain, "150350_cz"))
models_table_cov$p_fdr <- p.adjust(models_table_cov$p, method="fdr")

ggplot(models_table_cov, aes(x=component, fill=model, y=as.numeric(p))) +
  geom_col(position="dodge") +
  geom_hline(yintercept=0.05)
```



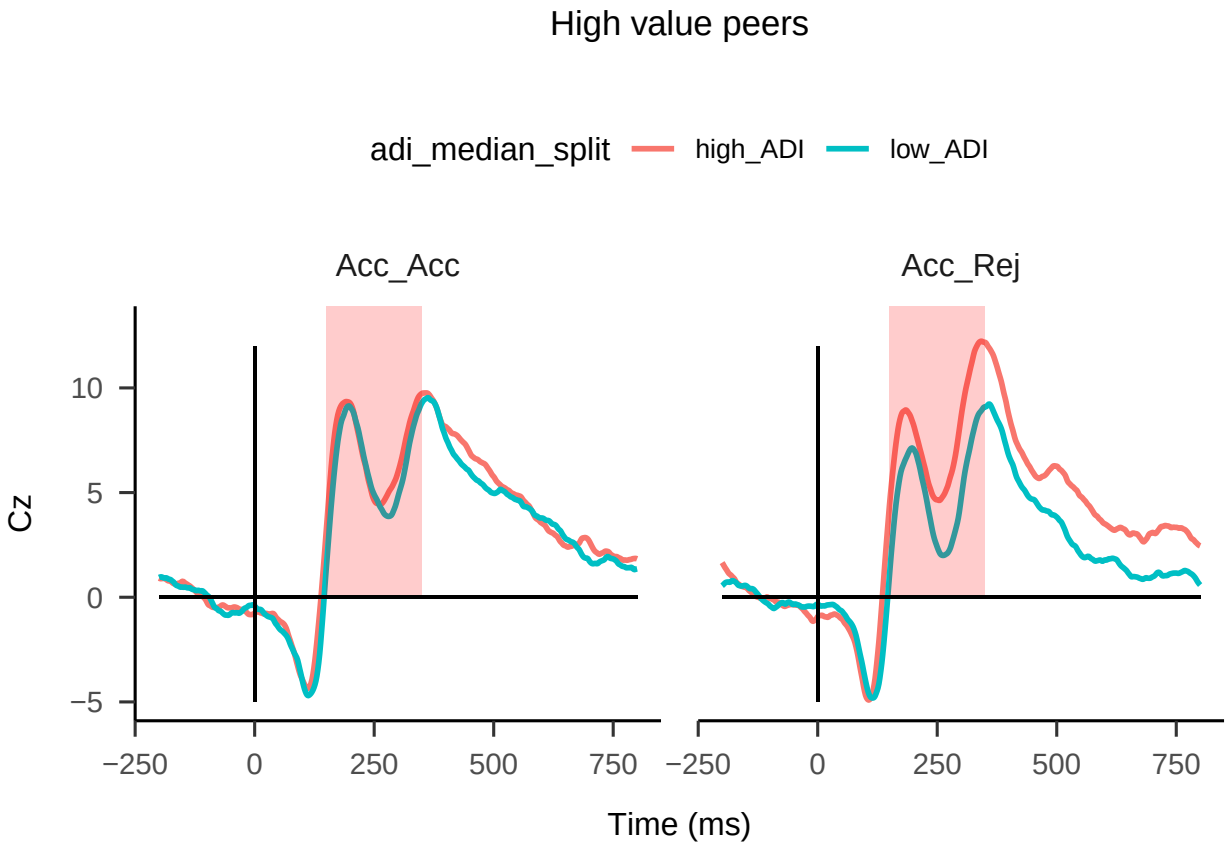

