```
rm(list=ls())
library("tidyverse")
library("ggeffects")

library("ggplot2")

Rawdata <- read_csv("Inner speech and purchasing behaviour_reversed.csv")
library(dplyr)
summary(Rawdata)

# Rename and Combine columns to create a new column
Rawdata <-    Rawdata%>%
   rename( `Timing_1A2B_a1_Page_Submit` = `Timing_1A2B_a1_Page Submit`,
`Timing_1A2B_a2_Page_Submit` = `Timing_1A2B_a2_Page Submit`,
`Timing_1A2B_a3_Page_Submit` = `Timing_1A2B_a3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_1A2B_b1_Page_Submit` = `Timing_1A2B_b1_Page Submit`,
`Timing_1A2B_b2_Page_Submit` = `Timing_1A2B_b2_Page Submit`,
`Timing_1A2B_b3_Page_Submit` = `Timing_1A2B_b3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_1B2A_a1_Page_Submit` = `Timing_1B2A_a1_Page Submit`,
`Timing_1B2A_a2_Page_Submit` = `Timing_1B2A_a2_Page Submit`,
`Timing_1B2A_a3_Page_Submit` = `Timing_1B2A_a3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_1B2A_b1_Page_Submit` = `Timing_1B2A_b1_Page Submit`,
`Timing_1B2A_b2_Page_Submit` = `Timing_1B2A_b2_Page Submit`,
`Timing_1B2A_b3_Page_Submit` = `Timing_1B2A_b3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_2A1B_a1_Page_Submit` = `Timing_2A1B_a1_Page Submit`,
`Timing_2A1B_a2_Page_Submit` = `Timing_2A1B_a2_Page Submit`,
`Timing_2A1B_a3_Page_Submit` = `Timing_2A1B_a3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_2A1B_b1_Page_Submit` = `Timing_2A1B_b1_Page Submit`,
`Timing_2A1B_b2_Page_Submit` = `Timing_2A1B_b2_Page Submit`,
`Timing_2A1B_b3_Page_Submit` = `Timing_2A1B_b3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_2B1A_a1_Page_Submit` = `Timing_2B1A_a1_Page Submit`,
`Timing_2B1A_a2_Page_Submit` = `Timing_2B1A_a2_Page Submit`,
```

```
`Timing_2B1A_a3_Page_Submit` = `Timing_2B1A_a3_Page Submit`)
Rawdata <-    Rawdata%>%
   rename( `Timing_2B1A_b1_Page_Submit` = `Timing_2B1A_b1_Page Submit`,
`Timing_2B1A_b2_Page_Submit` = `Timing_2B1A_b2_Page Submit`,
`Timing_2B1A_b3_Page_Submit` = `Timing_2B1A_b3_Page Submit`)


Rawdata <-    Rawdata%>%
   mutate( G1Suppression_average = (Timing_1A2B_a1_Page_Submit +
Timing_1A2B_a2_Page_Submit +Timing_1A2B_a3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G1Control_average = (Timing_1A2B_b1_Page_Submit +
Timing_1A2B_b2_Page_Submit + Timing_1A2B_b3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G2Suppression_average = (Timing_1B2A_b1_Page_Submit +
Timing_1B2A_b2_Page_Submit + Timing_1B2A_b3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G2Control_average = (Timing_1B2A_a1_Page_Submit +
Timing_1B2A_a2_Page_Submit + Timing_1B2A_a3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G3Suppression_average = (Timing_2A1B_b1_Page_Submit +
Timing_2A1B_b2_Page_Submit + Timing_2A1B_b3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G3Control_average = (Timing_2A1B_a1_Page_Submit +
Timing_2A1B_a2_Page_Submit + Timing_2A1B_a3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G4Suppression_average = (Timing_2B1A_a1_Page_Submit +
Timing_2B1A_a2_Page_Submit + Timing_2B1A_a3_Page_Submit) / 3)
Rawdata <-    Rawdata%>%
   mutate( G4Control_average = (Timing_2B1A_b1_Page_Submit +
Timing_2B1A_b2_Page_Submit + Timing_2B1A_b3_Page_Submit) / 3)

Rawdata <-    Rawdata%>%
   rename( `inner_speech_QS_1` = `inner speech QS_1`, `inner_speech_QS_2`    =
`inner speech QS_2`, `inner_speech_QS_3` = `inner speech QS_3`,
                `inner_speech_QS_4` = `inner speech QS_4`, `inner_speech_QS_5` =
`inner speech QS_5`, `inner_speech_QS_6` = `inner speech QS_6`,
                `inner_speech_QS_7` = `inner speech QS_7`, `inner_speech_QS_8` =
```

```
