log\_analysis\_with\_MI\_smcfcs

2023-03-29

Table of Contents

# Data Import & Cleaning

## Import data

raw\_psych\_hum\_subj <- import("data/raw/raw\_psych\_hum\_subj.csv")  
raw\_mktg\_hum\_subj <- import("data/raw/raw\_mktg\_hum\_subj.csv")  
raw\_gen\_uo\_pop <- import("data/raw/raw\_gen\_uo\_pop.csv")  
pre\_fall22 <- import("data/prescreen/dittersdorf\_matches\_f22.csv")  
pre\_winter23 <- import("data/prescreen/dittersdorf\_matches\_w23.csv")  
pre\_spring23 <- import("data/prescreen/dittersdorf\_matches\_s23.csv")  
participant\_list <- import("data/prescreen/dittersdorf\_participants.csv")

Fix age before converting variable types

table(raw\_psych\_hum\_subj$Age) # 18 years old = 18

##   
## 18 18 years old 19 20 21   
## 117 220 1 297 120 76   
## 22 23 24 25 27 28   
## 41 4 3 2 1 1   
## 29 30 31 32 33 50   
## 1 1 1 1 1 1

table(raw\_mktg\_hum\_subj$Age) # 1999 = 24

##   
## 18 19 1999 20 21 22 23 24 25 28 test   
## 11 4 13 1 50 119 66 7 9 3 1 3

table(raw\_gen\_uo\_pop$Age)

##   
## 18 20 21 22 28   
## 2 1 2 1 1

raw\_psych\_hum\_subj$Age[raw\_psych\_hum\_subj$Age == "18 years old"] <- 18  
raw\_mktg\_hum\_subj$Age[raw\_mktg\_hum\_subj$Age == 1999] <- 24  
  
table(raw\_psych\_hum\_subj$Age) # 18 years old = 18

##   
## 18 19 20 21 22 23 24 25 27 28 29 30 31 32 33 50   
## 117 221 297 120 76 41 4 3 2 1 1 1 1 1 1 1 1

table(raw\_mktg\_hum\_subj$Age) # 1999 = 24

##   
## 18 19 20 21 22 23 24 25 28 test   
## 11 4 13 50 119 66 7 10 3 1 3

## Combine dataframes

raw\_psych\_hum\_subj <- raw\_psych\_hum\_subj %>%  
 mutate(Age = as.integer(Age),  
 Gender = as.factor(Gender),  
 framing\_condition\_DO = as.factor(framing\_condition\_DO),  
 norm\_condition\_DO = as.factor(norm\_condition\_DO),  
 consumer\_behaviors = as.factor(consumer\_behaviors),  
 skepticism = as.factor(skepticism),  
 id = as.factor(id),  
 source = strrep("psych\_hsp", times = 1))  
  
levels(raw\_psych\_hum\_subj$framing\_condition\_DO)

## [1] "" "control\_framing" "pro\_env\_framing" "self\_enh\_framing"

raw\_mktg\_hum\_subj <- raw\_mktg\_hum\_subj %>%  
 mutate(Age = as.integer(Age),  
 Gender = as.factor(Gender),  
 Gender\_5\_TEXT = as.character(Gender\_5\_TEXT),  
 Class\_Lvl\_7\_TEXT = as.character(Class\_Lvl\_7\_TEXT),  
 Pol\_Ornt\_8\_TEXT = as.character(Pol\_Ornt\_8\_TEXT),  
 Ethnicity\_8\_TEXT = as.character(Ethnicity\_8\_TEXT),  
 skept\_open = as.character(skept\_open),  
 skepticism = as.factor(skepticism),  
 id = as.factor(id),  
 framing\_condition\_DO = as.factor(framing\_condition\_DO),  
 norm\_condition\_DO = as.factor(norm\_condition\_DO),  
 consumer\_behaviors = as.factor(consumer\_behaviors),  
 source = strrep("mktg\_hsp", times = 1))  
  
raw\_gen\_uo\_pop <- raw\_gen\_uo\_pop %>%  
 mutate(Gender = as.factor(Gender),  
 Gender\_5\_TEXT = as.character(Gender\_5\_TEXT),  
 Class\_Lvl\_7\_TEXT = as.character(Class\_Lvl\_7\_TEXT),  
 Pol\_Ornt\_8\_TEXT = as.character(Pol\_Ornt\_8\_TEXT),  
 skept\_open = as.character(skept\_open),  
 skepticism = as.factor(skepticism),  
 id = as.factor(id),  
 framing\_condition\_DO = as.factor(framing\_condition\_DO),  
 norm\_condition\_DO = as.factor(norm\_condition\_DO),  
 consumer\_behaviors = as.factor(consumer\_behaviors),  
 source = strrep("gen\_UO", times = 1))

Specify unique variables to combine prescreen data sets

# Create unique full\_name variable  
pre\_fall22$full\_name <- paste(pre\_fall22$first\_name, pre\_fall22$last\_name, sep="\_")  
  
pre\_winter23$full\_name <- paste(pre\_winter23$first\_name, pre\_winter23$last\_name, sep="\_")  
  
pre\_spring23$full\_name <- paste(pre\_spring23$first\_name, pre\_spring23$last\_name, sep="\_")  
  
participant\_list$full\_name <- paste(participant\_list$first\_name, participant\_list$last\_name, sep="\_")  
  
# Create column indicating which data set rows came from  
  
pre\_fall22 <- pre\_fall22 %>%  
 mutate(term = "fall22")  
  
pre\_winter23 <- pre\_winter23 %>%  
 mutate(term = "winter23")  
  
pre\_spring23 <- pre\_spring23 %>%  
 mutate(term = "spring23")

Combine prescreen data

combine1 <- smartbind(pre\_fall22, pre\_winter23)  
combined\_prescreen <- smartbind(combine1, pre\_spring23)  
  
# nrow(pre\_fall22) + nrow(pre\_winter23) + nrow(pre\_spring23) # n = 1167  
  
combined\_prescreen\_unique <- combined\_prescreen[!duplicated(combined\_prescreen$full\_name), ] # keeps first row (fall22)

Subset key variables

combined\_prescreen\_key <- combined\_prescreen\_unique %>%  
 dplyr::select(full\_name, term, respecting:gratification, honest:gossip)  
  
participant\_list\_key <- participant\_list %>%  
 dplyr::select(full\_name, survey\_id)

Merge with participant list

merged\_prescreen <- merge(combined\_prescreen\_key, participant\_list\_key, by = "full\_name")

Rename SDR items to match

Convert variable types

merged\_prescreen <- merged\_prescreen %>%  
 mutate(respecting = as.integer(respecting),  
 unity = as.integer(unity),  
 protecting = as.integer(protecting),  
 preventing = as.integer(preventing),  
 equality = as.integer(equality),  
 peace = as.integer(peace),  
 justice = as.integer(justice),  
 helpful = as.integer(helpful),  
 power = as.integer(power),  
 wealth = as.integer(wealth),  
 authority = as.integer(authority),  
 influential = as.integer(influential),  
 ambition = as.integer(ambition),  
 pleasures = as.integer(pleasures),  
 enjoying = as.integer(enjoying),  
 gratification = as.integer(gratification),  
 honest = as.integer(honest),  
 like = as.integer(like),  
 disturbing = as.integer(disturbing),  
 regret = as.integer(regret),  
 lose\_out = as.integer(lose\_out),  
 rational = as.integer(rational),  
 confident = as.integer(confident),  
 lover = as.integer(lover),  
 lies = as.integer(lies),  
 cover\_up = as.integer(cover\_up),  
 advantage = as.integer(advantage),  
 get\_even = as.integer(get\_even),  
 behind\_back = as.integer(behind\_back),  
 private\_talk = as.integer(private\_talk),  
 take\_things = as.integer(take\_things),  
 gossip = as.integer(gossip),  
 id = as.factor(id))

Rename values & socially desirable items in prescreen data to match names in main data:

Combine all data

* First, combine Psych Hum Subj data with Prescreen data based on id
* Second, add Mktg Hum Subj data
* Third, add gen UO Pop data

combine1 <- merge(raw\_psych\_hum\_subj, merged\_prescreen, by = "id")  
combine2 <- smartbind(combine1, raw\_mktg\_hum\_subj)  
combine3 <- smartbind(combine2, raw\_gen\_uo\_pop)

## Remove duplicate cases

Identify duplicate cases

# first, add unique row #s  
combine3 <- combine3 %>%  
 mutate(row = 1:nrow(combine3))  
  
combine3[duplicated(combine3$id),] # Only rows 1 through 858 have unique id #s  
  
# write.csv(combine3, "combined\_data.csv")

Row IDs to remove:

* 13 (participant’s second time completing study)
* 134 (participant didn’t complete study first time)
* 145 (participant didn’t complete study first time)
* 308 (participant’s second time completing study)
* 672 (participant’s second time completing study)
* 743 (participant didn’t complete study first time)
* 790 (participant didn’t complete study first time)
* 800 (participant didn’t complete study first time)

Remove duplicate rows after resolving:

combine3 <- combine3 %>%  
 filter(!row %in% c(13, 134, 145, 308, 672, 743, 790, 800))

## Remove rows of all NAs

Identify completely missing rows:

key\_vars <- combine3 %>%  
 dplyr::select(row, big\_2\_1:big\_2\_65, consumer\_intentions\_1:consumer\_intentions\_9, consumer\_behaviors, clothing\_interest\_1:clothing\_interest\_20, ingroup\_ident\_1:ingroup\_ident\_14, values\_1:values\_16, socially\_desirable\_1:socially\_desirable\_16, source)  
  
ncol(key\_vars) # number of columns - the row # & source column = 141  
  
all\_NA\_rows <- key\_vars[rowSums(is.na(key\_vars)) == 141,] # identify rows with 141 NAs (all missing values), row numbers are preserved  
  
all\_NA\_rows

Removing rows of fully missing data

data <- combine3 %>%  
 dplyr::filter(!row %in% c(859, 860, 900, 926, 927, 941, 1139, 1141, 1142, 1143, 1144, 1146, 1149, 1150, 1152)) %>% # remove rows containing all NAs  
 dplyr::select(-StartDate, -EndDate, -Status, -Progress, -"Duration (in seconds)", -Finished, -RecordedDate, -ResponseId, -DistributionChannel, -UserLanguage, -big\_2\_DO, -consumer\_intentions\_DO, -consumer\_behaviors\_DO, -clothing\_interest\_DO, -ingroup\_ident\_DO, -full\_name, -code, -socially\_desirable\_DO, -values\_DO, -email\_giftcard, -term) # removing variables not in analysis

## Number per source

table(data$source)

##   
## gen\_UO mktg\_hsp psych\_hsp   
## 7 276 850

* 850 = psych human subjects pool
* 276 = mktg human subjects pool
* 7 = general UO pop

Rename variables

data <- data %>%  
 rename("framing\_condition" = "framing\_condition\_DO",   
 "norm\_condition" = "norm\_condition\_DO")

Drop unused levels

Re-order levels of norm condition

data$norm\_condition <- factor(data$norm\_condition, levels = c("control\_norm", "descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"))

## Inspect final data

str(data, list.len = ncol(data))  
  
# write.csv(data, "final\_data.csv")

# Aggregate Variables

## Personality

### Reverse-code

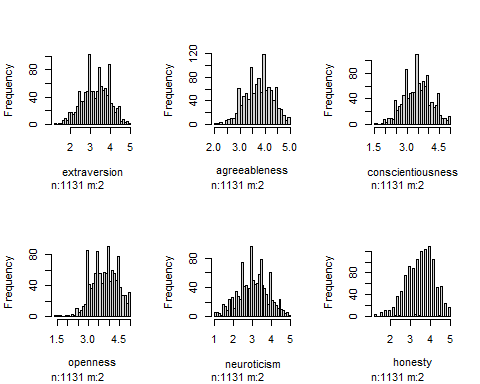
data\_R <- data %>%  
 mutate(across(c(big\_2\_11,  
 big\_2\_16,  
 big\_2\_26,  
 big\_2\_31,  
 big\_2\_36,  
 big\_2\_51,  
 big\_2\_12,  
 big\_2\_17,  
 big\_2\_22,  
 big\_2\_37,  
 big\_2\_42,  
 big\_2\_47,  
 big\_2\_3,  
 big\_2\_8,  
 big\_2\_23,  
 big\_2\_28,  
 big\_2\_48,  
 big\_2\_58,  
 big\_2\_4,  
 big\_2\_9,  
 big\_2\_24,  
 big\_2\_29,  
 big\_2\_44,  
 big\_2\_49,  
 big\_2\_5,  
 big\_2\_25,  
 big\_2\_30,  
 big\_2\_45,  
 big\_2\_50,  
 big\_2\_55,  
 big\_2\_63), ~6 - .)) # replace '6' with the max possible value plus 1 for any particular scale