```
ggplot(models_table_cov, aes(x=component, fill=model, y=as.numeric(p_fdr))) +
  geom_col(position="dodge") +
  geom_hline(yintercept=0.05)
```



Exaggerated response to rejection

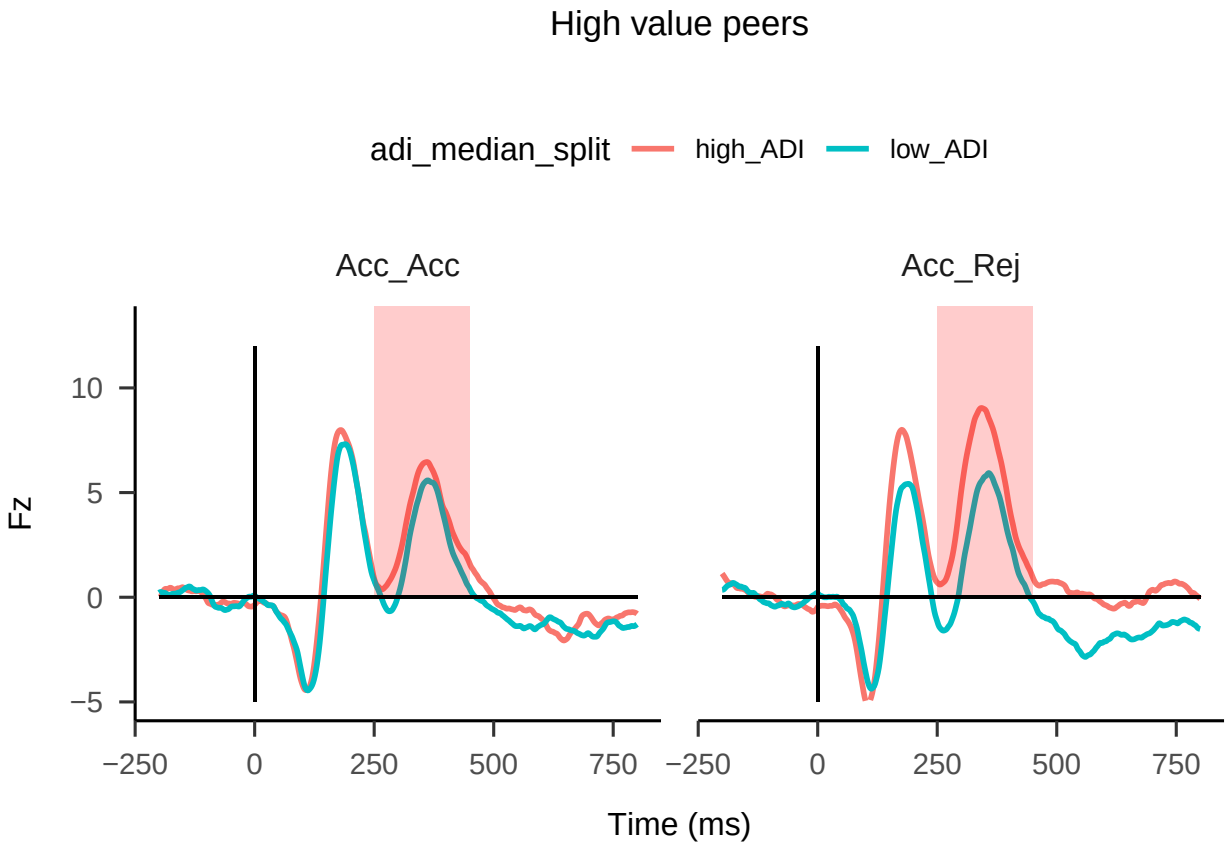
```
ggplot(data=filter(df_ga_Cz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej"), aes(x=Time, y=grand_
  facet_wrap(~ Condition) +
  xlim(-200, 800) +
  ylim( -5, 13) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=150, xmax=350, ymin=0, ymax=Inf, alpha=0.2, fill="red") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=12), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  labs(x="Time (ms)", y="Cz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1198 rows containing missing values (`geom_line()`).
```



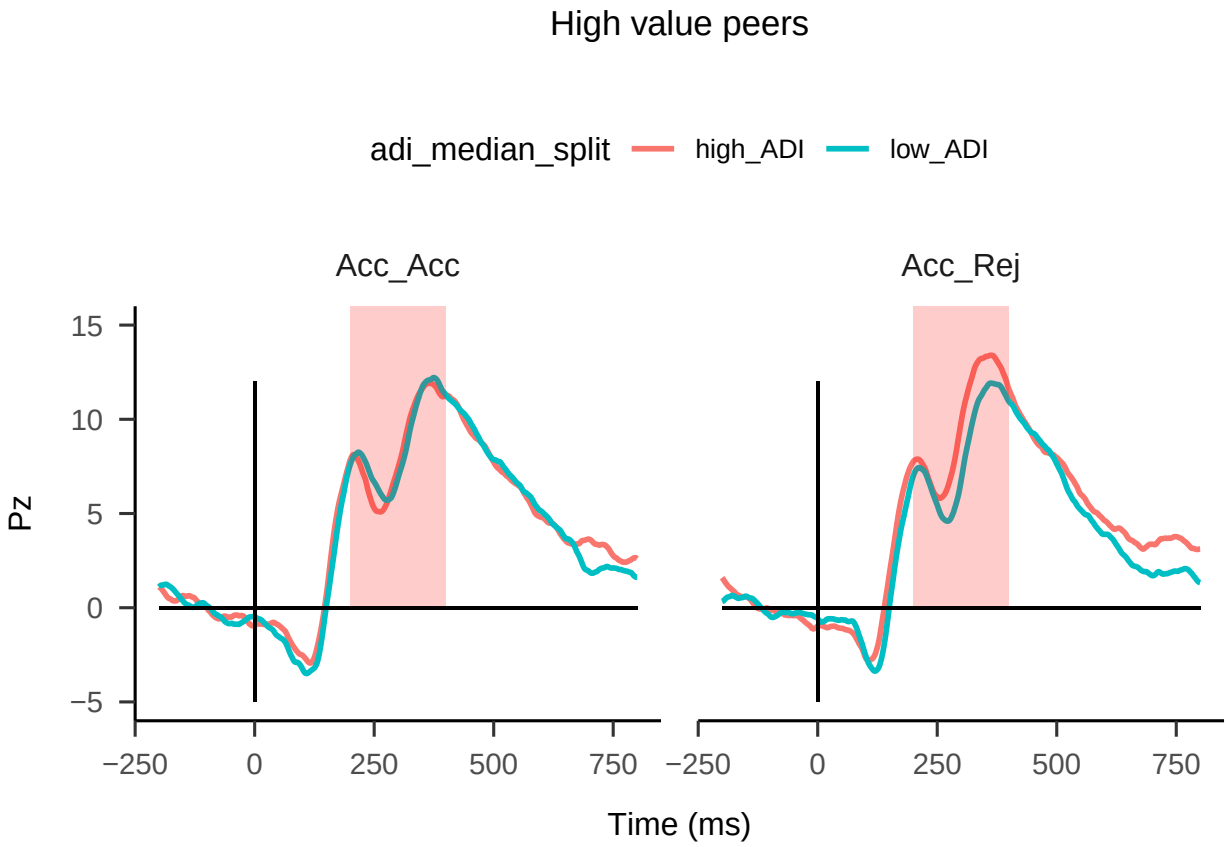

```
ggplot(data=filter(df_ga_Fz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej"), aes(x=Time, y=grand_
  facet_wrap(~ Condition) +
  xlim(-200, 800) +
  ylim( -5, 13) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=250, xmax=450, ymin=0, ymax=Inf, alpha=0.2, fill="red") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=12), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  labs(x="Time (ms)", y="Fz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1198 rows containing missing values (‘geom_line()‘).
```




```
ggplot(data=filter(df_ga_Pz_adi_wide, Condition=="Acc_Acc" | Condition=="Acc_Rej"), aes(x=Time, y=grand_
  facet_wrap(~ Condition) +
  xlim(-200, 800) +
  ylim( -5, 15) +
  geom_line(linewidth=1) +
  annotate("rect", xmin=200, xmax=400, ymin=0, ymax=Inf, alpha=0.2, fill="red") +
  geom_rect(aes(xmin=0, xmax=0, ymin=-5, ymax=12), color="black") +
  geom_rect(aes(xmin=-200, xmax=800, ymin=0, ymax=0), color="black") +
  labs(x="Time (ms)", y="Pz", title="High value peers") +
  theme_apa(base_size = 12) + theme(legend.position="top")
```

```
## Warning: Removed 1198 rows containing missing values (‘geom_line()‘).
```



“ ”

“ ”

“ ”

Regressions with ADDI