`inner speech QS_8`, `inner_speech_QS_9` = `inner speech QS_9`,
                `inner_speech_QS_10` = `inner speech QS_10`, `inner_speech_QS_11` =
`inner speech QS_11`, `inner_speech_QS_12`    = `inner speech QS_12`,
                `inner_speech_QS_13` = `inner speech QS_13`, `inner_speech_QS_14` =
`inner speech QS_14`, `inner_speech_QS_15` = `inner speech QS_15`,
                `inner_speech_QS_16` = `inner speech QS_16`, `inner_speech_QS_17` =
`inner speech QS_17`, `inner_speech_QS_18` = `inner speech QS_18`,
                `inner_speech_QS_19` = `inner speech QS_19`, `inner_speech_QS_20` =
`inner speech QS_20`)
library(dplyr)
Rawdata <- Rawdata %>%
   mutate(Participants_number = 1:30)

Rawdata <-    Rawdata%>%
   mutate(Innerspeech_total = inner_speech_QS_1 +inner_speech_QS_2
+inner_speech_QS_3 + inner_speech_QS_4 + inner_speech_QS_5+
                 inner_speech_QS_6+
inner_speech_QS_7+inner_speech_QS_8+inner_speech_QS_10+inner_speech_QS_1
1+inner_speech_QS_12+

inner_speech_QS_13+inner_speech_QS_14+inner_speech_QS_15+inner_speech_QS
_16+inner_speech_QS_17+inner_speech_QS_18+inner_speech_QS_19+inner_speec
h_QS_20)
Rawdata <-    Rawdata%>%
   mutate(IS_Dialogic = (inner_speech_QS_2 + inner_speech_QS_6 +
inner_speech_QS_10 + inner_speech_QS_13)/4)
Rawdata <-    Rawdata%>%
   mutate(IS_Evaluate.critical = (inner_speech_QS_9 + inner_speech_QS_11 +
inner_speech_QS_17 + inner_speech_QS_18 + inner_speech_QS_20)/5)
Rawdata <-    Rawdata%>%
   mutate(IS_Otherpeople = (inner_speech_QS_3 + inner_speech_QS_4 +
inner_speech_QS_5 + inner_speech_QS_12 + inner_speech_QS_16)/5)
Rawdata <-    Rawdata%>%
   mutate(IS_Condensed = (inner_speech_QS_1 + inner_speech_QS_7 +
inner_speech_QS_8 + inner_speech_QS_14 + inner_speech_QS_15)/5)
Rawdata <-    Rawdata%>%
   mutate(IS_Regulate = inner_speech_QS_19)
```

```
Rawdata$S_Infosearch_average <- coalesce((Rawdata$Rating_1A2B_a1_1 +
Rawdata$Rating_1A2B_a2_1 + Rawdata$Rating_1A2B_a3_1) / 3,
                                                    (Rawdata$Rating_2A1B_b1_1 +
Rawdata$Rating_2A1B_b2_1 + Rawdata$Rating_2A1B_b3_1) / 3,
                                                    (Rawdata$Rating_1B2A_b1_1 +
Rawdata$Rating_1B2A_b2_1 + Rawdata$Rating_1B2A_b3_1) / 3,
                                                    (Rawdata$Rating_2B1A_a1_1 +
Rawdata$Rating_2B1A_a2_1 + Rawdata$Rating_2B1A_a3_1) / 3)

Rawdata$C_Infosearch_average <- coalesce((Rawdata$Rating_1A2B_b1_1 +
Rawdata$Rating_1A2B_b2_1 + Rawdata$Rating_1A2B_b3_1) / 3,
                                                    (Rawdata$Rating_2A1B_a1_1 +
Rawdata$Rating_2A1B_a2_1 + Rawdata$Rating_2A1B_a3_1) / 3,
                                                    (Rawdata$Rating_1B2A_a1_1 +
Rawdata$Rating_1B2A_a2_1 + Rawdata$Rating_1B2A_a3_1) / 3,
                                                    (Rawdata$Rating_2B1A_b1_1 +
Rawdata$Rating_2B1A_b2_1 + Rawdata$Rating_2B1A_b3_1) / 3,)

Rawdata$S_Altevaluation_average <- coalesce((Rawdata$Rating_1A2B_a1_2 +
Rawdata$Rating_1A2B_a2_2 + Rawdata$Rating_1A2B_a3_2) / 3,
                                                          (Rawdata$Rating_2A1B_b1_2
+ Rawdata$Rating_2A1B_b2_2 + Rawdata$Rating_2A1B_b3_2) / 3,
                                                          (Rawdata$Rating_1B2A_b1_2
+ Rawdata$Rating_1B2A_b2_2 + Rawdata$Rating_1B2A_b3_2) / 3,
                                                          (Rawdata$Rating_2B1A_a1_2
+ Rawdata$Rating_2B1A_a2_2 + Rawdata$Rating_2B1A_a3_2) / 3)

Rawdata$C_Altevaluation_average <- coalesce((Rawdata$Rating_1A2B_b1_2 +