### Average items

data\_R$extraversion <- data\_R %>%  
 dplyr::select(big\_2\_1, big\_2\_6, big\_2\_11, big\_2\_16, big\_2\_21, big\_2\_26, big\_2\_31, big\_2\_36, big\_2\_41, big\_2\_46, big\_2\_51, big\_2\_56) %>%  
 rowMeans(na.rm = TRUE)   
  
  
data\_R$conscientiousness <- data\_R %>%  
 dplyr::select(big\_2\_3, big\_2\_8, big\_2\_13, big\_2\_18, big\_2\_23, big\_2\_28, big\_2\_33, big\_2\_38, big\_2\_43, big\_2\_48, big\_2\_53, big\_2\_58) %>%  
 rowMeans(na.rm = TRUE)  
  
  
data\_R$agreeableness <- data\_R %>%  
 dplyr::select(big\_2\_2, big\_2\_7, big\_2\_12, big\_2\_17, big\_2\_22, big\_2\_27, big\_2\_32, big\_2\_37, big\_2\_42, big\_2\_47, big\_2\_52, big\_2\_57) %>%  
 rowMeans(na.rm = TRUE)  
  
  
data\_R$neuroticism <- data\_R %>%  
 dplyr::select(big\_2\_4, big\_2\_9, big\_2\_14, big\_2\_19, big\_2\_24, big\_2\_29, big\_2\_34, big\_2\_39, big\_2\_44, big\_2\_49, big\_2\_54, big\_2\_59) %>%  
 rowMeans(na.rm = TRUE)  
  
  
data\_R$openness <- data\_R %>%  
 dplyr::select(big\_2\_5, big\_2\_10, big\_2\_15, big\_2\_20, big\_2\_25, big\_2\_30, big\_2\_35, big\_2\_40, big\_2\_45, big\_2\_50, big\_2\_55, big\_2\_60) %>%  
 rowMeans(na.rm = TRUE)  
  
  
data\_R$honesty <- data\_R %>%  
 dplyr::select(big\_2\_61, big\_2\_62, big\_2\_63, big\_2\_64, big\_2\_65) %>%  
 rowMeans(na.rm = TRUE)

### Visually inspect

data\_R %>%  
 dplyr::select(extraversion, agreeableness, conscientiousness, openness, neuroticism, honesty) %>%  
 hist()



## Clothing Interest

### Reverse-code

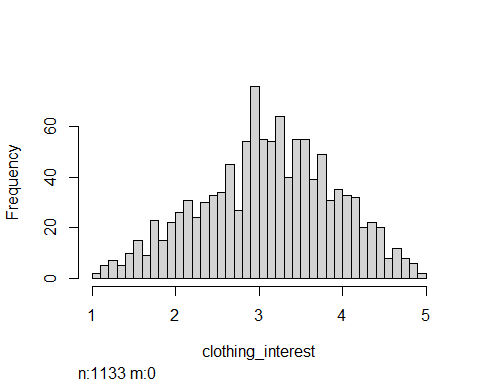
data\_R <- data\_R %>%  
 mutate(across(c(clothing\_interest\_3,  
 clothing\_interest\_5,  
 clothing\_interest\_7,  
 clothing\_interest\_9,  
 clothing\_interest\_12,  
 clothing\_interest\_14,  
 clothing\_interest\_15,  
 clothing\_interest\_16,  
 clothing\_interest\_18,  
 clothing\_interest\_20), ~6 - .)) # replace '#' with the max possible value plus 1 for any particular scale

### Average items

data\_R$clothing\_interest <- data\_R %>%  
 dplyr::select(clothing\_interest\_1:clothing\_interest\_20) %>%  
 rowMeans(na.rm = TRUE)

### Visually Inspect

data\_R %>%  
 dplyr::select(clothing\_interest) %>%  
 hist()



## In-group Identification

### Reverse-code

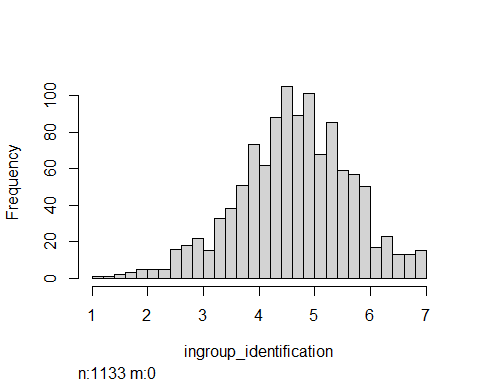
No items need to be reverse-coded.

### Average items

data\_R$ingroup\_identification <- data\_R %>%  
 dplyr::select(ingroup\_ident\_1:ingroup\_ident\_14) %>%  
 rowMeans(na.rm = TRUE)

### Visually Inspect

data\_R %>%  
 dplyr::select(ingroup\_identification) %>%  
 hist()



## Values

### Reverse-code

No items need to be reverse-coded.

### Recoding scale options

Recoding values:

* -3 = 1
* -2 = 2
* -1 = 3
* 0 = 4
* +1 = 5
* +2 = 6
* +3 = 7

table(data\_R$values\_1)

##   
## -3 -2 -1 0 1 2 3   
## 5 10 17 40 176 362 508

data\_R$values\_1\_rec <- dplyr::recode(data\_R$values\_1, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
  
table(data\_R$values\_1\_rec)

##   
## 1 2 3 4 5 6 7   
## 5 10 17 40 176 362 508

data\_R$values\_2\_rec <- dplyr::recode(data\_R$values\_2, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_3\_rec <- dplyr::recode(data\_R$values\_3, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_4\_rec <- dplyr::recode(data\_R$values\_4, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_5\_rec <- dplyr::recode(data\_R$values\_5, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_6\_rec <- dplyr::recode(data\_R$values\_6, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_7\_rec <- dplyr::recode(data\_R$values\_7, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_8\_rec <- dplyr::recode(data\_R$values\_8, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_9\_rec <- dplyr::recode(data\_R$values\_9, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_10\_rec <- dplyr::recode(data\_R$values\_10, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_11\_rec <- dplyr::recode(data\_R$values\_11, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_12\_rec <- dplyr::recode(data\_R$values\_12, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_13\_rec <- dplyr::recode(data\_R$values\_13, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_14\_rec <- dplyr::recode(data\_R$values\_14, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_15\_rec <- dplyr::recode(data\_R$values\_15, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
data\_R$values\_16\_rec <- dplyr::recode(data\_R$values\_16, `-3` = 1, `-2` = 2, `-1` = 3, `0` = 4, `1` = 5, `2` = 6, `3` = 7)  
  
table(data\_R$values\_16)

##   
## -3 -2 -1 0 1 2 3   
## 4 11 29 116 250 394 312

table(data\_R$values\_16\_rec)

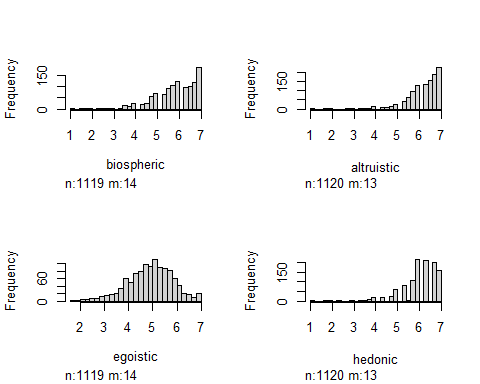
##   
## 1 2 3 4 5 6 7   
## 4 11 29 116 250 394 312

### Average items

data\_R$biospheric <- data\_R %>%  
 dplyr::select(values\_1\_rec:values\_4\_rec) %>%  
 rowMeans(na.rm = TRUE)  
  
data\_R$altruistic <- data\_R %>%  
 dplyr::select(values\_5\_rec:values\_8\_rec) %>%  
 rowMeans(na.rm = TRUE)  
  
data\_R$egoistic <- data\_R %>%  
 dplyr::select(values\_9\_rec:values\_13\_rec) %>%  
 rowMeans(na.rm = TRUE)  
  
data\_R$hedonic <- data\_R %>%  
 dplyr::select(values\_14\_rec:values\_16\_rec) %>%  
 rowMeans(na.rm = TRUE)

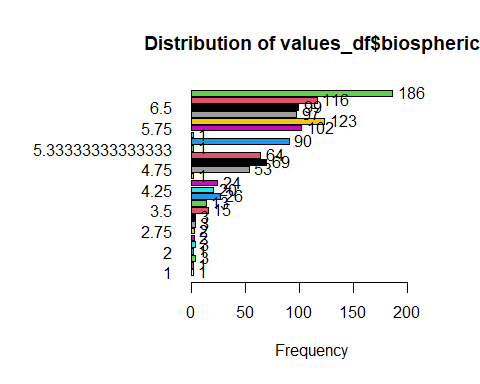
### Visually inspect

values\_df <- data\_R %>%  
 dplyr::select(biospheric, altruistic, egoistic, hedonic)  
  
values\_df %>%  
 hist()



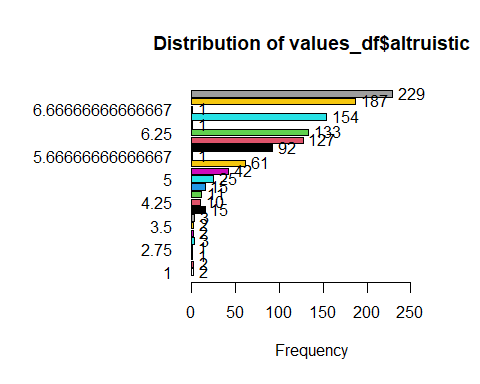
### Frequency tables

# Biospheric values  
tab1(values\_df$biospheric, sort.group = "descending", cum.percent = TRUE, missing = FALSE, horiz = TRUE)



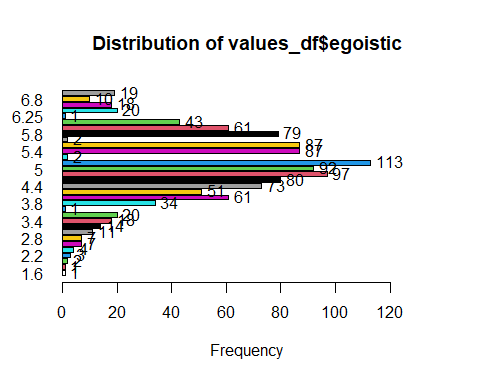
## values\_df$biospheric :   
## Frequency %(NA+) cum.%(NA+) %(NA-) cum.%(NA-)  
## 1 1 0.1 0.1 0.1 0.1  
## 1.5 1 0.1 0.2 0.1 0.2  
## 1.75 3 0.3 0.4 0.3 0.4  
## 2 1 0.1 0.5 0.1 0.5  
## 2.25 3 0.3 0.8 0.3 0.8  
## 2.5 2 0.2 1.0 0.2 1.0  
## 2.75 2 0.2 1.1 0.2 1.2  
## 3 3 0.3 1.4 0.3 1.4  
## 3.25 3 0.3 1.7 0.3 1.7  
## 3.5 15 1.3 3.0 1.3 3.0  
## 3.75 13 1.1 4.1 1.2 4.2  
## 4 26 2.3 6.4 2.3 6.5  
## 4.25 20 1.8 8.2 1.8 8.3  
## 4.5 24 2.1 10.3 2.1 10.5  
## 4.66666666666667 1 0.1 10.4 0.1 10.5  
## 4.75 53 4.7 15.1 4.7 15.3  
## 5 69 6.1 21.2 6.2 21.4  
## 5.25 64 5.6 26.8 5.7 27.2  
## 5.33333333333333 1 0.1 26.9 0.1 27.3  
## 5.5 90 7.9 34.9 8.0 35.3  
## 5.66666666666667 1 0.1 35.0 0.1 35.4  
## 5.75 102 9.0 44.0 9.1 44.5  
## 6 123 10.9 54.8 11.0 55.5  
## 6.25 97 8.6 63.4 8.7 64.2  
## 6.5 99 8.7 72.1 8.8 73.0  
## 6.75 116 10.2 82.3 10.4 83.4  
## 7 186 16.4 98.8 16.6 100.0  
## NaN 14 1.2 100.0 0.0 100.0  
## Total 1133 100.0 100.0 100.0 100.0