```
for (p in c("addi_total","addi_01","addi_educ","addi_instit","addi_distress")) {
      eval(parse(text=paste0('hist(df_150350_cz$',p,')')))
    }
table(df_150350_cz$addi_instit>0)

for (data in c("df_150350_cz","df_250450_fz","df_200400_pz")) {
  for (comp in c("A_all","AA_AR","RA_RR")) {
    for (p in c("addi_total","addi_01","addi_educ","addi_instit","addi_distress")) {
      eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
                             print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$cou
    }}}

for (data in c("df_200400_pz")) {
```

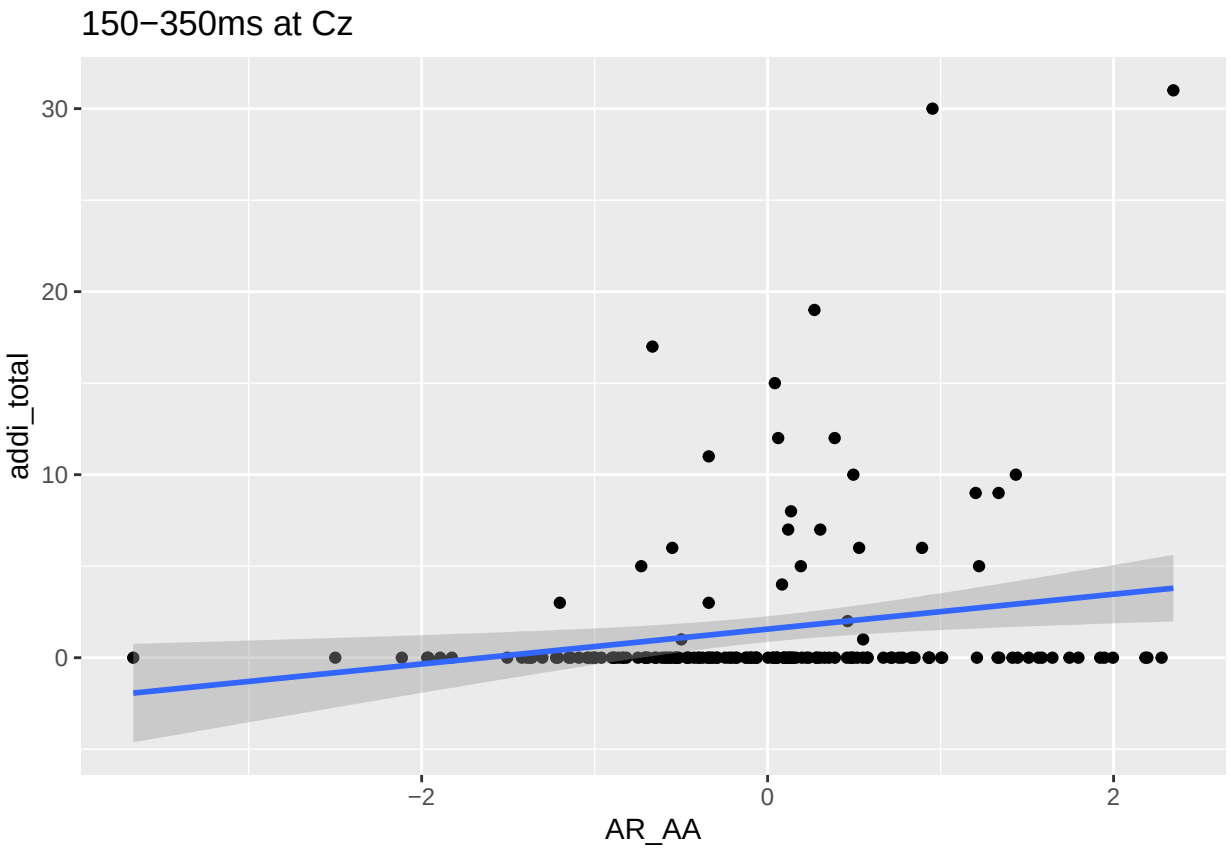
```
  for (comp in c("AR_RR","RA_RR","RA_AA")) {
    for (p in c("addi_total","addi_01","addi_educ","addi_instit","addi_distress")) {
      eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
                             print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$cou
    }}}
```

Significant results

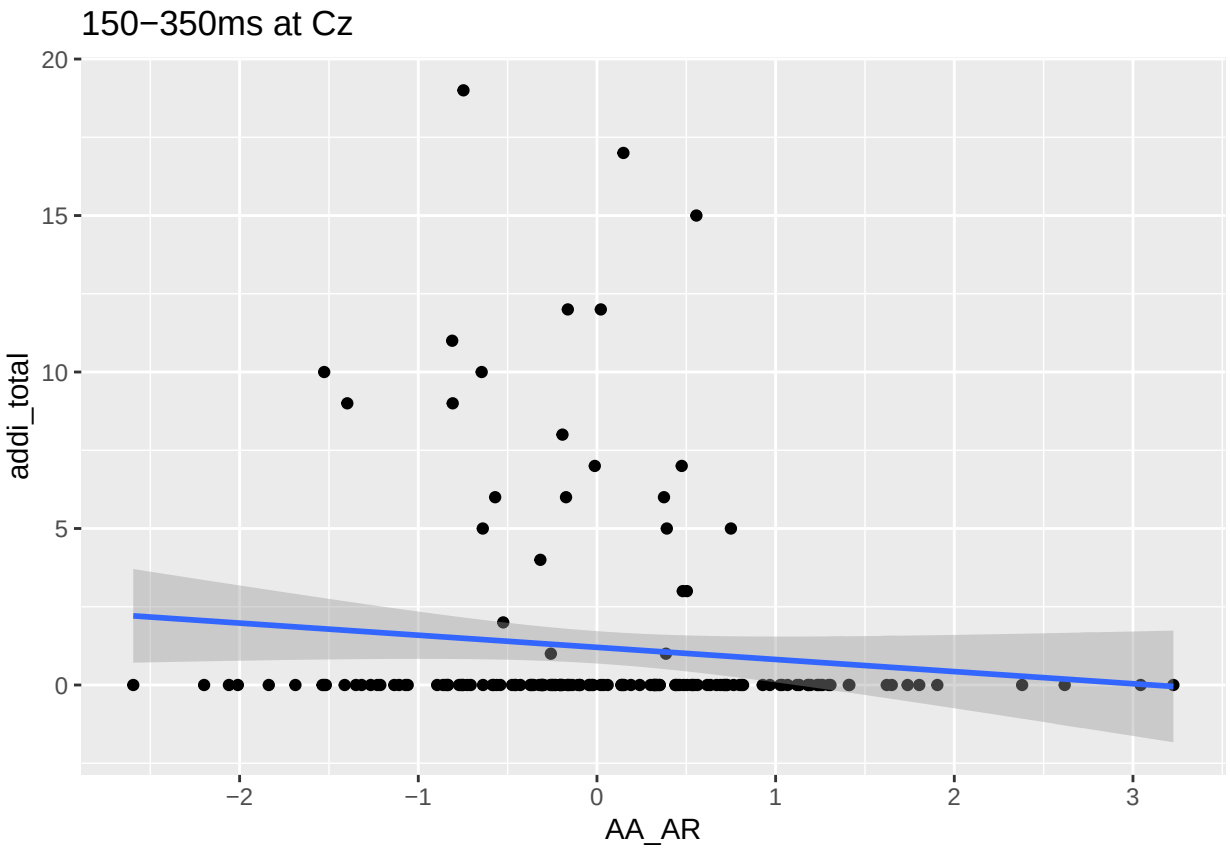
```
summary(zeroinfl(formula = addi_total ~ AA_AR, data = df_150350_cz))
summary(zeroinfl(formula = addi_educ ~ AA_AR, data = df_150350_cz))
summary(zeroinfl(formula = addi_distress ~ AA_AR, data = df_200400_pz))