Rawdata$Rating_1A2B_b2_2 + Rawdata$Rating_1A2B_b3_2) / 3,
                                                          (Rawdata$Rating_2A1B_a1_2
+ Rawdata$Rating_2A1B_a2_2 + Rawdata$Rating_2A1B_a3_2) / 3,
                                                          (Rawdata$Rating_1B2A_a1_2
+ Rawdata$Rating_1B2A_a2_2 + Rawdata$Rating_1B2A_a3_2) / 3,
                                                          (Rawdata$Rating_2B1A_b1_2
+ Rawdata$Rating_2B1A_b2_2 + Rawdata$Rating_2B1A_b3_2) / 3,)


Rawdata$Suppression_average <- coalesce(Rawdata$G1Suppression_average,
```

```
Rawdata$G2Suppression_average, Rawdata$G3Suppression_average,
Rawdata$G4Suppression_average)

Rawdata$Control_average <- coalesce(Rawdata$G1Control_average,
Rawdata$G2Control_average, Rawdata$G3Control_average,
Rawdata$G4Control_average)

Rawdata$perfume1_search_s <-
coalesce(Rawdata$Rating_1A2B_a1_1,Rawdata$Rating_2B1A_a1_1)
Rawdata$perfume1_search_c <-
coalesce(Rawdata$Rating_2A1B_a1_1,Rawdata$Rating_1B2A_a1_1)
Rawdata$perfume1_search <-
coalesce(Rawdata$Rating_2A1B_a1_1,Rawdata$Rating_1B2A_a1_1,

Rawdata$Rating_1A2B_a1_1,Rawdata$Rating_2B1A_a1_1)

Rawdata$perfume2_search_s<-
coalesce(Rawdata$Rating_2A1B_b1_1,Rawdata$Rating_1B2A_b1_1)
Rawdata$perfume2_search_c<-coalesce(Rawdata$Rating_1A2B_b1_1,
Rawdata$Rating_2B1A_b1_1)
Rawdata$perfume2_search <-
coalesce(Rawdata$Rating_2A1B_b1_1,Rawdata$Rating_1B2A_b1_1,

Rawdata$Rating_1A2B_b1_1,Rawdata$Rating_2B1A_b1_1)

Rawdata$bluetooth1_search_s <-
coalesce(Rawdata$Rating_1A2B_a2_1,Rawdata$Rating_2B1A_a2_1)
Rawdata$bluetooth1_search_c <-
coalesce(Rawdata$Rating_2A1B_a2_1,Rawdata$Rating_1B2A_a2_1)
Rawdata$bluetooth1_search <-
coalesce(Rawdata$Rating_1A2B_a2_1,Rawdata$Rating_2B1A_a2_1,

Rawdata$Rating_2A1B_a2_1,Rawdata$Rating_1B2A_a2_1)

Rawdata$bluetooth2_search_s <-
coalesce(Rawdata$Rating_2A1B_b2_1,Rawdata$Rating_1B2A_b2_1)
Rawdata$bluetooth2_search_c <-
coalesce(Rawdata$Rating_1A2B_b2_1,Rawdata$Rating_2B1A_b2_1)
```

```
Rawdata$bluetooth2_search <-
coalesce(Rawdata$Rating_1A2B_b2_1,Rawdata$Rating_2B1A_b2_1,

Rawdata$Rating_2A1B_b2_1,Rawdata$Rating_1B2A_b2_1)

Rawdata$mask1_search_s <-
coalesce(Rawdata$Rating_1A2B_a3_1,Rawdata$Rating_2B1A_a3_1)
Rawdata$mask1_search_c <-coalesce(Rawdata$Rating_2A1B_a3_1,
Rawdata$Rating_1B2A_a3_1)
Rawdata$mask1_search <-
coalesce(Rawdata$Rating_1A2B_a3_1,Rawdata$Rating_2B1A_a3_1,

Rawdata$Rating_2A1B_a3_1,Rawdata$Rating_1B2A_a3_1)


Rawdata$mask2_search_s <-
coalesce(Rawdata$Rating_2A1B_b3_1,Rawdata$Rating_1B2A_b3_1)
Rawdata$mask2_search_c<-coalesce(Rawdata$Rating_1A2B_b3_1,
Rawdata$Rating_2B1A_b3_1)
Rawdata$mask2_search <-
coalesce(Rawdata$Rating_1A2B_b3_1,Rawdata$Rating_2B1A_b3_1,

Rawdata$Rating_2A1B_b3_1,Rawdata$Rating_1B2A_b3_1)


Rawdata$perfume1_eva_s <-
coalesce(Rawdata$Rating_1A2B_a1_2,Rawdata$Rating_2B1A_a1_2)
Rawdata$perfume1_eva_c <-
coalesce(Rawdata$Rating_2A1B_a1_2,Rawdata$Rating_1B2A_a1_2)

Rawdata$perfume2_eva_s<-
coalesce(Rawdata$Rating_2A1B_b1_2,Rawdata$Rating_1B2A_b1_2)
Rawdata$perfume2_eva_c<-coalesce(Rawdata$Rating_1A2B_b1_2,
Rawdata$Rating_2B1A_b1_2)

Rawdata$bluetooth1_eva_s <-
coalesce(Rawdata$Rating_1A2B_a2_2,Rawdata$Rating_2B1A_a2_2)
Rawdata$bluetooth1_eva_c <-
```

```
coalesce(Rawdata$Rating_2A1B_a2_2,Rawdata$Rating_1B2A_a2_2)

Rawdata$bluetooth2_eva_s <-
coalesce(Rawdata$Rating_2A1B_b2_2,Rawdata$Rating_1B2A_b2_2)
Rawdata$bluetooth2_eva_c <-
coalesce(Rawdata$Rating_1A2B_b2_2,Rawdata$Rating_2B1A_b2_2)

Rawdata$mask1_eva_s <-
coalesce(Rawdata$Rating_1A2B_a3_2,Rawdata$Rating_2B1A_a3_2)
Rawdata$mask1_eva_c <-coalesce(Rawdata$Rating_2A1B_a3_2,