# Altruistic values  
tab1(values\_df$altruistic, sort.group = "descending", cum.percent = TRUE, missing = FALSE, horiz = TRUE)



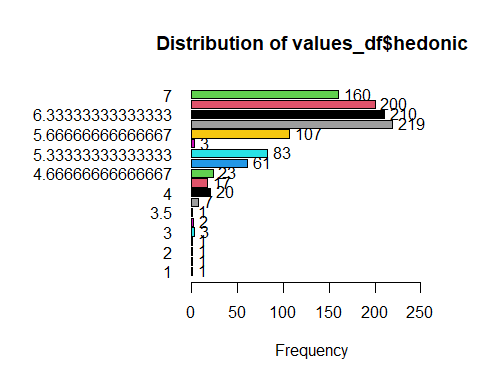
## values\_df$altruistic :   
## Frequency %(NA+) cum.%(NA+) %(NA-) cum.%(NA-)  
## 1 2 0.2 0.2 0.2 0.2  
## 1.75 2 0.2 0.4 0.2 0.4  
## 2 1 0.1 0.4 0.1 0.4  
## 2.75 1 0.1 0.5 0.1 0.5  
## 3 3 0.3 0.8 0.3 0.8  
## 3.25 2 0.2 1.0 0.2 1.0  
## 3.5 2 0.2 1.1 0.2 1.2  
## 3.75 3 0.3 1.4 0.3 1.4  
## 4 15 1.3 2.7 1.3 2.8  
## 4.25 10 0.9 3.6 0.9 3.7  
## 4.5 11 1.0 4.6 1.0 4.6  
## 4.75 15 1.3 5.9 1.3 6.0  
## 5 25 2.2 8.1 2.2 8.2  
## 5.25 42 3.7 11.8 3.8 12.0  
## 5.5 61 5.4 17.2 5.4 17.4  
## 5.66666666666667 1 0.1 17.3 0.1 17.5  
## 5.75 92 8.1 25.4 8.2 25.7  
## 6 127 11.2 36.6 11.3 37.1  
## 6.25 133 11.7 48.4 11.9 48.9  
## 6.33333333333333 1 0.1 48.5 0.1 49.0  
## 6.5 154 13.6 62.0 13.8 62.8  
## 6.66666666666667 1 0.1 62.1 0.1 62.9  
## 6.75 187 16.5 78.6 16.7 79.6  
## 7 229 20.2 98.9 20.4 100.0  
## NaN 13 1.1 100.0 0.0 100.0  
## Total 1133 100.0 100.0 100.0 100.0

# Egoistic values  
tab1(values\_df$egoistic, sort.group = "descending", cum.percent = TRUE, missing = FALSE, horiz = TRUE)



## values\_df$egoistic :   
## Frequency %(NA+) cum.%(NA+) %(NA-) cum.%(NA-)  
## 1.6 1 0.1 0.1 0.1 0.1  
## 1.8 1 0.1 0.2 0.1 0.2  
## 2 2 0.2 0.4 0.2 0.4  
## 2.2 3 0.3 0.6 0.3 0.6  
## 2.4 4 0.4 1.0 0.4 1.0  
## 2.6 7 0.6 1.6 0.6 1.6  
## 2.8 7 0.6 2.2 0.6 2.2  
## 3 11 1.0 3.2 1.0 3.2  
## 3.2 14 1.2 4.4 1.3 4.5  
## 3.4 18 1.6 6.0 1.6 6.1  
## 3.6 20 1.8 7.8 1.8 7.9  
## 3.75 1 0.1 7.9 0.1 8.0  
## 3.8 34 3.0 10.9 3.0 11.0  
## 4 61 5.4 16.2 5.5 16.4  
## 4.2 51 4.5 20.7 4.6 21.0  
## 4.4 73 6.4 27.2 6.5 27.5  
## 4.6 80 7.1 34.2 7.1 34.7  
## 4.8 97 8.6 42.8 8.7 43.3  
## 5 92 8.1 50.9 8.2 51.6  
## 5.2 113 10.0 60.9 10.1 61.7  
## 5.25 2 0.2 61.1 0.2 61.8  
## 5.4 87 7.7 68.8 7.8 69.6  
## 5.6 87 7.7 76.4 7.8 77.4  
## 5.75 2 0.2 76.6 0.2 77.6  
## 5.8 79 7.0 83.6 7.1 84.6  
## 6 61 5.4 89.0 5.5 90.1  
## 6.2 43 3.8 92.8 3.8 93.9  
## 6.25 1 0.1 92.9 0.1 94.0  
## 6.4 20 1.8 94.6 1.8 95.8  
## 6.6 18 1.6 96.2 1.6 97.4  
## 6.8 10 0.9 97.1 0.9 98.3  
## 7 19 1.7 98.8 1.7 100.0  
## NaN 14 1.2 100.0 0.0 100.0  
## Total 1133 100.0 100.0 100.0 100.0

# Hedonic values  
tab1(values\_df$hedonic, sort.group = "descending", cum.percent = TRUE, missing = FALSE, horiz = TRUE)



## values\_df$hedonic :   
## Frequency %(NA+) cum.%(NA+) %(NA-) cum.%(NA-)  
## 1 1 0.1 0.1 0.1 0.1  
## 1.66666666666667 1 0.1 0.2 0.1 0.2  
## 2 1 0.1 0.3 0.1 0.3  
## 2.33333333333333 1 0.1 0.4 0.1 0.4  
## 3 3 0.3 0.6 0.3 0.6  
## 3.33333333333333 2 0.2 0.8 0.2 0.8  
## 3.5 1 0.1 0.9 0.1 0.9  
## 3.66666666666667 7 0.6 1.5 0.6 1.5  
## 4 20 1.8 3.3 1.8 3.3  
## 4.33333333333333 17 1.5 4.8 1.5 4.8  
## 4.66666666666667 23 2.0 6.8 2.1 6.9  
## 5 61 5.4 12.2 5.4 12.3  
## 5.33333333333333 83 7.3 19.5 7.4 19.7  
## 5.5 3 0.3 19.8 0.3 20.0  
## 5.66666666666667 107 9.4 29.2 9.6 29.6  
## 6 219 19.3 48.5 19.6 49.1  
## 6.33333333333333 210 18.5 67.1 18.8 67.9  
## 6.66666666666667 200 17.7 84.7 17.9 85.7  
## 7 160 14.1 98.9 14.3 100.0  
## NaN 13 1.1 100.0 0.0 100.0  
## Total 1133 100.0 100.0 100.0 100.0

## Socially Desirable Responding

### Reverse-code

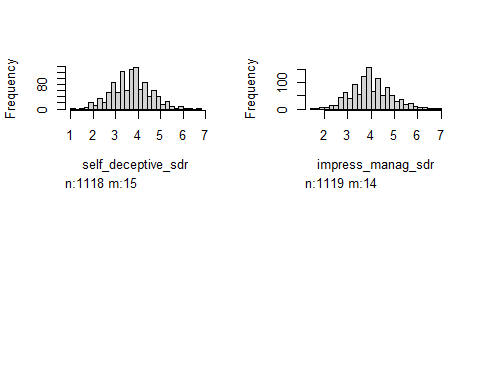
data\_R <- data\_R %>%  
 mutate(across(c(socially\_desirable\_1,  
 socially\_desirable\_3,  
 socially\_desirable\_5,  
 socially\_desirable\_8,  
 socially\_desirable\_9,  
 socially\_desirable\_11,  
 socially\_desirable\_12,  
 socially\_desirable\_13), ~8 - .)) # replace '#' with the max possible value plus 1 for any particular scale

### Average items

data\_R$self\_deceptive\_sdr <- data\_R %>%  
 dplyr::select(socially\_desirable\_1:socially\_desirable\_8) %>%  
 rowMeans(na.rm = TRUE)  
   
data\_R$impress\_manag\_sdr <- data\_R %>%  
 dplyr::select(socially\_desirable\_9:socially\_desirable\_16) %>%  
 rowMeans(na.rm = TRUE)

### Visually inspect

data\_R %>%  
 dplyr::select(self\_deceptive\_sdr, impress\_manag\_sdr) %>%  
 hist()



## Consumer Intentions

### Reverse-code

Higher scores mean better consumer intentions (intentions to *reduce* future consumption):

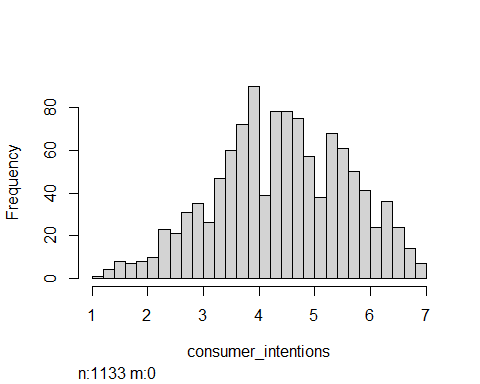
data\_R <- data\_R %>%  
 mutate(across(c(consumer\_intentions\_2,  
 consumer\_intentions\_4,  
 consumer\_intentions\_7,  
 consumer\_intentions\_9), ~8 - .)) # replace '#' with the max possible value plus 1 for any particular scale

### Average items

data\_R$consumer\_intentions <- data\_R %>%  
 dplyr::select(consumer\_intentions\_1:consumer\_intentions\_9) %>%  
 rowMeans(na.rm = TRUE)

### Visually inspect

data\_R %>%  
 dplyr::select(consumer\_intentions) %>%  
 hist()



# Contrast Coding

Subset variables

Contrast Coding using ifelse() approach:

# Framing  
data\_R\_alt$FramingCode1 <- ifelse(data\_R\_alt$framing\_condition == "control\_framing", -1/2, ifelse(data\_R\_alt$framing\_condition == "self\_enh\_framing", 1/2, 0))  
  
data\_R\_alt$FramingCode2 <- ifelse(data\_R\_alt$framing\_condition == "pro\_env\_framing", 2/3, -1/3)  
  
  
# Norm  
data\_R\_alt$NormCode1 <- ifelse(data\_R\_alt$norm\_condition == "moral\_norm", 4, -1)  
  
data\_R\_alt$NormCode2 <- ifelse(data\_R\_alt$norm\_condition == "social\_norm", 3, ifelse(data\_R\_alt$norm\_condition == "moral\_norm", 0, -1))  
  
data\_R\_alt$NormCode3 <- ifelse(data\_R\_alt$norm\_condition == "convention\_norm", 2, ifelse(data\_R\_alt$norm\_condition == "moral\_norm", 0, ifelse(data\_R\_alt$norm\_condition == "social\_norm", 0, -1)))  
data\_R\_alt$NormCode4 <- ifelse(data\_R\_alt$norm\_condition == "descriptive\_norm", 1, ifelse(data\_R\_alt$norm\_condition == "control\_norm", -1, 0))  
  
  
## Adding contrast codes to Framing & Norm Condition  
# Framing  
FrameCode1 <- c(-1/2, 0, 1/2) # control vs self-enhancing  
FrameCode2 <- c(-1/3, 2/3, -1/3) # arbitrary code  
  
contrasts(data\_R\_alt$framing\_condition) <- cbind(FrameCode1, FrameCode2)  
contrasts(data\_R\_alt$framing\_condition)