summary(zeroinfl(formula = addi_total ~ AA_AR, data = df_275425_pooled))
summary(zeroinfl(formula = addi_educ ~ AA_AR, data = df_275425_pooled))
summary(zeroinfl(formula = addi_distress ~ AA_AR, data = df_275425_pooled))

summary(glm(addi_01 ~ AA_AR, data=df_150350_cz, family="binomial"))
summary(glm(addi_01 ~ AA_AR, data=df_275425_pooled, family="binomial"))

summary(zeroinfl(formula = addi_total ~ AA_AR, data = df_150350_cz %>% filter(df_150350_cz$addi_total<2
summary(zeroinfl(formula = addi_educ ~ AA_AR, data = df_150350_cz %>% filter(df_150350_cz$addi_educ<8))
summary(zeroinfl(formula = addi_distress ~ AA_AR, data = df_200400_pz %>% filter(df_200400_pz$addi_dist

m1 <- zeroinfl(formula = addi_total ~ AR_AA, data = df_150350_cz)
mnull <- update(m1, . ~ 1)
pchisq(2 * (logLik(m1) - logLik(mnull)), df = 3, lower.tail = FALSE)

ggplot(df_150350_cz, aes(x=AR_AA, y=addi_total)) +
  geom_point() +
  stat_smooth(method="lm") +
  labs(title="150-350ms at Cz")
```

```
## Warning: Removed 28 rows containing non-finite values (`stat_smooth()`).
```

```
## Warning: Removed 28 rows containing missing values (`geom_point()`).
```

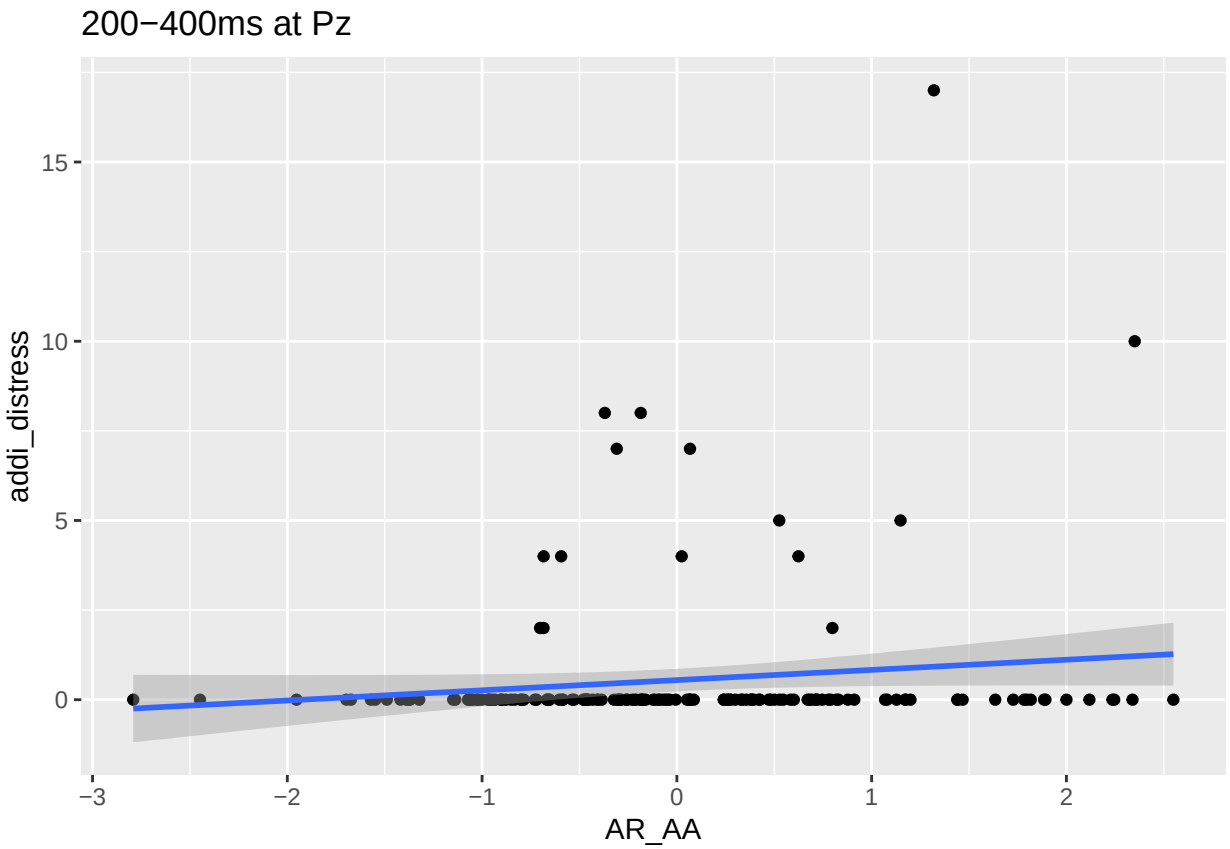