Rawdata$Rating_1B2A_a3_2)

Rawdata$mask2_eva_s <-
coalesce(Rawdata$Rating_2A1B_b3_2,Rawdata$Rating_1B2A_b3_2)
Rawdata$mask2_eva_c<-coalesce(Rawdata$Rating_1A2B_b3_2,
Rawdata$Rating_2B1A_b3_2)

new_dataset <- Rawdata %>%
   mutate(Info_value = coalesce(perfume1_search, perfume2_search,
bluetooth1_search, bluetooth2_search,
                                        mask1_search, mask2_search))


data_analyse <- select(Rawdata, Participants_number,
                              IS_Dialogic, IS_Evaluate.critical, IS_Otherpeople,
IS_Condensed, IS_Regulate, Innerspeech_total,
                              Suppression_average, Control_average,
                              S_Infosearch_average, C_Infosearch_average,
                              S_Altevaluation_average, C_Altevaluation_average)

data_analyse_long <- pivot_longer(Rawdata,
                                        cols = c(Timing_1A2B_a1_Page_Submit,
Timing_1A2B_a2_Page_Submit, Timing_1A2B_a3_Page_Submit,
                                                Timing_1A2B_b1_Page_Submit,
Timing_1A2B_b2_Page_Submit, Timing_1A2B_b3_Page_Submit,
                                                Timing_1B2A_a1_Page_Submit,
Timing_1B2A_a2_Page_Submit, Timing_1B2A_a3_Page_Submit,
                                                Timing_1B2A_b1_Page_Submit,
```

```
Timing_1B2A_b2_Page_Submit, Timing_1B2A_b3_Page_Submit,
                                                    Timing_2A1B_a1_Page_Submit,
Timing_2A1B_a2_Page_Submit, Timing_2A1B_a3_Page_Submit,
                                                    Timing_2A1B_b1_Page_Submit,
Timing_2A1B_b2_Page_Submit, Timing_2A1B_b3_Page_Submit,
                                                    Timing_2B1A_a1_Page_Submit,
Timing_2B1A_a2_Page_Submit, Timing_2B1A_a3_Page_Submit,
                                                    Timing_2B1A_b1_Page_Submit,
Timing_2B1A_b2_Page_Submit, Timing_2B1A_b3_Page_Submit),
                                          names_to = "Product_sets", values_to =
"Decision_time")

# Assuming 'data_analyse_long' is the data frame
# Remove rows with NA in "Decision_time" column
data_analyse_cleaned <-
data_analyse_long[complete.cases(data_analyse_long$Decision_time), ]

library(dplyr)

data_analyse_cleaned <- data_analyse_long %>%
  filter(complete.cases(Decision_time))

#Quantitative data which need to be analysed
data_for_gamma <- select(data_analyse_cleaned, Participants_number,
                         IS_Dialogic, IS_Evaluate.critical, IS_Otherpeople,
IS_Condensed, IS_Regulate, Innerspeech_total,
                         Suppression_average, Control_average,
                         S_Infosearch_average, C_Infosearch_average,
                         S_Altevaluation_average, C_Altevaluation_average,
Product_sets, Decision_time)

# Sample data frame with the column names
library(dplyr)
# Create a new column "Independent_Condition" and set all values to NA
data_for_gamma$Independent_Condition <- NA


# Assign values based on conditions
```

```
data_for_gamma$Independent_Condition[data_for_gamma$Product_sets %in% c(
   "Timing_1A2B_a1_Page_Submit", "Timing_1A2B_a2_Page_Submit",
"Timing_1A2B_a3_Page_Submit",
   "Timing_1B2A_b1_Page_Submit", "Timing_1B2A_b2_Page_Submit",
"Timing_1B2A_b3_Page_Submit",
   "Timing_2A1B_b1_Page_Submit", "Timing_2A1B_b2_Page_Submit",
"Timing_2A1B_b3_Page_Submit",
   "Timing_2B1A_a1_Page_Submit", "Timing_2B1A_a2_Page_Submit",
"Timing_2B1A_a3_Page_Submit"
)] <- "0.5"

data_for_gamma$Independent_Condition[data_for_gamma$Product_sets %in% c(
   "Timing_1A2B_b1_Page_Submit", "Timing_1A2B_b2_Page_Submit",