## FrameCode1 FrameCode2  
## control\_framing -0.5 -0.3333333  
## pro\_env\_framing 0.0 0.6666667  
## self\_enh\_framing 0.5 -0.3333333

# Norm  
contrasts(data\_R\_alt$norm\_condition) <- contr.helmert(5)  
contrasts(data\_R\_alt$norm\_condition) # control vs DN

## [,1] [,2] [,3] [,4]  
## control\_norm -1 -1 -1 -1  
## descriptive\_norm 1 -1 -1 -1  
## convention\_norm 0 2 -1 -1  
## social\_norm 0 0 3 -1  
## moral\_norm 0 0 0 4

# Gender  
levels(data\_R\_alt$Gender) <- c("Woman", "Man", "Non-binary", "I prefer not to identify", "Other")  
  
data\_R\_alt$Gender[data\_R\_alt$Gender == "Non-binary"] <- NA  
data\_R\_alt$Gender[data\_R\_alt$Gender == "I prefer not to identify"] <- NA  
data\_R\_alt$Gender[data\_R\_alt$Gender == "Other"] <- NA  
  
data\_R\_alt$Gender <- droplevels(data\_R\_alt$Gender)  
  
contrasts(data\_R\_alt$Gender) <- c(1, 0)  
levels(data\_R\_alt$Gender)

## [1] "Woman" "Man"

Coding consumer\_behaviors 0/1 and numeric because required by smcfcs imputation function:

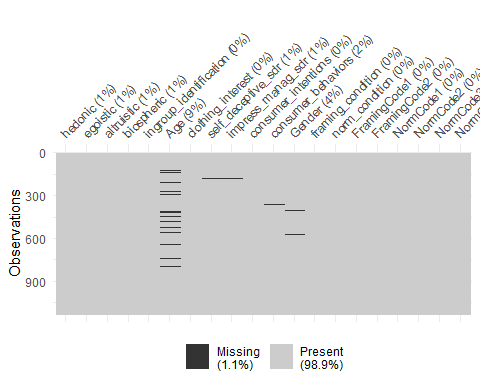
data\_R\_alt$consumer\_behaviors <- as.numeric(data\_R\_alt$consumer\_behaviors)  
  
data\_R\_alt$consumer\_behaviors <- ifelse(data\_R\_alt$consumer\_behaviors == 1, 0, 1)

# Multiple Imputation

## Examine Missingness

Examine missingness:

data\_R\_alt %>%  
 vis\_miss()



Variables with NO missing data:

* ingroup\_identification
* clothing\_interest
* consumer\_intentions
* framing\_condition
* norm\_condition

## Adding interaction terms

## Imputation Model

set.seed(114950518)

## [1] "Outcome variable(s): consumer\_behaviors"  
## [1] "Passive variables: framing1Xbiospheric,framing2Xbiospheric,norm1Xbiospheric,norm2Xbiospheric,norm3Xbiospheric,norm4Xbiospheric,framing1Xnorm1Xbiospheric,framing1Xnorm2Xbiospheric,framing1Xnorm3Xbiospheric,framing1Xnorm4Xbiospheric,framing2Xnorm1Xbiospheric,framing2Xnorm2Xbiospheric,framing2Xnorm3Xbiospheric,framing2Xnorm4Xbiospheric,framing1Xaltruistic,framing2Xaltruistic,norm1Xaltruistic,norm2Xaltruistic,norm3Xaltruistic,norm4Xaltruistic,framing1Xnorm1Xaltruistic,framing1Xnorm2Xaltruistic,framing1Xnorm3Xaltruistic,framing1Xnorm4Xaltruistic,framing2Xnorm1Xaltruistic,framing2Xnorm2Xaltruistic,framing2Xnorm3Xaltruistic,framing2Xnorm4Xaltruistic,framing1Xegoistic,framing2Xegoistic,norm1Xegoistic,norm2Xegoistic,norm3Xegoistic,norm4Xegoistic,framing1Xnorm1Xegoistic,framing1Xnorm2Xegoistic,framing1Xnorm3Xegoistic,framing1Xnorm4Xegoistic,framing2Xnorm1Xegoistic,framing2Xnorm2Xegoistic,framing2Xnorm3Xegoistic,framing2Xnorm4Xegoistic,framing1Xhedonic,framing2Xhedonic,norm1Xhedonic,norm2Xhedonic,norm3Xhedonic,norm4Xhedonic,framing1Xnorm1Xhedonic,framing1Xnorm2Xhedonic,framing1Xnorm3Xhedonic,framing1Xnorm4Xhedonic,framing2Xnorm1Xhedonic,framing2Xnorm2Xhedonic,framing2Xnorm3Xhedonic,framing2Xnorm4Xhedonic"  
## [1] "Partially obs. variables: hedonic,egoistic,altruistic,biospheric,Age,self\_deceptive\_sdr,impress\_manag\_sdr,Gender"  
## [1] "Fully obs. substantive model variables: ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup"  
## [1] "Imputation 1"  
## [1] "Imputing missing outcomes using specified substantive model."  
## [1] "Imputing: hedonic using egoistic,altruistic,biospheric,Age,self\_deceptive\_sdr,impress\_manag\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: egoistic using hedonic,altruistic,biospheric,Age,self\_deceptive\_sdr,impress\_manag\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: altruistic using hedonic,egoistic,biospheric,Age,self\_deceptive\_sdr,impress\_manag\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: biospheric using hedonic,egoistic,altruistic,Age,self\_deceptive\_sdr,impress\_manag\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: Age using hedonic,egoistic,altruistic,biospheric,self\_deceptive\_sdr,impress\_manag\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: self\_deceptive\_sdr using hedonic,egoistic,altruistic,biospheric,Age,impress\_manag\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: impress\_manag\_sdr using hedonic,egoistic,altruistic,biospheric,Age,self\_deceptive\_sdr,Gender,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputing: Gender using hedonic,egoistic,altruistic,biospheric,Age,self\_deceptive\_sdr,impress\_manag\_sdr,ingroup\_identification,clothing\_interest,consumer\_intentions,framing\_condition,norm\_condition,framing1Xingroup,framing2Xingroup,norm1Xingroup,norm2Xingroup,norm3Xingroup,norm4Xingroup,framing1Xnorm1Xingroup,framing1Xnorm2Xingroup,framing1Xnorm3Xingroup,framing1Xnorm4Xingroup,framing2Xnorm1Xingroup,framing2Xnorm2Xingroup,framing2Xnorm3Xingroup,framing2Xnorm4Xingroup plus outcome"  
## [1] "Imputation 2"  
## [1] "Imputation 3"  
## [1] "Imputation 4"  
## [1] "Imputation 5"

Storing imputed data sets

impobject <- imputationList(imps$impDatasets)

Restrict range of values on imputed variables

# bio values  
impobject$imputations[[1]]$biospheric <- ifelse(impobject$imputations[[1]]$biospheric > 7, 7, impobject$imputations[[1]]$biospheric)  
  
impobject$imputations[[2]]$biospheric <- ifelse(impobject$imputations[[2]]$biospheric > 7, 7, impobject$imputations[[2]]$biospheric)  
  
impobject$imputations[[3]]$biospheric <- ifelse(impobject$imputations[[3]]$biospheric > 7, 7, impobject$imputations[[3]]$biospheric)  
  
impobject$imputations[[4]]$biospheric <- ifelse(impobject$imputations[[4]]$biospheric > 7, 7, impobject$imputations[[4]]$biospheric)  
  
impobject$imputations[[5]]$biospheric <- ifelse(impobject$imputations[[5]]$biospheric > 7, 7, impobject$imputations[[5]]$biospheric)  
  
  
# alt values  
impobject$imputations[[1]]$altruistic <- ifelse(impobject$imputations[[1]]$altruistic > 7, 7, impobject$imputations[[1]]$altruistic)  
  
impobject$imputations[[2]]$altruistic <- ifelse(impobject$imputations[[2]]$altruistic > 7, 7, impobject$imputations[[2]]$altruistic)  
  
impobject$imputations[[3]]$altruistic <- ifelse(impobject$imputations[[3]]$altruistic > 7, 7, impobject$imputations[[3]]$altruistic)  
  
impobject$imputations[[4]]$altruistic <- ifelse(impobject$imputations[[4]]$altruistic > 7, 7, impobject$imputations[[4]]$altruistic)  
  
impobject$imputations[[5]]$altruistic <- ifelse(impobject$imputations[[5]]$altruistic > 7, 7, impobject$imputations[[5]]$altruistic)  
  
  
# ego values  
impobject$imputations[[1]]$egoistic <- ifelse(impobject$imputations[[1]]$egoistic > 7, 7, impobject$imputations[[1]]$egoistic)  
  
impobject$imputations[[2]]$egoistic <- ifelse(impobject$imputations[[2]]$egoistic > 7, 7, impobject$imputations[[2]]$egoistic)  
  
impobject$imputations[[3]]$egoistic <- ifelse(impobject$imputations[[3]]$egoistic > 7, 7, impobject$imputations[[3]]$egoistic)  
  
impobject$imputations[[4]]$egoistic <- ifelse(impobject$imputations[[4]]$egoistic > 7, 7, impobject$imputations[[4]]$egoistic)  
  
impobject$imputations[[5]]$egoistic <- ifelse(impobject$imputations[[5]]$egoistic > 7, 7, impobject$imputations[[5]]$egoistic)  
  
  
# hed values  
impobject$imputations[[1]]$hedonic <- ifelse(impobject$imputations[[1]]$hedonic > 7, 7, impobject$imputations[[1]]$hedonic)  
  
impobject$imputations[[2]]$hedonic <- ifelse(impobject$imputations[[2]]$hedonic > 7, 7, impobject$imputations[[2]]$hedonic)  
  
impobject$imputations[[3]]$hedonic <- ifelse(impobject$imputations[[3]]$hedonic > 7, 7, impobject$imputations[[3]]$hedonic)  
  
impobject$imputations[[4]]$hedonic <- ifelse(impobject$imputations[[4]]$hedonic > 7, 7, impobject$imputations[[4]]$hedonic)  
  
impobject$imputations[[5]]$hedonic <- ifelse(impobject$imputations[[5]]$hedonic > 7, 7, impobject$imputations[[5]]$hedonic)  
  
  
# self-deceptive enhancement  
with(impobject, describe(self\_deceptive\_sdr))

## [[1]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 3.72 0.85 3.75 3.71 0.74 1 6.62 5.62 0.13 0.14 0.03  
##   
## [[2]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 3.71 0.86 3.75 3.7 0.74 1 6.62 5.62 0.15 0.14 0.03  
##   
## [[3]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 3.72 0.86 3.75 3.71 0.74 1 6.75 5.75 0.15 0.23 0.03  
##   
## [[4]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 3.72 0.86 3.75 3.71 0.74 1 6.62 5.62 0.14 0.13 0.03  
##   
## [[5]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 3.72 0.85 3.75 3.71 0.74 1 6.62 5.62 0.14 0.14 0.03  
##   
## attr(,"call")  
## with(impobject, describe(self\_deceptive\_sdr))

impobject$imputations[[4]]$self\_deceptive\_sdr <- ifelse(impobject$imputations[[4]]$self\_deceptive\_sdr < 1, 1, impobject$imputations[[4]]$self\_deceptive\_sdr)  
  
  
# impr manag  
with(impobject, describe(impress\_manag\_sdr))

## [[1]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 4.01 0.85 4 3.99 0.74 1.5 7 5.5 0.24 0.14 0.03  
##   
## [[2]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 4.01 0.85 4 3.99 0.74 1.5 7 5.5 0.24 0.14 0.03  
##   
## [[3]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 4.01 0.85 4 3.99 0.74 1.5 7 5.5 0.25 0.16 0.03  
##   
## [[4]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 4 0.85 4 3.99 0.74 1.5 7 5.5 0.25 0.17 0.03  
##   
## [[5]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 4.01 0.85 4 3.99 0.74 1.5 7 5.5 0.27 0.19 0.03  
##   
## attr(,"call")  
## with(impobject, describe(impress\_manag\_sdr))