```
ggplot(df_150350_cz %>% filter(df_150350_cz$addi_total<20), aes(x=AA_AR, y=addi_total)) +
  geom_point() +
  stat_smooth(method="lm") +
  labs(title="150-350ms at Cz")
```

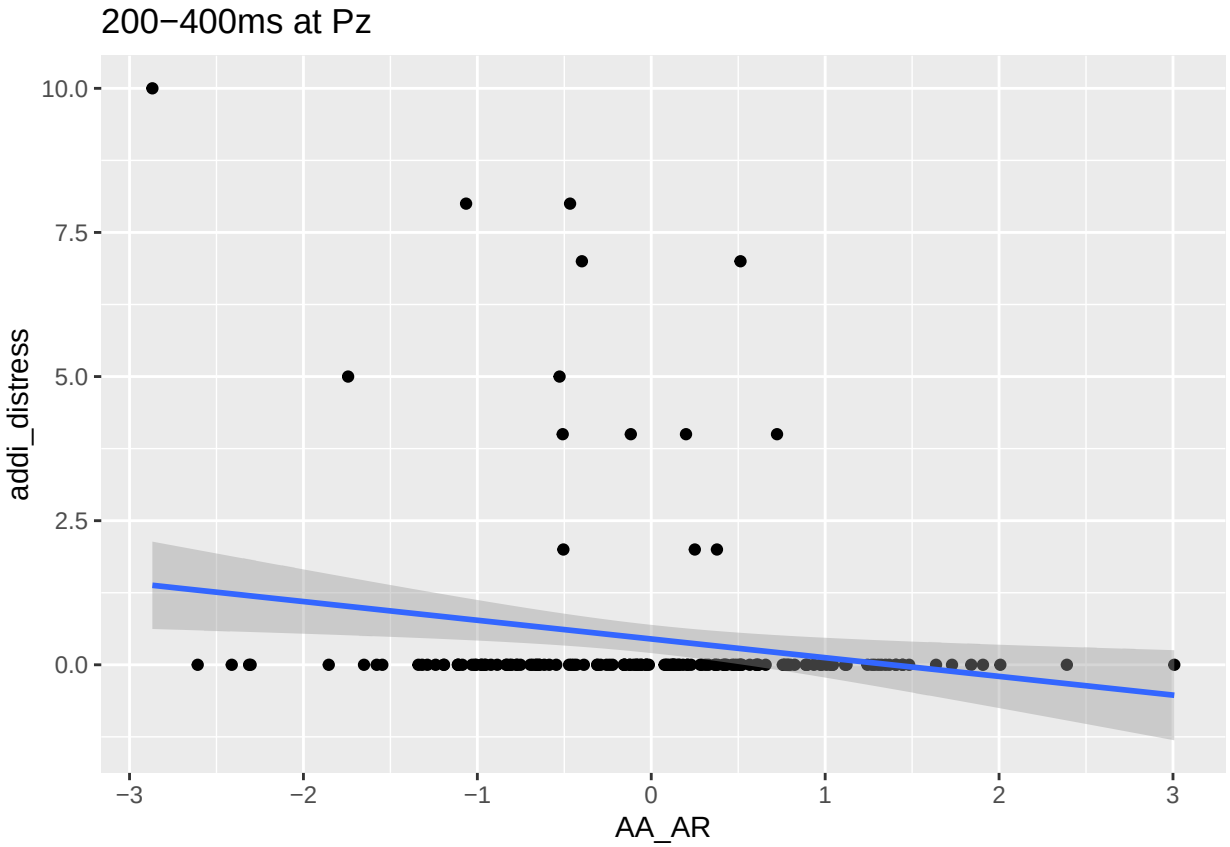



```
summary(zeroinfl(formula = addi_distress ~ AR_AA, data = df_200400_pz))
ggplot(df_200400_pz, aes(x=AR_AA, y=addi_distress)) +
  geom_point() +
  stat_smooth(method="lm") +
  labs(title="200-400ms at Pz")
```

```
## Warning: Removed 28 rows containing non-finite values (‘stat_smooth()‘).
## Removed 28 rows containing missing values (‘geom_point()‘).
```




```
ggplot(df_200400_pz %>% filter(df_200400_pz$addi_distress<15), aes(x=AA_AR, y=addi_distress)) +
  geom_point() +
  stat_smooth(method="lm") +
  labs(title="200-400ms at Pz")
```



Regressions with BCS-A

```
for (p in c("bcs_physical_vic","bcs_physical_vic_01","bcs_verbal_vic","bcs_rel_vic","bcs_cyber_vic","bcs
      eval(parse(text=paste0('hist(',data,'$',p,')')))
    }

for (data in c("df_150350_cz","df_250450_fz","df_200400_pz")) {
  for (comp in c("A_all")) {
    for (p in c("bcs_physical_vic","bcs_physical_vic_01","bcs_verbal_vic","bcs_rel_vic","bcs_cyber_vic"
      eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
                             print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$cou
    }}}


for (data in c("df_150350_cz")) {
  for (comp in c("RA_RR")) {
    for (p in c("bcs_physical_vic","bcs_physical_vic_01","bcs_verbal_vic","bcs_rel_vic","bcs_cyber_vic"
      eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
                             print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$cou
    }}}

for (data in c("df_250450_fz")) {
  for (comp in c("AA_AR")) {
```

```
   for (p in c("bcs_physical_vic","bcs_physical_vic_01","bcs_verbal_vic","bcs_rel_vic","bcs_cyber_vic",
      eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
                             print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$cou
   }}}

for (data in c("df_200400_pz")) {
  for (comp in c("AR_RR","RA_RR","RA_AA")) {
    for (p in c("bcs_physical_vic","bcs_physical_vic_01","bcs_verbal_vic","bcs_rel_vic","bcs_cyber_vic"
      eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
                             print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$cou
    }}}