"Timing_1A2B_b3_Page_Submit",
   "Timing_1B2A_a1_Page_Submit", "Timing_1B2A_a2_Page_Submit",
"Timing_1B2A_a3_Page_Submit",
   "Timing_2A1B_a1_Page_Submit", "Timing_2A1B_a2_Page_Submit",
"Timing_2A1B_a3_Page_Submit",
   "Timing_2B1A_b1_Page_Submit", "Timing_2B1A_b2_Page_Submit",
"Timing_2B1A_b3_Page_Submit"
)] <- "-0.5"

data_for_gamma <- data_for_gamma %>%
   mutate(Product_sets = case_when(
      Product_sets == "Timing_1A2B_a1_Page_Submit" ~ "perfume1",
      Product_sets == "Timing_1A2B_a2_Page_Submit" ~ "bluetooth1",
      Product_sets == "Timing_1A2B_a3_Page_Submit" ~ "mask1",
      Product_sets == "Timing_1A2B_b1_Page_Submit" ~ "perfume2",
      Product_sets == "Timing_1A2B_b2_Page_Submit" ~ "bluetooth2",
      Product_sets == "Timing_1A2B_b3_Page_Submit" ~ "mask2",
      Product_sets == "Timing_1B2A_a1_Page_Submit" ~ "perfume1",
      Product_sets == "Timing_1B2A_a2_Page_Submit" ~ "bluetooth1",
      Product_sets == "Timing_1B2A_a3_Page_Submit" ~ "mask1",
      Product_sets == "Timing_1B2A_b1_Page_Submit" ~ "perfume2",
      Product_sets == "Timing_1B2A_b2_Page_Submit" ~ "bluetooth2",
      Product_sets == "Timing_1B2A_b3_Page_Submit" ~ "mask2",
      Product_sets == "Timing_2A1B_a1_Page_Submit" ~ "perfume1",
      Product_sets == "Timing_2A1B_a2_Page_Submit" ~ "bluetooth1",
```

```
      Product_sets == "Timing_2A1B_a3_Page_Submit" ~ "mask1",
      Product_sets == "Timing_2A1B_b1_Page_Submit" ~ "perfume2",
      Product_sets == "Timing_2A1B_b2_Page_Submit" ~ "bluetooth2",
      Product_sets == "Timing_2A1B_b3_Page_Submit" ~ "mask2",
      Product_sets == "Timing_2B1A_a1_Page_Submit" ~ "perfume1",
      Product_sets == "Timing_2B1A_a2_Page_Submit" ~ "bluetooth1",
      Product_sets == "Timing_2B1A_a3_Page_Submit" ~ "mask1",
      Product_sets == "Timing_2B1A_b1_Page_Submit" ~ "perfume2",
      Product_sets == "Timing_2B1A_b2_Page_Submit" ~ "bluetooth2",
      Product_sets == "Timing_2B1A_b3_Page_Submit" ~ "mask2",
      TRUE ~ NA_character_
  ))


data_analyse_long2 <- pivot_longer(Rawdata,
                                   cols =
c(perfume1_search_s,perfume1_search_c,

perfume2_search_s,perfume2_search_c,
                                       bluetooth1_search_s,
bluetooth1_search_c,
                                       bluetooth2_search_s,
bluetooth2_search_c,
                                       mask1_search_s,
mask1_search_c,
                                       mask2_search_s,
mask2_search_c),
                                   names_to = "Product_sets", values_to =
"search_value")
data_analyse_cleaned2 <-
data_analyse_long2[complete.cases(data_analyse_long2$search_value), ]
data_for_search <-select(data_analyse_cleaned2, Participants_number,
                         Product_sets, search_value)
data_for_search$Independent_Condition <- NA
data_for_search$Independent_Condition[data_for_search$Product_sets %in% c(
  "perfume1_search_s", "perfume2_search_s", "bluetooth1_search_s",
  "bluetooth2_search_s", "mask1_search_s", "mask2_search_s")] <- "0.5"
data_for_search$Independent_Condition[data_for_search$Product_sets %in% c(
```

```
   "perfume1_search_c", "perfume2_search_c", "bluetooth1_search_c",
   "bluetooth2_search_c", "mask1_search_c", "mask2_search_c")] <- "-0.5"
library(tidyverse)

data_analyse_long3 <- pivot_longer(Rawdata,
                                   cols =
c(perfume1_eva_s,perfume1_eva_c,

perfume2_eva_s,perfume2_eva_c,
                                   bluetooth1_eva_s,
bluetooth1_eva_c,
                                   bluetooth2_eva_s,