# Age  
describe(data\_R\_alt$Age)

## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1030 19.87 1.95 19 19.67 1.48 18 50 32 4.91 59.29 0.06

with(impobject, describe(Age))

## [[1]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 19.89 1.94 19.39 19.7 2.06 15.09 50 34.91 4.56 54.97 0.06  
##   
## [[2]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 19.85 1.94 19 19.67 1.48 14.85 50 35.15 4.55 55.63 0.06  
##   
## [[3]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 19.88 1.98 19.05 19.69 1.55 13.77 50 36.23 4.27 50.86 0.06  
##   
## [[4]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 19.88 1.97 19.25 19.7 1.86 14.74 50 35.26 4.37 52.37 0.06  
##   
## [[5]]  
## vars n mean sd median trimmed mad min max range skew kurtosis se  
## X1 1 1133 19.9 1.95 19.48 19.71 2.19 15.37 50 34.63 4.49 53.77 0.06  
##   
## attr(,"call")  
## with(impobject, describe(Age))

impobject$imputations[[1]]$Age <- ifelse(impobject$imputations[[1]]$Age < 18, 18, impobject$imputations[[1]]$Age)  
  
impobject$imputations[[2]]$Age <- ifelse(impobject$imputations[[2]]$Age < 18, 18, impobject$imputations[[2]]$Age)  
  
impobject$imputations[[3]]$Age <- ifelse(impobject$imputations[[3]]$Age < 18, 18, impobject$imputations[[3]]$Age)  
  
impobject$imputations[[4]]$Age <- ifelse(impobject$imputations[[4]]$Age < 18, 18, impobject$imputations[[4]]$Age)  
  
impobject$imputations[[5]]$Age <- ifelse(impobject$imputations[[5]]$Age < 18, 18, impobject$imputations[[5]]$Age)

### Centering continuous predictors

# Biospheric values  
impobject$imputations[[1]]$biospheric\_center <- impobject$imputations[[1]]$biospheric - mean(impobject$imputations[[1]]$biospheric)  
  
impobject$imputations[[2]]$biospheric\_center <- impobject$imputations[[2]]$biospheric - mean(impobject$imputations[[2]]$biospheric)  
  
impobject$imputations[[3]]$biospheric\_center <- impobject$imputations[[3]]$biospheric - mean(impobject$imputations[[3]]$biospheric)  
  
impobject$imputations[[4]]$biospheric\_center <- impobject$imputations[[4]]$biospheric - mean(impobject$imputations[[4]]$biospheric)  
  
impobject$imputations[[5]]$biospheric\_center <- impobject$imputations[[5]]$biospheric - mean(impobject$imputations[[5]]$biospheric)  
  
  
# Altruistic values  
impobject$imputations[[1]]$altruistic\_center <- impobject$imputations[[1]]$altruistic - mean(impobject$imputations[[1]]$altruistic)  
  
impobject$imputations[[2]]$altruistic\_center <- impobject$imputations[[2]]$altruistic - mean(impobject$imputations[[2]]$altruistic)  
  
impobject$imputations[[3]]$altruistic\_center <- impobject$imputations[[3]]$altruistic - mean(impobject$imputations[[3]]$altruistic)  
  
impobject$imputations[[4]]$altruistic\_center <- impobject$imputations[[4]]$altruistic - mean(impobject$imputations[[4]]$altruistic)  
  
impobject$imputations[[5]]$altruistic\_center <- impobject$imputations[[5]]$altruistic - mean(impobject$imputations[[5]]$altruistic)  
  
  
# Egoistic values  
impobject$imputations[[1]]$egoistic\_center <- impobject$imputations[[1]]$egoistic - mean(impobject$imputations[[1]]$egoistic)  
  
impobject$imputations[[2]]$egoistic\_center <- impobject$imputations[[2]]$egoistic - mean(impobject$imputations[[2]]$egoistic)  
  
impobject$imputations[[3]]$egoistic\_center <- impobject$imputations[[3]]$egoistic - mean(impobject$imputations[[3]]$egoistic)  
  
impobject$imputations[[4]]$egoistic\_center <- impobject$imputations[[4]]$egoistic - mean(impobject$imputations[[4]]$egoistic)  
  
impobject$imputations[[5]]$egoistic\_center <- impobject$imputations[[5]]$egoistic - mean(impobject$imputations[[5]]$egoistic)  
  
  
# Hedonic values  
impobject$imputations[[1]]$hedonic\_center <- impobject$imputations[[1]]$hedonic - mean(impobject$imputations[[1]]$hedonic)  
  
impobject$imputations[[2]]$hedonic\_center <- impobject$imputations[[2]]$hedonic - mean(impobject$imputations[[2]]$hedonic)  
  
impobject$imputations[[3]]$hedonic\_center <- impobject$imputations[[3]]$hedonic - mean(impobject$imputations[[3]]$hedonic)  
  
impobject$imputations[[4]]$hedonic\_center <- impobject$imputations[[4]]$hedonic - mean(impobject$imputations[[4]]$hedonic)  
  
impobject$imputations[[5]]$hedonic\_center <- impobject$imputations[[5]]$hedonic - mean(impobject$imputations[[5]]$hedonic)  
  
  
  
# Ingroup identification  
impobject$imputations[[1]]$ingroup\_center <- impobject$imputations[[1]]$ingroup\_identification - mean(impobject$imputations[[1]]$ingroup\_identification)  
  
impobject$imputations[[2]]$ingroup\_center <- impobject$imputations[[2]]$ingroup\_identification - mean(impobject$imputations[[2]]$ingroup\_identification)  
  
impobject$imputations[[3]]$ingroup\_center <- impobject$imputations[[3]]$ingroup\_identification - mean(impobject$imputations[[3]]$ingroup\_identification)  
  
impobject$imputations[[4]]$ingroup\_center <- impobject$imputations[[4]]$ingroup\_identification - mean(impobject$imputations[[4]]$ingroup\_identification)  
  
impobject$imputations[[5]]$ingroup\_center <- impobject$imputations[[5]]$ingroup\_identification - mean(impobject$imputations[[5]]$ingroup\_identification)  
  
  
# Age  
impobject$imputations[[1]]$Age\_center <- impobject$imputations[[1]]$Age - mean(impobject$imputations[[1]]$Age)  
  
impobject$imputations[[2]]$Age\_center <- impobject$imputations[[2]]$Age - mean(impobject$imputations[[2]]$Age)  
  
impobject$imputations[[3]]$Age\_center <- impobject$imputations[[3]]$Age - mean(impobject$imputations[[3]]$Age)  
  
impobject$imputations[[4]]$Age\_center <- impobject$imputations[[4]]$Age - mean(impobject$imputations[[4]]$Age)  
  
impobject$imputations[[5]]$Age\_center <- impobject$imputations[[5]]$Age - mean(impobject$imputations[[5]]$Age)  
  
  
  
# Clothing interest  
impobject$imputations[[1]]$clothing\_center <- impobject$imputations[[1]]$clothing\_interest - mean(impobject$imputations[[1]]$clothing\_interest)  
  
impobject$imputations[[2]]$clothing\_center <- impobject$imputations[[2]]$clothing\_interest - mean(impobject$imputations[[2]]$clothing\_interest)  
  
impobject$imputations[[3]]$clothing\_center <- impobject$imputations[[3]]$clothing\_interest - mean(impobject$imputations[[3]]$clothing\_interest)  
  
impobject$imputations[[4]]$clothing\_center <- impobject$imputations[[4]]$clothing\_interest - mean(impobject$imputations[[4]]$clothing\_interest)  
  
impobject$imputations[[5]]$clothing\_center <- impobject$imputations[[5]]$clothing\_interest - mean(impobject$imputations[[5]]$clothing\_interest)  
  
  
  
# Self deceptive SDR  
impobject$imputations[[1]]$self\_dec\_center <- impobject$imputations[[1]]$self\_deceptive\_sdr - mean(impobject$imputations[[1]]$self\_deceptive\_sdr)  
  
impobject$imputations[[2]]$self\_dec\_center <- impobject$imputations[[2]]$self\_deceptive\_sdr - mean(impobject$imputations[[2]]$self\_deceptive\_sdr)  
  
impobject$imputations[[3]]$self\_dec\_center <- impobject$imputations[[3]]$self\_deceptive\_sdr - mean(impobject$imputations[[3]]$self\_deceptive\_sdr)  
  
impobject$imputations[[4]]$self\_dec\_center <- impobject$imputations[[4]]$self\_deceptive\_sdr - mean(impobject$imputations[[4]]$self\_deceptive\_sdr)  
  
impobject$imputations[[5]]$self\_dec\_center <- impobject$imputations[[5]]$self\_deceptive\_sdr - mean(impobject$imputations[[5]]$self\_deceptive\_sdr)  
  
  
# Impression management SDR  
impobject$imputations[[1]]$impress\_manag\_center <- impobject$imputations[[1]]$impress\_manag\_sdr - mean(impobject$imputations[[1]]$impress\_manag\_sdr)  
  
impobject$imputations[[2]]$impress\_manag\_center <- impobject$imputations[[2]]$impress\_manag\_sdr - mean(impobject$imputations[[2]]$impress\_manag\_sdr)  
  
impobject$imputations[[3]]$impress\_manag\_center <- impobject$imputations[[3]]$impress\_manag\_sdr - mean(impobject$imputations[[3]]$impress\_manag\_sdr)  
  
impobject$imputations[[4]]$impress\_manag\_center <- impobject$imputations[[4]]$impress\_manag\_sdr - mean(impobject$imputations[[4]]$impress\_manag\_sdr)  
  
impobject$imputations[[5]]$impress\_manag\_center <- impobject$imputations[[5]]$impress\_manag\_sdr - mean(impobject$imputations[[5]]$impress\_manag\_sdr)  
  
# Coding Gender  
contrasts(impobject$imputations[[1]]$Gender) <- c(1/2, -1/2)  
contrasts(impobject$imputations[[2]]$Gender) <- c(1/2, -1/2)  
contrasts(impobject$imputations[[3]]$Gender) <- c(1/2, -1/2)  
contrasts(impobject$imputations[[4]]$Gender) <- c(1/2, -1/2)  
contrasts(impobject$imputations[[5]]$Gender) <- c(1/2, -1/2)

Convert scmfcs object to a mids object (to make the object compatible with mice, and thus, emmeans):

mids\_obj <- datlist2mids(impobject)

Complete data set:

# Descriptive Statistics

freqs <- with(mids\_obj, table(consumer\_behaviors))  
freqs$analyses

## [[1]]  
## consumer\_behaviors  
## 0 1   
## 608 525   
##   
## [[2]]  
## consumer\_behaviors  
## 0 1   
## 605 528   
##   
## [[3]]  
## consumer\_behaviors  
## 0 1   
## 606 527   
##   
## [[4]]  
## consumer\_behaviors  
## 0 1   
## 606 527   
##   
## [[5]]  
## consumer\_behaviors  
## 0 1   
## 603 530

props1 <- with(mids\_obj, prop.table(table(consumer\_behaviors)))  
props1$analyses

## [[1]]  
## consumer\_behaviors  
## 0 1   
## 0.5366284 0.4633716   
##   
## [[2]]  
## consumer\_behaviors  
## 0 1   
## 0.5339806 0.4660194   
##   
## [[3]]  
## consumer\_behaviors  
## 0 1   
## 0.5348632 0.4651368   
##   
## [[4]]  
## consumer\_behaviors  
## 0 1   
## 0.5348632 0.4651368   
##   
## [[5]]  
## consumer\_behaviors  
## 0 1   
## 0.5322154 0.4677846

# Logistic Analysis (DV = Consumer Behaviors)

Consumer Behaviors

* 0 = New Clothing
* 1 = Secondhand Clothing

## Running Model

log\_pool\_obj <- pool(log\_mice)