# for (data in c("df_4001000_pz")) {
#   for (comp in c("RR_RA","AA_RA")) {
#     for (p in c("bcs_physical_vic","bcs_physical_vic_01","bcs_verbal_vic","bcs_rel_vic","bcs_cyber_vi
#       eval(parse(text=paste0('print(zeroinfl(',p,' ~ ',comp,', ',data,')$call)
#                              print(round(summary(zeroinfl(',p,' ~ ',comp,', ',data,'))$coefficients$c
#     }}}
```

No significant results

Regressions with PROMIS

```
for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
      eval(parse(text=paste0('hist(',data,'$',p,')')))
    }

for (data in c("df_150350_cz","df_250450_fz","df_200400_pz")) {
  for (comp in c("A_all")) {
    for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coefficients)')))
    }}}

for (data in c("df_150350_cz","df_250450_fz","df_200400_pz")) {
  for (comp in c("A_all")) {
    for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coefficients)')))
}}}

for (data in c("df_150350_cz")) {
  for (comp in c("RA_RR")) {
    for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coefficients)')))
}}}

for (data in c("df_250450_fz")) {
  for (comp in c("AA_AR")) {
    for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coefficients)')))
}}}
```

```
for (data in c("df_200400_pz")) {
  for (comp in c("AR_RR","RA_RR","RA_AA")) {
    for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coefficients)')))
    }}}

# for (data in c("df_4001000_pz")) {
#   for (comp in c("RR_RA","AA_RA")) {
#     for (p in c("promis_peer_sumraw","promis_fam_sumraw","promis_peer_tscore","promis_fam_tscore")) {
#       eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coefficients)')))
#     }}}
```

No significant results

Regressions with romantic relationship

```
load(here("data/BUDS_cleaning02_with_strain.RData"))
BUDS_cleaning02_with_strain$ID <- as.integer(as.character(BUDS_cleaning02_with_strain$id_1_i))
BUDS_cleaning02_with_strain <- BUDS_cleaning02_with_strain %>%
  distinct(ID, .keep_all=TRUE) %>%
  mutate(RelationshipStatus_named = case_match(RelationshipStatus, 1 ~ "I've never had a boyfriend or gi
                                       2 ~ "I've had a boyfriend or girlfriend, but I'm not dating anyo
                                       3 ~ "I'm dating someone, but it's not very serious",
                                       4 ~ "I have a serious boyfriend or girlfriend",
                                       5 ~ "I am married"),
         Never_dated = case_when(RelationshipStatus == 1 ~ "never_dated",
                                 RelationshipStatus > 1 &  RelationshipStatus!=2 ~ "dated"),
         RelationshipStatus_named_no4 = case_match(RelationshipStatus, 1 ~ "I've never had a boyfriend o
                                       2 ~ "I've had a boyfriend or girlfriend, but I'm not dating anyo
                                       3 ~ "I'm dating someone, but it's not very serious",
                                       4 ~ NA,
                                       5 ~ "I am married"),
         RelationshipStatus_named_no2 = case_match(RelationshipStatus, 1 ~ "I've never had a boyfriend o
                                       2 ~ NA,
                                       3 ~ "I'm dating someone, but it's not very serious",
                                       4 ~ "I have a serious boyfriend or girlfriend",
                                       5 ~ "I am married"))



df_150350_cz_strain <- df_150350_cz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_250450_fz_strain <- df_250450_fz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

df_200400_pz_strain <- df_200400_pz %>%
  full_join(BUDS_cleaning02_with_strain, by="ID")

# df_4001000_pz_strain <- df_4001000_pz %>%
#   full_join(BUDS_cleaning02_with_strain, by="ID")
```

```
#
# df_6001500_pz_strain <- df_6001500_pz %>%
#   full_join(BUDS_cleaning02_with_strain, by="ID")

table(df_150350_cz_strain$RelationshipStatus_named)
table(df_150350_cz_strain$Never_dated)

# Acceptance from a liked peer relative to acceptance from a disliked peer is greater for youth who hav
# summary(lm(AA_RA ~ Never_dated, data = df_4001000_pz_strain))
# summary(lm(A_all ~ Never_dated, data = df_4001000_pz_strain))

# ggplot(filter(df_4001000_pz_strain, complete.cases(Never_dated)), aes(y=A_all, x=Never_dated)) +
  # geom_bar(stat="summary", position = "dodge", fun.y = "mean")

# df_4001000_pz_hcs_strain <- df_4001000_pz_hcs %>%
  # full_join(BUDS_cleaning02_with_strain, by="ID")
# anova(lm(call = AA_RA ~ Never_dated, data = df_4001000_pz_hcs_strain))

# t.test(A_all ~ Never_dated, df_4001000_pz_strain)
# t.test(AA_RA ~ Never_dated, df_4001000_pz_hcs_strain)

# for (data in c("df_200400_pz_strain")) {
#   for (comp in c("AR_RR","RA_RR","RA_AA")) {
#     for (p in c("RelationshipStatus","Never_dated")) {
#       eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,')))')))
#     }}}
```

```
df_4001000_pz_strain_idas <- df_4001000_pz_strain

for (var in c(15,18,20,41,47,99,
              3,10,23,27,50,53,59,64)) {
 eval(parse(text=paste0('
  df_4001000_pz_strain_idas$idas_',var,' <- dplyr::recode_factor(df_4001000_pz_strain_idas$idas_',var,'
  "Not at all"=1,
  "A little bit"=2,
  "Moderately"=3,
  "Quite a bit"=4,
  "Extremely"=5,
  `1`=1, `2`=2, `3`=3, `4`=4,`5`=5)
  df_4001000_pz_strain_idas$idas_',var,' <- as.integer(df_4001000_pz_strain_idas$idas_',var,')')))
}

for (var in c(1:17)) {
 eval(parse(text=paste0('
  df_4001000_pz_strain_idas$acips_',var,' <- dplyr::recode_factor(df_4001000_pz_strain_idas$acips_',var
  "Very false for me"=1,
  "Moderately false for me"=2,
  "Slightly false for me"=3,
  "Slightly true for me"=4,
  "Moderately true for me"=5,
  "Very true for me"=6,
  `1`=1, `2`=2, `3`=3, `4`=4,`5`=5, `6`=6)
  df_4001000_pz_strain_idas$acips_',var,' <- as.integer(df_4001000_pz_strain_idas$acips_',var,')')))
```