bluetooth2_eva_c,
                                   mask1_eva_s, mask1_eva_c,
                                   mask2_eva_s, mask2_eva_c),
                                   names_to = "Product_sets", values_to =
"eva_value")
data_analyse_cleaned3 <-
data_analyse_long3[complete.cases(data_analyse_long3$eva_value), ]
data_for_eva <-select(data_analyse_cleaned3, Participants_number,
                      Product_sets, eva_value)
data_for_eva$Independent_Condition <- NA
data_for_eva$Independent_Condition[data_for_eva$Product_sets %in% c(
   "perfume1_eva_s", "perfume2_eva_s", "bluetooth1_eva_s",
   "bluetooth2_eva_s", "mask1_eva_s", "mask2_eva_s")] <- "0.5"
data_for_eva$Independent_Condition[data_for_eva$Product_sets %in% c(
   "perfume1_eva_c", "perfume2_eva_c", "bluetooth1_eva_c",
   "bluetooth2_eva_c", "mask1_eva_c", "mask2_eva_c")] <- "-0.5"

data_for_gamma$Suppression_average <-
as.numeric(data_for_gamma$Suppression_average)
data_for_gamma$Control_average <-as.numeric(data_for_gamma$Control_average)


#t-test 1. Decision Timing./ 2.Information Search rating score / 3. Alternatives
Evaluation rating score
t.test(data_analyse$Control_average, data_analyse$Suppression_average, paired =
TRUE)
```

```
t.test(data_analyse$C_Infosearch_average, data_analyse$S_Infosearch_average,
paired = TRUE)
t.test(data_analyse$C_Altevaluation_average,
data_analyse$S_Altevaluation_average, paired = TRUE)


###### Effect size
### 1 Average time
# mean difference between two groups
mean_difference_at <- 11.88359
# Sstandard deviation of the data

sd_averagetime <- sd(c(data_analyse$Control_average,
data_analyse$Suppression_average))    # Replace group1 and group2 with your
actual data

# Calculate Cohen's d
cohens_d_average_time <- mean_difference_at / sd_averagetime

# Print the effect size
print(cohens_d_average_time)

### 2 Information search
# mean difference between two groups
mean_difference_is <- 0.6666667
# Standard deviation of the data
sd_info <- sd(c(data_analyse$C_Infosearch_average,
data_analyse$S_Infosearch_average))    # Replace group1 and group2 with your
actual data

# Calculate Cohen's d
cohens_d_infosearch <- mean_difference_is / sd_info
# Print the effect size
print(cohens_d_infosearch)

### 3 Alternatives Evaluation
# mean difference between two groups
mean_difference_ae <- 0.5
```

```
# Standard deviation of the data
sd_alt <- sd(c(data_analyse$C_Altevaluation_average,
data_analyse$S_Altevaluation_average))    # Replace group1 and group2 with your
actual data

# Calculate Cohen's d
cohens_d_altevaluation <- mean_difference_ae / sd_alt
# Print the effect size
print(cohens_d_altevaluation)


# Average Decision time
library(ggplot2)

# Create a new dataframe with relevant columns
Averagetime <- data.frame(
   Value = c(data_analyse$Suppression_average, data_analyse$Control_average),
   Condition = rep(c("Suppression Decision Time", "Control Decision Time"), each =
nrow(data_analyse)),
   Participants_number = rep(data_analyse$Participants_number, 2))


# Create the violin plot with connected dots and overlay boxplots
ggplot(Averagetime, aes(x = Condition, y = Value, fill = Condition)) +
   geom_violin(trim = FALSE, alpha = 0.4) +    # Make the violins more transparent
   geom_point(position = "identity", width = 0.2, alpha = 0.3) +    # Make the points
more transparent
   geom_boxplot(width = 0.2, alpha = 0.8) +    # Overlay boxplots on top
   geom_line(aes(group = Participants_number), color = "black", alpha = 0.3) +    #
Make the lines more transparent