* df\_residual = 1038
* residual deviance: 1329

## Model Summary

Full summary

## Pooled Regression Results

summary(pool(log\_mice)) %>%  
 knitr::kable(digits = 3)

| term | estimate | std.error | statistic | df | p.value |
| --- | --- | --- | --- | --- | --- |
| (Intercept) | -0.154 | 0.074 | -2.092 | 811.847 | 0.037 |
| framing\_conditionFrameCode1 | 0.123 | 0.174 | 0.708 | 882.439 | 0.479 |
| framing\_conditionFrameCode2 | 0.504 | 0.152 | 3.324 | 937.441 | 0.001 |
| norm\_condition1 | 0.137 | 0.113 | 1.216 | 894.465 | 0.224 |
| norm\_condition2 | 0.002 | 0.065 | 0.032 | 984.072 | 0.974 |
| norm\_condition3 | 0.013 | 0.045 | 0.291 | 1025.111 | 0.771 |
| norm\_condition4 | 0.017 | 0.036 | 0.484 | 955.659 | 0.628 |
| biospheric\_center | 0.508 | 0.106 | 4.801 | 1004.891 | 0.000 |
| altruistic\_center | 0.226 | 0.148 | 1.526 | 946.390 | 0.127 |
| egoistic\_center | -0.729 | 0.100 | -7.294 | 751.725 | 0.000 |
| hedonic\_center | 0.008 | 0.121 | 0.066 | 847.891 | 0.948 |
| ingroup\_center | 0.010 | 0.073 | 0.140 | 856.019 | 0.888 |
| self\_dec\_center | -0.236 | 0.090 | -2.621 | 1033.255 | 0.009 |
| impress\_manag\_center | -0.226 | 0.088 | -2.556 | 984.405 | 0.011 |
| clothing\_center | 0.051 | 0.095 | 0.539 | 1002.212 | 0.590 |
| Gender1 | -0.014 | 0.170 | -0.080 | 219.027 | 0.936 |
| Age\_center | -0.087 | 0.050 | -1.733 | 57.425 | 0.088 |
| framing\_conditionFrameCode1:norm\_condition1 | 0.463 | 0.268 | 1.732 | 1018.113 | 0.084 |
| framing\_conditionFrameCode2:norm\_condition1 | 0.348 | 0.244 | 1.427 | 1000.360 | 0.154 |
| framing\_conditionFrameCode1:norm\_condition2 | -0.058 | 0.163 | -0.355 | 829.435 | 0.723 |
| framing\_conditionFrameCode2:norm\_condition2 | -0.010 | 0.134 | -0.072 | 1020.077 | 0.943 |
| framing\_conditionFrameCode1:norm\_condition3 | 0.063 | 0.108 | 0.584 | 936.829 | 0.559 |
| framing\_conditionFrameCode2:norm\_condition3 | 0.086 | 0.099 | 0.869 | 1027.197 | 0.385 |
| framing\_conditionFrameCode1:norm\_condition4 | 0.027 | 0.091 | 0.299 | 532.635 | 0.765 |
| framing\_conditionFrameCode2:norm\_condition4 | -0.041 | 0.075 | -0.554 | 838.856 | 0.580 |
| framing\_conditionFrameCode1:biospheric\_center | -0.187 | 0.269 | -0.693 | 1010.638 | 0.488 |
| framing\_conditionFrameCode2:biospheric\_center | 0.390 | 0.214 | 1.828 | 966.989 | 0.068 |
| norm\_condition1:biospheric\_center | 0.274 | 0.163 | 1.683 | 953.880 | 0.093 |
| norm\_condition2:biospheric\_center | 0.062 | 0.094 | 0.661 | 941.570 | 0.509 |
| norm\_condition3:biospheric\_center | 0.008 | 0.066 | 0.124 | 929.196 | 0.901 |
| norm\_condition4:biospheric\_center | 0.012 | 0.059 | 0.206 | 718.240 | 0.837 |
| framing\_conditionFrameCode1:altruistic\_center | 0.702 | 0.354 | 1.985 | 1018.329 | 0.047 |
| framing\_conditionFrameCode2:altruistic\_center | -0.768 | 0.304 | -2.529 | 962.726 | 0.012 |
| norm\_condition1:altruistic\_center | -0.545 | 0.243 | -2.245 | 985.715 | 0.025 |
| norm\_condition2:altruistic\_center | 0.203 | 0.129 | 1.577 | 1034.112 | 0.115 |
| norm\_condition3:altruistic\_center | 0.079 | 0.095 | 0.829 | 1003.032 | 0.407 |
| norm\_condition4:altruistic\_center | 0.065 | 0.069 | 0.950 | 491.638 | 0.343 |
| framing\_conditionFrameCode1:egoistic\_center | -0.495 | 0.237 | -2.087 | 892.821 | 0.037 |
| framing\_conditionFrameCode2:egoistic\_center | -0.105 | 0.202 | -0.517 | 1034.637 | 0.605 |
| norm\_condition1:egoistic\_center | 0.022 | 0.158 | 0.137 | 955.965 | 0.891 |
| norm\_condition2:egoistic\_center | -0.049 | 0.086 | -0.573 | 1022.179 | 0.567 |
| norm\_condition3:egoistic\_center | 0.057 | 0.058 | 0.972 | 910.694 | 0.332 |
| norm\_condition4:egoistic\_center | -0.039 | 0.051 | -0.768 | 779.884 | 0.443 |
| framing\_conditionFrameCode1:hedonic\_center | -0.236 | 0.293 | -0.807 | 939.087 | 0.420 |
| framing\_conditionFrameCode2:hedonic\_center | 0.007 | 0.252 | 0.027 | 913.626 | 0.979 |
| norm\_condition1:hedonic\_center | -0.028 | 0.195 | -0.142 | 937.344 | 0.887 |
| norm\_condition2:hedonic\_center | -0.062 | 0.108 | -0.579 | 1033.422 | 0.563 |
| norm\_condition3:hedonic\_center | -0.090 | 0.077 | -1.159 | 906.439 | 0.247 |
| norm\_condition4:hedonic\_center | -0.029 | 0.057 | -0.505 | 960.152 | 0.614 |
| framing\_conditionFrameCode1:ingroup\_center | 0.023 | 0.175 | 0.130 | 999.829 | 0.896 |
| framing\_conditionFrameCode2:ingroup\_center | 0.070 | 0.152 | 0.459 | 1015.900 | 0.647 |
| norm\_condition1:ingroup\_center | -0.042 | 0.109 | -0.387 | 1013.442 | 0.699 |
| norm\_condition2:ingroup\_center | -0.027 | 0.068 | -0.402 | 1000.683 | 0.688 |
| norm\_condition3:ingroup\_center | 0.012 | 0.046 | 0.265 | 965.347 | 0.791 |
| norm\_condition4:ingroup\_center | -0.027 | 0.037 | -0.737 | 532.824 | 0.461 |
| framing\_conditionFrameCode1:norm\_condition1:biospheric\_center | -0.328 | 0.397 | -0.827 | 937.252 | 0.409 |
| framing\_conditionFrameCode2:norm\_condition1:biospheric\_center | -0.096 | 0.345 | -0.277 | 982.189 | 0.782 |
| framing\_conditionFrameCode1:norm\_condition2:biospheric\_center | 0.150 | 0.236 | 0.634 | 952.575 | 0.526 |
| framing\_conditionFrameCode2:norm\_condition2:biospheric\_center | -0.053 | 0.193 | -0.277 | 968.583 | 0.782 |
| framing\_conditionFrameCode1:norm\_condition3:biospheric\_center | 0.111 | 0.167 | 0.663 | 922.000 | 0.508 |
| framing\_conditionFrameCode2:norm\_condition3:biospheric\_center | -0.022 | 0.131 | -0.168 | 1022.771 | 0.867 |
| framing\_conditionFrameCode1:norm\_condition4:biospheric\_center | 0.333 | 0.157 | 2.115 | 721.925 | 0.035 |
| framing\_conditionFrameCode2:norm\_condition4:biospheric\_center | -0.050 | 0.112 | -0.449 | 674.058 | 0.654 |
| framing\_conditionFrameCode1:norm\_condition1:altruistic\_center | 0.082 | 0.567 | 0.145 | 987.332 | 0.885 |
| framing\_conditionFrameCode2:norm\_condition1:altruistic\_center | 0.360 | 0.535 | 0.672 | 987.424 | 0.502 |
| framing\_conditionFrameCode1:norm\_condition2:altruistic\_center | -0.101 | 0.315 | -0.320 | 1024.699 | 0.749 |
| framing\_conditionFrameCode2:norm\_condition2:altruistic\_center | 0.466 | 0.275 | 1.697 | 1028.550 | 0.090 |
| framing\_conditionFrameCode1:norm\_condition3:altruistic\_center | -0.107 | 0.241 | -0.445 | 974.544 | 0.657 |
| framing\_conditionFrameCode2:norm\_condition3:altruistic\_center | 0.277 | 0.193 | 1.439 | 1024.859 | 0.150 |
| framing\_conditionFrameCode1:norm\_condition4:altruistic\_center | -0.350 | 0.173 | -2.025 | 909.383 | 0.043 |
| framing\_conditionFrameCode2:norm\_condition4:altruistic\_center | 0.083 | 0.136 | 0.613 | 682.509 | 0.540 |
| framing\_conditionFrameCode1:norm\_condition1:egoistic\_center | -0.002 | 0.399 | -0.005 | 957.783 | 0.996 |
| framing\_conditionFrameCode2:norm\_condition1:egoistic\_center | -0.151 | 0.327 | -0.463 | 832.980 | 0.644 |
| framing\_conditionFrameCode1:norm\_condition2:egoistic\_center | 0.397 | 0.207 | 1.921 | 1018.344 | 0.055 |
| framing\_conditionFrameCode2:norm\_condition2:egoistic\_center | 0.040 | 0.184 | 0.215 | 1029.607 | 0.830 |
| framing\_conditionFrameCode1:norm\_condition3:egoistic\_center | 0.104 | 0.136 | 0.762 | 838.865 | 0.446 |
| framing\_conditionFrameCode2:norm\_condition3:egoistic\_center | -0.065 | 0.129 | -0.501 | 969.872 | 0.617 |
| framing\_conditionFrameCode1:norm\_condition4:egoistic\_center | 0.134 | 0.135 | 0.991 | 167.624 | 0.323 |
| framing\_conditionFrameCode2:norm\_condition4:egoistic\_center | 0.037 | 0.106 | 0.346 | 542.595 | 0.730 |
| framing\_conditionFrameCode1:norm\_condition1:hedonic\_center | 0.311 | 0.477 | 0.653 | 990.283 | 0.514 |
| framing\_conditionFrameCode2:norm\_condition1:hedonic\_center | -0.172 | 0.421 | -0.409 | 622.658 | 0.683 |
| framing\_conditionFrameCode1:norm\_condition2:hedonic\_center | -0.392 | 0.263 | -1.490 | 984.202 | 0.137 |
| framing\_conditionFrameCode2:norm\_condition2:hedonic\_center | 0.142 | 0.231 | 0.613 | 991.022 | 0.540 |
| framing\_conditionFrameCode1:norm\_condition3:hedonic\_center | -0.020 | 0.194 | -0.105 | 766.414 | 0.917 |
| framing\_conditionFrameCode2:norm\_condition3:hedonic\_center | 0.225 | 0.161 | 1.392 | 935.238 | 0.164 |
| framing\_conditionFrameCode1:norm\_condition4:hedonic\_center | -0.043 | 0.141 | -0.305 | 958.514 | 0.760 |
| framing\_conditionFrameCode2:norm\_condition4:hedonic\_center | 0.109 | 0.122 | 0.888 | 525.511 | 0.375 |
| framing\_conditionFrameCode1:norm\_condition1:ingroup\_center | -0.045 | 0.264 | -0.171 | 1009.362 | 0.864 |
| framing\_conditionFrameCode2:norm\_condition1:ingroup\_center | 0.122 | 0.235 | 0.520 | 964.407 | 0.603 |
| framing\_conditionFrameCode1:norm\_condition2:ingroup\_center | 0.249 | 0.174 | 1.429 | 776.747 | 0.153 |
| framing\_conditionFrameCode2:norm\_condition2:ingroup\_center | 0.114 | 0.140 | 0.816 | 985.047 | 0.415 |
| framing\_conditionFrameCode1:norm\_condition3:ingroup\_center | 0.014 | 0.113 | 0.126 | 899.917 | 0.900 |
| framing\_conditionFrameCode2:norm\_condition3:ingroup\_center | 0.043 | 0.098 | 0.442 | 1022.062 | 0.658 |
| framing\_conditionFrameCode1:norm\_condition4:ingroup\_center | -0.030 | 0.086 | -0.346 | 920.724 | 0.729 |
| framing\_conditionFrameCode2:norm\_condition4:ingroup\_center | 0.038 | 0.079 | 0.479 | 715.938 | 0.632 |