```
}

df_4001000_pz_strain_idas$idas_sa <- rowMeans(df_4001000_pz_strain_idas[,c("idas_15","idas_18",
                                                                          "idas_20","idas_41",
                                                                          "idas_47","idas_99")], na.rm=T)
df_4001000_pz_strain_idas$idas_wellbeing <- rowMeans(df_4001000_pz_strain_idas[,c("idas_3","idas_10",
                                                                          "idas_23","idas_27",
                                                                          "idas_50","idas_53",
                                                                          "idas_59","idas_64")], na.rm=T)
df_4001000_pz_strain_idas$acips <- rowMeans(df_4001000_pz_strain_idas[,c("acips_1","acips_2",
                                                                          "acips_3","acips_4",
                                                                          "acips_5","acips_6",
                                                                         "acips_7","acips_8",
                                                                         "acips_9","acips_10",
                                                                         "acips_11","acips_12",
                                                                         "acips_13","acips_14",
                                                                         "acips_15","acips_16","acips_17")

df_4001000_pz_strain_idas$idas_sa_norm <- bestNormalize(df_4001000_pz_strain_idas$idas_sa)$x.t
hist(df_4001000_pz_strain_idas$idas_sa_norm)

df_4001000_pz_strain_idas$acips_norm <- bestNormalize(df_4001000_pz_strain_idas$acips)$x.t
hist(df_4001000_pz_strain_idas$acips_norm)

t.test(idas_sa_norm ~ Never_dated, df_4001000_pz_strain_idas)
t.test(idas_wellbeing ~ Never_dated, df_4001000_pz_strain_idas)
t.test(acips ~ Never_dated, df_4001000_pz_strain_idas)

summary(lm(AA_RA ~ idas_sa_norm + acips_norm + idas_wellbeing, df_4001000_pz_strain_idas))
summary(lm(AA_RA ~ idas_sa_norm*Never_dated, df_4001000_pz_strain_idas))

# SEND THIS TO STEW
summary(lm(AA_AR ~ idas_sa_norm + idas_wellbeing, df_4001000_pz_strain_idas))

df_4001000_pz_strain_idas_complete <- df_4001000_pz_strain_idas %>%
  filter(complete.cases(AA_AR) & complete.cases(idas_sa_norm) & complete.cases(idas_wellbeing))

fit.1 <- lm(AA_AR ~ idas_sa_norm, data=df_4001000_pz_strain_idas_complete)
fit.2 <- lm(AA_AR ~ idas_wellbeing, data=df_4001000_pz_strain_idas_complete)
df_4001000_pz_strain_idas_complete$residual2 <- residuals(fit.2)
df_4001000_pz_strain_idas_complete$residual1 <- residuals(lm(idas_sa_norm ~ idas_wellbeing, df_4001000_

# Check and make sure these lead to the same effect as the regular multiple regression model
round(summary(lm(AA_AR ~ idas_sa_norm + idas_wellbeing, df_4001000_pz_strain_idas))$coefficients[2,],3)
round(summary(lm(residual2 ~ residual1, df_4001000_pz_strain_idas_complete))$coefficients[2,],3)
# yea, these are basically the same except for some slight change due to rounding and the fact that the

ggplot(df_4001000_pz_strain_idas_complete, aes(x=residual1, y=residual2)) +
  geom_point() +
  stat_smooth(method="lm", color="black", se=TRUE) +
  labs(x="Social anxiety symptoms", y="Response to high-value peer acceptance") +
  papaja::theme_apa() +
  theme(text = element_text(size = 16))
```

```
ggplot(df_4001000_pz_strain_idas_complete, aes(x=idas_sa_norm, y=AA_AR)) +
  geom_point() +
  stat_smooth(method="lm") +
    papaja::theme_apa()
```

Regressions with STRAIN

All stressors

```
stressors <- c("StressCT","StressTH","EvntCT","DiffCT","EvntTH","DiffTH")

# RewP, P3, LPP
for (data in c("df_150350_cz_strain","df_250450_fz_strain","df_200400_pz_strain",
               "df_4001000_pz_strain","df_6001500_pz_strain")) {
  for (comp in c("A_all","AA_AR","RA_RR")) {
    for (p in stressors) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}


# LPP
for (data in c("df_4001000_pz_strain","df_6001500_pz_strain")) {
  for (comp in c("RR_RA","AA_RA")) {
    for (p in stressors) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}

# P3
for (data in c("df_200400_pz_strain")) {
  for (comp in c("AR_RR","RA_AA")) {
    for (p in stressors) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}
```

Interpersonal Loss

```
interpersonal_loss <- c("CIEvntCT","CIDiffCT","CIAllCT","CIEvntTH","CIDiffTH","CIAllTH")

# RewP, P3, LPP
for (data in c("df_150350_cz_strain","df_250450_fz_strain","df_200400_pz_strain",
               "df_4001000_pz_strain","df_6001500_pz_strain")) {
  for (comp in c("A_all","AA_AR","RA_RR")) {
    for (p in interpersonal_loss) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}


# LPP
```

```
for (data in c("df_4001000_pz_strain","df_6001500_pz_strain")) {
  for (comp in c("RR_RA","AA_RA")) {
    for (p in interpersonal_loss) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}

# P3
for (data in c("df_200400_pz_strain")) {
  for (comp in c("AR_RR","RA_AA")) {
    for (p in interpersonal_loss) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}
```

Humiliation

Full sample

```
humiliation <- c("CHEvntCT","CHDiffCT","CHAllCT","CHEvntTH","CHDiffTH","CHAllTH")

# RewP, P3, LPP
for (data in c("df_150350_cz_strain","df_250450_fz_strain","df_200400_pz_strain",
               "df_4001000_pz_strain","df_6001500_pz_strain")) {
  for (comp in c("A_all","AA_AR","RA_RR")) {
    for (p in humiliation) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}

# LPP
for (data in c("df_4001000_pz_strain","df_6001500_pz_strain")) {
  for (comp in c("RR_RA","AA_RA")) {
    for (p in humiliation) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}

# P3
for (data in c("df_200400_pz_strain")) {
  for (comp in c("AR_RR","RA_AA")) {
    for (p in humiliation) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}