   labs(title = "Comparison of Suppression and Control on Average Decision Time",
        x = "Condition", y = "Decision time") +
   theme_minimal()


# Information search score
#Violin plots
Infosearch <- data.frame(
```

```
  Value = c(data_analyse$S_Infosearch_average,
data_analyse$C_Infosearch_average),
  Condition = rep(c("Suppression Information Search Score", "Control Information
Search Score"), each = nrow(data_analyse)),
  Participants_number = rep(data_analyse$Participants_number, 2)
)

# Create the violin plot with connected dots and box plot
ggplot(Infosearch, aes(x = Condition, y = Value, fill = Condition)) +
  geom_violin(trim = FALSE, alpha = 0.4) +
  geom_point(position = "identity", width = 0.2) +
  geom_boxplot(width = 0.2, alpha = 0.8) +
  geom_line(aes(group = Participants_number), color = "black", alpha = 0.3) +
  labs(title = "Comparison of Information Search rate in two conditions",
       x = "Condition", y = "Rate Score") +
  scale_y_continuous(breaks = c(0, 2.5, 5, 7.5)) +    # Set custom breaks
  theme_minimal()



#Alternatives evaluation score
#violin plots for alternative evaluation
Altevaluation <- data.frame(
  Value = c(data_analyse$S_Altevaluation_average,
data_analyse$C_Altevaluation_average),
  Condition = rep(c("Suppression Alternative Evaluation Score", "Control Alternative
Evaluation Score"), each = nrow(data_analyse)),
  Participants_number = rep(data_analyse$Participants_number, 2))

# Create the violin plot with connected dots and box plot
ggplot(Altevaluation, aes(x = Condition, y = Value, fill = Condition)) +
  geom_violin(trim = FALSE, alpha = 0.4) +
  geom_point(position = "identity", width = 0.2) +
  geom_boxplot(width = 0.2, alpha = 0.8) +
  geom_line(aes(group = Participants_number), color = "black", alpha = 0.3) +
  labs(title = "Comparison of Alternatives Evaluation rate in two conditions",
       x = "Condition", y = "Rate Score") +
  theme_minimal()
```

```
plot1 <- ggplot(Averagetime, aes(x = Condition, y = Value, fill = Condition)) +
  geom_violin(trim = FALSE, alpha = 0.4) +
  geom_point(position = "identity", width = 0.2, alpha = 0.3) +
  geom_boxplot(width = 0.2, alpha = 0.8) +    # Overlay boxplots on top
  geom_line(aes(group = Participants_number), color = "black", alpha = 0.3) +
  labs(title = "Comparison of Suppression and Control on Average Decision Time",
       x = "Condition", y = "Decision time") +
  theme_minimal()

plot2 <- ggplot(Infosearch, aes(x = Condition, y = Value, fill = Condition)) +
  geom_violin(trim = FALSE, alpha = 0.4) +
  geom_point(position = "identity", width = 0.2) +
  geom_boxplot(width = 0.2, alpha = 0.8) +
  geom_line(aes(group = Participants_number), color = "black", alpha = 0.3) +
  labs(title = "Comparison of Information Search rate in two conditions",
       x = "Condition", y = "Rate Score") +
  scale_y_continuous(breaks = c(0, 2.5, 5, 7.5)) +    # Set custom breaks
  theme_minimal()

plot3 <- ggplot(Altevaluation, aes(x = Condition, y = Value, fill = Condition)) +
  geom_violin(trim = FALSE, alpha = 0.4) +
  geom_point(position = "identity", width = 0.2) +
  geom_boxplot(width = 0.2, alpha = 0.8) +
  geom_line(aes(group = Participants_number), color = "black", alpha = 0.3) +
  labs(title = "Comparison of Alternatives Evaluation rate in two conditions",
       x = "Condition", y = "Rate Score") +
  theme_minimal()


library(patchwork)


#Linear model for inner speech frequency and decision time
library(lme4)
data_for_gamma$Participants_number <-
as.numeric(data_for_gamma$Participants_number)
```

```