APA-style table

pool\_summ <- summary(pool(log\_mice))  
  
apa\_table(pool\_summ,  
 caption = "Pooled Logistic Regression Results",  
 note = "DV = Consumer Behaviors")

(#tab:unnamed-chunk-29)

*Pooled Logistic Regression Results*

| term | estimate | std.error | statistic | df | p.value |
| --- | --- | --- | --- | --- | --- |
| (Intercept) | -0.15 | 0.07 | -2.09 | 811.85 | 0.04 |
| framing\_conditionFrameCode1 | 0.12 | 0.17 | 0.71 | 882.44 | 0.48 |
| framing\_conditionFrameCode2 | 0.50 | 0.15 | 3.32 | 937.44 | 0.00 |
| norm\_condition1 | 0.14 | 0.11 | 1.22 | 894.46 | 0.22 |
| norm\_condition2 | 0.00 | 0.06 | 0.03 | 984.07 | 0.97 |
| norm\_condition3 | 0.01 | 0.05 | 0.29 | 1,025.11 | 0.77 |
| norm\_condition4 | 0.02 | 0.04 | 0.48 | 955.66 | 0.63 |
| biospheric\_center | 0.51 | 0.11 | 4.80 | 1,004.89 | 0.00 |
| altruistic\_center | 0.23 | 0.15 | 1.53 | 946.39 | 0.13 |
| egoistic\_center | -0.73 | 0.10 | -7.29 | 751.72 | 0.00 |
| hedonic\_center | 0.01 | 0.12 | 0.07 | 847.89 | 0.95 |
| ingroup\_center | 0.01 | 0.07 | 0.14 | 856.02 | 0.89 |
| self\_dec\_center | -0.24 | 0.09 | -2.62 | 1,033.26 | 0.01 |
| impress\_manag\_center | -0.23 | 0.09 | -2.56 | 984.40 | 0.01 |
| clothing\_center | 0.05 | 0.10 | 0.54 | 1,002.21 | 0.59 |
| Gender1 | -0.01 | 0.17 | -0.08 | 219.03 | 0.94 |
| Age\_center | -0.09 | 0.05 | -1.73 | 57.42 | 0.09 |
| framing\_conditionFrameCode1:norm\_condition1 | 0.46 | 0.27 | 1.73 | 1,018.11 | 0.08 |
| framing\_conditionFrameCode2:norm\_condition1 | 0.35 | 0.24 | 1.43 | 1,000.36 | 0.15 |
| framing\_conditionFrameCode1:norm\_condition2 | -0.06 | 0.16 | -0.36 | 829.44 | 0.72 |
| framing\_conditionFrameCode2:norm\_condition2 | -0.01 | 0.13 | -0.07 | 1,020.08 | 0.94 |
| framing\_conditionFrameCode1:norm\_condition3 | 0.06 | 0.11 | 0.58 | 936.83 | 0.56 |
| framing\_conditionFrameCode2:norm\_condition3 | 0.09 | 0.10 | 0.87 | 1,027.20 | 0.39 |
| framing\_conditionFrameCode1:norm\_condition4 | 0.03 | 0.09 | 0.30 | 532.64 | 0.76 |
| framing\_conditionFrameCode2:norm\_condition4 | -0.04 | 0.07 | -0.55 | 838.86 | 0.58 |
| framing\_conditionFrameCode1:biospheric\_center | -0.19 | 0.27 | -0.69 | 1,010.64 | 0.49 |
| framing\_conditionFrameCode2:biospheric\_center | 0.39 | 0.21 | 1.83 | 966.99 | 0.07 |
| norm\_condition1:biospheric\_center | 0.27 | 0.16 | 1.68 | 953.88 | 0.09 |
| norm\_condition2:biospheric\_center | 0.06 | 0.09 | 0.66 | 941.57 | 0.51 |
| norm\_condition3:biospheric\_center | 0.01 | 0.07 | 0.12 | 929.20 | 0.90 |
| norm\_condition4:biospheric\_center | 0.01 | 0.06 | 0.21 | 718.24 | 0.84 |
| framing\_conditionFrameCode1:altruistic\_center | 0.70 | 0.35 | 1.98 | 1,018.33 | 0.05 |
| framing\_conditionFrameCode2:altruistic\_center | -0.77 | 0.30 | -2.53 | 962.73 | 0.01 |
| norm\_condition1:altruistic\_center | -0.54 | 0.24 | -2.24 | 985.71 | 0.03 |
| norm\_condition2:altruistic\_center | 0.20 | 0.13 | 1.58 | 1,034.11 | 0.12 |
| norm\_condition3:altruistic\_center | 0.08 | 0.09 | 0.83 | 1,003.03 | 0.41 |
| norm\_condition4:altruistic\_center | 0.07 | 0.07 | 0.95 | 491.64 | 0.34 |
| framing\_conditionFrameCode1:egoistic\_center | -0.49 | 0.24 | -2.09 | 892.82 | 0.04 |
| framing\_conditionFrameCode2:egoistic\_center | -0.10 | 0.20 | -0.52 | 1,034.64 | 0.61 |
| norm\_condition1:egoistic\_center | 0.02 | 0.16 | 0.14 | 955.96 | 0.89 |
| norm\_condition2:egoistic\_center | -0.05 | 0.09 | -0.57 | 1,022.18 | 0.57 |
| norm\_condition3:egoistic\_center | 0.06 | 0.06 | 0.97 | 910.69 | 0.33 |
| norm\_condition4:egoistic\_center | -0.04 | 0.05 | -0.77 | 779.88 | 0.44 |
| framing\_conditionFrameCode1:hedonic\_center | -0.24 | 0.29 | -0.81 | 939.09 | 0.42 |
| framing\_conditionFrameCode2:hedonic\_center | 0.01 | 0.25 | 0.03 | 913.63 | 0.98 |
| norm\_condition1:hedonic\_center | -0.03 | 0.20 | -0.14 | 937.34 | 0.89 |
| norm\_condition2:hedonic\_center | -0.06 | 0.11 | -0.58 | 1,033.42 | 0.56 |
| norm\_condition3:hedonic\_center | -0.09 | 0.08 | -1.16 | 906.44 | 0.25 |
| norm\_condition4:hedonic\_center | -0.03 | 0.06 | -0.50 | 960.15 | 0.61 |
| framing\_conditionFrameCode1:ingroup\_center | 0.02 | 0.17 | 0.13 | 999.83 | 0.90 |
| framing\_conditionFrameCode2:ingroup\_center | 0.07 | 0.15 | 0.46 | 1,015.90 | 0.65 |
| norm\_condition1:ingroup\_center | -0.04 | 0.11 | -0.39 | 1,013.44 | 0.70 |
| norm\_condition2:ingroup\_center | -0.03 | 0.07 | -0.40 | 1,000.68 | 0.69 |
| norm\_condition3:ingroup\_center | 0.01 | 0.05 | 0.27 | 965.35 | 0.79 |
| norm\_condition4:ingroup\_center | -0.03 | 0.04 | -0.74 | 532.82 | 0.46 |
| framing\_conditionFrameCode1:norm\_condition1:biospheric\_center | -0.33 | 0.40 | -0.83 | 937.25 | 0.41 |
| framing\_conditionFrameCode2:norm\_condition1:biospheric\_center | -0.10 | 0.35 | -0.28 | 982.19 | 0.78 |
| framing\_conditionFrameCode1:norm\_condition2:biospheric\_center | 0.15 | 0.24 | 0.63 | 952.58 | 0.53 |
| framing\_conditionFrameCode2:norm\_condition2:biospheric\_center | -0.05 | 0.19 | -0.28 | 968.58 | 0.78 |
| framing\_conditionFrameCode1:norm\_condition3:biospheric\_center | 0.11 | 0.17 | 0.66 | 922.00 | 0.51 |
| framing\_conditionFrameCode2:norm\_condition3:biospheric\_center | -0.02 | 0.13 | -0.17 | 1,022.77 | 0.87 |
| framing\_conditionFrameCode1:norm\_condition4:biospheric\_center | 0.33 | 0.16 | 2.12 | 721.93 | 0.03 |
| framing\_conditionFrameCode2:norm\_condition4:biospheric\_center | -0.05 | 0.11 | -0.45 | 674.06 | 0.65 |
| framing\_conditionFrameCode1:norm\_condition1:altruistic\_center | 0.08 | 0.57 | 0.15 | 987.33 | 0.88 |
| framing\_conditionFrameCode2:norm\_condition1:altruistic\_center | 0.36 | 0.54 | 0.67 | 987.42 | 0.50 |
| framing\_conditionFrameCode1:norm\_condition2:altruistic\_center | -0.10 | 0.31 | -0.32 | 1,024.70 | 0.75 |
| framing\_conditionFrameCode2:norm\_condition2:altruistic\_center | 0.47 | 0.27 | 1.70 | 1,028.55 | 0.09 |
| framing\_conditionFrameCode1:norm\_condition3:altruistic\_center | -0.11 | 0.24 | -0.44 | 974.54 | 0.66 |
| framing\_conditionFrameCode2:norm\_condition3:altruistic\_center | 0.28 | 0.19 | 1.44 | 1,024.86 | 0.15 |
| framing\_conditionFrameCode1:norm\_condition4:altruistic\_center | -0.35 | 0.17 | -2.02 | 909.38 | 0.04 |
| framing\_conditionFrameCode2:norm\_condition4:altruistic\_center | 0.08 | 0.14 | 0.61 | 682.51 | 0.54 |
| framing\_conditionFrameCode1:norm\_condition1:egoistic\_center | 0.00 | 0.40 | 0.00 | 957.78 | 1.00 |
| framing\_conditionFrameCode2:norm\_condition1:egoistic\_center | -0.15 | 0.33 | -0.46 | 832.98 | 0.64 |
| framing\_conditionFrameCode1:norm\_condition2:egoistic\_center | 0.40 | 0.21 | 1.92 | 1,018.34 | 0.06 |
| framing\_conditionFrameCode2:norm\_condition2:egoistic\_center | 0.04 | 0.18 | 0.22 | 1,029.61 | 0.83 |
| framing\_conditionFrameCode1:norm\_condition3:egoistic\_center | 0.10 | 0.14 | 0.76 | 838.87 | 0.45 |
| framing\_conditionFrameCode2:norm\_condition3:egoistic\_center | -0.06 | 0.13 | -0.50 | 969.87 | 0.62 |
| framing\_conditionFrameCode1:norm\_condition4:egoistic\_center | 0.13 | 0.14 | 0.99 | 167.62 | 0.32 |
| framing\_conditionFrameCode2:norm\_condition4:egoistic\_center | 0.04 | 0.11 | 0.35 | 542.60 | 0.73 |
| framing\_conditionFrameCode1:norm\_condition1:hedonic\_center | 0.31 | 0.48 | 0.65 | 990.28 | 0.51 |
| framing\_conditionFrameCode2:norm\_condition1:hedonic\_center | -0.17 | 0.42 | -0.41 | 622.66 | 0.68 |
| framing\_conditionFrameCode1:norm\_condition2:hedonic\_center | -0.39 | 0.26 | -1.49 | 984.20 | 0.14 |
| framing\_conditionFrameCode2:norm\_condition2:hedonic\_center | 0.14 | 0.23 | 0.61 | 991.02 | 0.54 |
| framing\_conditionFrameCode1:norm\_condition3:hedonic\_center | -0.02 | 0.19 | -0.10 | 766.41 | 0.92 |
| framing\_conditionFrameCode2:norm\_condition3:hedonic\_center | 0.22 | 0.16 | 1.39 | 935.24 | 0.16 |
| framing\_conditionFrameCode1:norm\_condition4:hedonic\_center | -0.04 | 0.14 | -0.30 | 958.51 | 0.76 |
| framing\_conditionFrameCode2:norm\_condition4:hedonic\_center | 0.11 | 0.12 | 0.89 | 525.51 | 0.37 |
| framing\_conditionFrameCode1:norm\_condition1:ingroup\_center | -0.05 | 0.26 | -0.17 | 1,009.36 | 0.86 |
| framing\_conditionFrameCode2:norm\_condition1:ingroup\_center | 0.12 | 0.23 | 0.52 | 964.41 | 0.60 |
| framing\_conditionFrameCode1:norm\_condition2:ingroup\_center | 0.25 | 0.17 | 1.43 | 776.75 | 0.15 |
| framing\_conditionFrameCode2:norm\_condition2:ingroup\_center | 0.11 | 0.14 | 0.82 | 985.05 | 0.41 |
| framing\_conditionFrameCode1:norm\_condition3:ingroup\_center | 0.01 | 0.11 | 0.13 | 899.92 | 0.90 |
| framing\_conditionFrameCode2:norm\_condition3:ingroup\_center | 0.04 | 0.10 | 0.44 | 1,022.06 | 0.66 |
| framing\_conditionFrameCode1:norm\_condition4:ingroup\_center | -0.03 | 0.09 | -0.35 | 920.72 | 0.73 |
| framing\_conditionFrameCode2:norm\_condition4:ingroup\_center | 0.04 | 0.08 | 0.48 | 715.94 | 0.63 |