#########################################################

for (data in c("df_250450_fz_strain")) {
  for (comp in c("AA_AR")) {
    for (p in humiliation) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,')))')))
    }}}

summary(lm(formula = AA_AR ~ CHAllCT, data = df_250450_fz_strain)) #Characteristic: Humiliation - Total
summary(lm(formula = AA_AR ~ CHAllTH, data = df_250450_fz_strain)) #Characteristic: Humiliation - Total
```

```
summary(lm(formula = AA_AR ~ CHEvntCT, data = df_250450_fz_strain)) #Characteristic: Humiliation - Coun
summary(lm(formula = AA_AR ~ CHEvntTH, data = df_250450_fz_strain)) #~ Characteristic: Humiliation - Se

ggplot(df_250450_fz_strain, aes(x=CHAllCT, y=AA_AR)) +
  geom_point() +
  stat_smooth(method="lm")

ggplot(df_250450_fz_strain, aes(x=CHAllTH, y=AA_AR)) +
  geom_point() +
  stat_smooth(method="lm")

ggplot(df_250450_fz_strain, aes(x=CHEvntCT, y=AA_AR)) +
  geom_point() +
  stat_smooth(method="lm")
```

These findings are specific to humiliation type stressors from the STRAIN.

The direction suggests that greater experience with humiliating life events is related to a enhanced response to acceptance relative to rejection. However, since rejection appears to elicits a greater ERP than rejection in this time window (i.e., negative difference), it is more interpretable as greater experience with humiliating life events is related to a less negative net response to rejection (right?).

Financial

```
financial <- c("DFEvntCT","DFDiffCT","DFAllCT","DFEvntTH","DFDiffTH","DFAllTH")

for (p in financial) {
  for (data in c("df_150350_cz_strain","df_250450_fz_strain","df_200400_pz_strain")) {
  for (comp in c("RR_RA")) {
      eval(parse(text=paste0('print(summary(lm(',comp,' ~ ',p,', ',data,'))$call)
                             print(summary(lm(',comp,' ~ ',p,', ',data,'))$coef[2,4])')))
    }}}



summary(lm(formula = ADI_NATRANK_log_z ~ DFDiffCT, data = df_150350_cz_strain))
summary(lm(formula = ADI_NATRANK_log_z ~ DFDiffTH, data = df_150350_cz_strain))

# Domain: Financial - Count of Chronic Difficulties
summary(lm(formula = DFDiffCT ~ RR_RA, data = df_150350_cz_strain))
summary(lm(formula = DFDiffCT ~ RR_RA, data = df_250450_fz_strain))

summary(lm(formula = RR_RA ~ DFAllCT, data = df_250450_fz_strain))

# Domain: Financial - Severity of Chronic Difficulties
summary(lm(formula = RR_RA ~ DFDiffTH, data = df_150350_cz_strain))
summary(lm(formula = RR_RA ~ DFDiffTH, data = df_250450_fz_strain))

summary(lm(formula = RR_RA ~ DFAllTH, data = df_250450_fz_strain))

df_150350_cz_strain$DFDiffCT_z <- scale(df_150350_cz_strain$DFDiffCT, scale=T, center=T)
df_150350_cz_strain$DFDiffTH_z <- scale(df_150350_cz_strain$DFDiffTH, scale=T, center=T)
```

```r
df_250450_fz_strain$DFDiffCT_z <- scale(df_250450_fz_strain$DFDiffCT, scale=T, center=T)
df_250450_fz_strain$DFDiffTH_z <- scale(df_250450_fz_strain$DFDiffTH, scale=T, center=T)

ggplot(df_150350_cz_strain, aes(x=DFDiffCT_z, y=RR_RA)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=2, y=-2.5, color="blue", size=5, label=paste0("beta=",
       round(tidy(lm(formula = RR_RA ~ DFDiffCT_z, data = df_150350_cz_strain))[2,c(2)],3),
       ", p=",
       round(tidy(lm(formula = RR_RA ~ DFDiffCT_z, data = df_150350_cz_strain))[2,c(5)],3))) +
    labs(x="Low value rejection \n(relative to low value acceptance)",
       y="STRAIN financial chronic stressors (count)",
       title="150-350 ms at Cz")

ggplot(df_250450_fz_strain, aes(x=DFDiffCT_z, y=RR_RA)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=3, y=-2.5, color="blue", size=5, label=paste0("beta=",
       round(tidy(lm(formula = RR_RA ~ DFDiffCT_z, data = df_250450_fz_strain))[2,c(2)],3),
       ", p=",
       round(tidy(lm(formula = RR_RA ~ DFDiffCT_z, data = df_250450_fz_strain))[2,c(5)],3))) +
    labs(x="Low value rejection \n(relative to low value acceptance)",
       y="STRAIN financial chronic stressors (count)",
       title="250-450 ms at Fz")

ggplot(df_150350_cz_strain, aes(x=DFDiffTH_z, y=RR_RA)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=14, y=-2.5, color="blue", size=5, label=paste0("beta=",
       round(tidy(lm(formula = RR_RA ~ DFDiffTH_z, data = df_150350_cz_strain))[2,c(2)],3),
       ", p=",
       round(tidy(lm(formula = RR_RA ~ DFDiffTH_z, data = df_150350_cz_strain))[2,c(5)],3))) +
    labs(x="Low value rejection \n(relative to low value acceptance)",
       y="STRAIN financial chronic stressors (severity)",
       title="150-350 ms at Cz")

ggplot(df_250450_fz_strain, aes(x=DFDiffTH_z, y=RR_RA)) +
  geom_point() +
  stat_smooth(method="lm") +
  geom_text(x=14, y=-3, color="blue", size=5, label=paste0("beta=",
       round(tidy(lm(formula = RR_RA ~ DFDiffTH_z, data = df_250450_fz_strain))[2,c(2)],3),
       ", p=",
       round(tidy(lm(formula = RR_RA ~ DFDiffTH_z, data = df_250450_fz_strain))[2,c(5)],3))) +
    labs(x="Low value rejection \n(relative to low value acceptance)",
       y="STRAIN financial chronic stressors (severity)",
       title="250-450 ms at Fz")
```

```r
# save(BUDS_cleaning04, file=here("data/BUDS_cleaning04.RData"))
```