data_for_gamma$Product_sets <- as.factor(data_for_gamma$Product_sets)

data_for_gamma$Independent_Condition <-
ifelse(data_for_gamma$Independent_Condition == "0.5",0.5, -0.5)

data_for_gamma = data_for_gamma %>%
   mutate(IS_D = scale(IS_Dialogic)/2,
          IS_C = scale(IS_Condensed)/2,
          IS_E = scale(IS_Evaluate.critical)/2,
          IS_O = scale(IS_Otherpeople)/2,
          IS_R = scale(IS_Regulate)/2)
library(dplyr)

model <- glmer(Decision_time ~ Independent_Condition * IS_D +
Independent_Condition * IS_C +
                  Independent_Condition * IS_E + Independent_Condition *
IS_O +
                  Independent_Condition * IS_R +
                  (0 +Independent_Condition | Participants_number) +
                  (1 +Independent_Condition | Product_sets),
                data = data_for_gamma, family = Gamma(link = "identity"),
                glmerControl(optimizer = "bobyqa"))
summary(model)

### decision time gamma model
data_for_search$Independent_Condition <-
as.numeric(data_for_search$Independent_Condition)
model2 <- glmer(Decision_time ~ Independent_Condition +
                  (1 + Independent_Condition | Participants_number) + (1 +
Independent_Condition| Product_sets),
                data = data_for_gamma, family = Gamma(link = "identity"))

summary(model2)

library(stringr)
### info search model
data_for_search <- data_for_search %>%
   mutate(Product_sets = case_when(
```

```
      str_detect(Product_sets, "perfume1") ~ "perfume1",
      str_detect(Product_sets, "bluetooth1") ~ "bluetooth1",
      str_detect(Product_sets, "mask1") ~ "mask1",
      str_detect(Product_sets, "perfume2") ~ "perfume2",
      str_detect(Product_sets, "bluetooth2") ~ "bluetooth2",
      str_detect(Product_sets, "mask2") ~ "mask2",
      TRUE ~ Product_sets
   ))

library(ordinal)
data_for_search$Independent_Condition <-
ifelse(data_for_search$Independent_Condition == "0.5",0.5, -0.5)

data_for_search$search_value <- as.factor(data_for_search$search_value)

model3 <- clmm(search_value ~ Independent_Condition +
                          (1 + Independent_Condition | Participants_number)+ (1 +
Independent_Condition| Product_sets),
                       data = data_for_search)
summary(model3)


### alt eva model
data_for_eva <- data_for_eva %>%
   mutate(Product_sets = case_when(
      str_detect(Product_sets, "perfume1") ~ "perfume1",
      str_detect(Product_sets, "bluetooth1") ~ "bluetooth1",
      str_detect(Product_sets, "mask1") ~ "mask1",
      str_detect(Product_sets, "perfume2") ~ "perfume2",
      str_detect(Product_sets, "bluetooth2") ~ "bluetooth2",
      str_detect(Product_sets, "mask2") ~ "mask2",
      TRUE ~ Product_sets
   ))

data_for_eva$Independent_Condition <-
ifelse(data_for_eva$Independent_Condition == "0.5",0.5, -0.5)

data_for_eva$eva_value <- as.factor(data_for_eva$eva_value)
```

```
model4 <- clmm(eva_value ~ Independent_Condition +
                          (1 + Independent_Condition| Participants_number)+ (1 +
Independent_Condition| Product_sets),
                       data = data_for_eva)

summary(model4)




######sd for descriptive
summary(data_for_gamma)
sd(data_for_gamma$IS_Dialogic)
sd(data_for_gamma$IS_Evaluate.critical)
sd(data_for_gamma$IS_Otherpeople)
sd(data_for_gamma$IS_Condensed)
sd(data_for_gamma$IS_Regulate)
sd(data_for_gamma$Suppression_average)
sd(data_for_gamma$Control_average)
sd(data_for_gamma$S_Infosearch_average)
sd(data_for_gamma$C_Infosearch_average)
sd(data_for_gamma$S_Altevaluation_average)
sd(data_for_gamma$C_Altevaluation_average)
sd(data_for_gamma$Decision_time)
```