*Note.* DV = Consumer Behaviors

### Odds Ratios

Converting log odds estimates to odds ratios:

ORs\_pool <- cbind(log\_summ\_pool$term, exp(log\_summ\_pool$estimate))  
  
ORs\_pool %>%  
 knitr::kable(digits = 2)

|  |  |
| --- | --- |
| 1 | 0.86 |
| 2 | 1.13 |
| 3 | 1.66 |
| 4 | 1.15 |
| 5 | 1.00 |
| 6 | 1.01 |
| 7 | 1.02 |
| 8 | 1.66 |
| 9 | 1.25 |
| 10 | 0.48 |
| 11 | 1.01 |
| 12 | 1.01 |
| 13 | 0.79 |
| 14 | 0.80 |
| 15 | 1.05 |
| 16 | 0.99 |
| 17 | 0.92 |
| 18 | 1.59 |
| 19 | 1.42 |
| 20 | 0.94 |
| 21 | 0.99 |
| 22 | 1.07 |
| 23 | 1.09 |
| 24 | 1.03 |
| 25 | 0.96 |
| 26 | 0.83 |
| 27 | 1.48 |
| 28 | 1.31 |
| 29 | 1.06 |
| 30 | 1.01 |
| 31 | 1.01 |
| 32 | 2.02 |
| 33 | 0.46 |
| 34 | 0.58 |
| 35 | 1.23 |
| 36 | 1.08 |
| 37 | 1.07 |
| 38 | 0.61 |
| 39 | 0.90 |
| 40 | 1.02 |
| 41 | 0.95 |
| 42 | 1.06 |
| 43 | 0.96 |
| 44 | 0.79 |
| 45 | 1.01 |
| 46 | 0.97 |
| 47 | 0.94 |
| 48 | 0.91 |
| 49 | 0.97 |
| 50 | 1.02 |
| 51 | 1.07 |
| 52 | 0.96 |
| 53 | 0.97 |
| 54 | 1.01 |
| 55 | 0.97 |
| 56 | 0.72 |
| 57 | 0.91 |
| 58 | 1.16 |
| 59 | 0.95 |
| 60 | 1.12 |
| 61 | 0.98 |
| 62 | 1.39 |
| 63 | 0.95 |
| 64 | 1.09 |
| 65 | 1.43 |
| 66 | 0.90 |
| 67 | 1.59 |
| 68 | 0.90 |
| 69 | 1.32 |
| 70 | 0.70 |
| 71 | 1.09 |
| 72 | 1.00 |
| 73 | 0.86 |
| 74 | 1.49 |
| 75 | 1.04 |
| 76 | 1.11 |
| 77 | 0.94 |
| 78 | 1.14 |
| 79 | 1.04 |
| 80 | 1.37 |
| 81 | 0.84 |
| 82 | 0.68 |
| 83 | 1.15 |
| 84 | 0.98 |
| 85 | 1.25 |
| 86 | 0.96 |
| 87 | 1.11 |
| 88 | 0.96 |
| 89 | 1.13 |
| 90 | 1.28 |
| 91 | 1.12 |
| 92 | 1.01 |
| 93 | 1.04 |
| 94 | 0.97 |
| 95 | 1.04 |

## Pooled Anova Results

Using Anova()

doesn’t have a pooling option

# anova\_mod2

### Imputed data 1

imp1\_log <- anova\_mod2$analyses[[1]]  
  
imp1\_log %>%  
 knitr::kable(digits = c(2,2,3))

|  | LR Chisq | Df | Pr(>Chisq) |
| --- | --- | --- | --- |
| framing\_condition | 12.72 | 2 | 0.002 |
| norm\_condition | 2.08 | 4 | 0.721 |
| biospheric\_center | 25.09 | 1 | 0.000 |
| altruistic\_center | 1.87 | 1 | 0.172 |
| egoistic\_center | 61.43 | 1 | 0.000 |
| hedonic\_center | 0.03 | 1 | 0.859 |
| ingroup\_center | 0.10 | 1 | 0.753 |
| self\_dec\_center | 7.28 | 1 | 0.007 |
| impress\_manag\_center | 7.05 | 1 | 0.008 |
| clothing\_center | 0.23 | 1 | 0.630 |
| Gender | 0.13 | 1 | 0.723 |
| Age\_center | 2.49 | 1 | 0.114 |
| framing\_condition:norm\_condition | 7.06 | 8 | 0.531 |
| framing\_condition:biospheric\_center | 3.93 | 2 | 0.140 |
| norm\_condition:biospheric\_center | 3.84 | 4 | 0.428 |
| framing\_condition:altruistic\_center | 10.03 | 2 | 0.007 |
| norm\_condition:altruistic\_center | 8.68 | 4 | 0.070 |
| framing\_condition:egoistic\_center | 4.29 | 2 | 0.117 |
| norm\_condition:egoistic\_center | 1.92 | 4 | 0.751 |
| framing\_condition:hedonic\_center | 0.72 | 2 | 0.699 |
| norm\_condition:hedonic\_center | 1.97 | 4 | 0.741 |
| framing\_condition:ingroup\_center | 0.20 | 2 | 0.907 |
| norm\_condition:ingroup\_center | 0.72 | 4 | 0.949 |
| framing\_condition:norm\_condition:biospheric\_center | 6.19 | 8 | 0.626 |
| framing\_condition:norm\_condition:altruistic\_center | 10.94 | 8 | 0.205 |
| framing\_condition:norm\_condition:egoistic\_center | 5.81 | 8 | 0.669 |
| framing\_condition:norm\_condition:hedonic\_center | 5.72 | 8 | 0.679 |
| framing\_condition:norm\_condition:ingroup\_center | 3.19 | 8 | 0.922 |

imp1\_log

## Analysis of Deviance Table (Type III tests)  
##   
## Response: consumer\_behaviors  
## LR Chisq Df  
## framing\_condition 12.716 2  
## norm\_condition 2.083 4  
## biospheric\_center 25.092 1  
## altruistic\_center 1.867 1  
## egoistic\_center 61.432 1  
## hedonic\_center 0.031 1  
## ingroup\_center 0.099 1  
## self\_dec\_center 7.285 1  
## impress\_manag\_center 7.052 1  
## clothing\_center 0.232 1  
## Gender 0.126 1  
## Age\_center 2.493 1  
## framing\_condition:norm\_condition 7.056 8  
## framing\_condition:biospheric\_center 3.932 2  
## norm\_condition:biospheric\_center 3.844 4  
## framing\_condition:altruistic\_center 10.031 2  
## norm\_condition:altruistic\_center 8.677 4  
## framing\_condition:egoistic\_center 4.287 2  
## norm\_condition:egoistic\_center 1.918 4  
## framing\_condition:hedonic\_center 0.716 2  
## norm\_condition:hedonic\_center 1.973 4  
## framing\_condition:ingroup\_center 0.196 2  
## norm\_condition:ingroup\_center 0.722 4  
## framing\_condition:norm\_condition:biospheric\_center 6.191 8  
## framing\_condition:norm\_condition:altruistic\_center 10.938 8  
## framing\_condition:norm\_condition:egoistic\_center 5.809 8  
## framing\_condition:norm\_condition:hedonic\_center 5.718 8  
## framing\_condition:norm\_condition:ingroup\_center 3.192 8  
## Pr(>Chisq)   
## framing\_condition 0.001733 \*\*   
## norm\_condition 0.720511   
## biospheric\_center 0.000000546482605334 \*\*\*  
## altruistic\_center 0.171765   
## egoistic\_center 0.000000000000004582 \*\*\*  
## hedonic\_center 0.859490   
## ingroup\_center 0.753338   
## self\_dec\_center 0.006954 \*\*   
## impress\_manag\_center 0.007916 \*\*   
## clothing\_center 0.630104   
## Gender 0.723136   
## Age\_center 0.114339   
## framing\_condition:norm\_condition 0.530625   
## framing\_condition:biospheric\_center 0.140008   
## norm\_condition:biospheric\_center 0.427503   
## framing\_condition:altruistic\_center 0.006636 \*\*   
## norm\_condition:altruistic\_center 0.069713 .   
## framing\_condition:egoistic\_center 0.117265   
## norm\_condition:egoistic\_center 0.750816   
## framing\_condition:hedonic\_center 0.698924   
## norm\_condition:hedonic\_center 0.740680   
## framing\_condition:ingroup\_center 0.906610   
## norm\_condition:ingroup\_center 0.948556   
## framing\_condition:norm\_condition:biospheric\_center 0.625894   
## framing\_condition:norm\_condition:altruistic\_center 0.205250   
## framing\_condition:norm\_condition:egoistic\_center 0.668628   
## framing\_condition:norm\_condition:hedonic\_center 0.678789   
## framing\_condition:norm\_condition:ingroup\_center 0.921717   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

### Imputed data 2

anova\_mod2$analyses[[2]] %>%  
 knitr::kable(digits = c(2,2,3))

|  | LR Chisq | Df | Pr(>Chisq) |
| --- | --- | --- | --- |
| framing\_condition | 12.13 | 2 | 0.002 |
| norm\_condition | 2.35 | 4 | 0.671 |
| biospheric\_center | 23.89 | 1 | 0.000 |
| altruistic\_center | 2.74 | 1 | 0.098 |
| egoistic\_center | 62.37 | 1 | 0.000 |
| hedonic\_center | 0.01 | 1 | 0.931 |
| ingroup\_center | 0.00 | 1 | 0.988 |
| self\_dec\_center | 6.99 | 1 | 0.008 |
| impress\_manag\_center | 7.39 | 1 | 0.007 |
| clothing\_center | 0.43 | 1 | 0.511 |
| Gender | 0.34 | 1 | 0.559 |
| Age\_center | 5.47 | 1 | 0.019 |
| framing\_condition:norm\_condition | 6.63 | 8 | 0.577 |
| framing\_condition:biospheric\_center | 3.90 | 2 | 0.142 |
| norm\_condition:biospheric\_center | 3.88 | 4 | 0.423 |
| framing\_condition:altruistic\_center | 10.47 | 2 | 0.005 |
| norm\_condition:altruistic\_center | 9.24 | 4 | 0.055 |
| framing\_condition:egoistic\_center | 4.61 | 2 | 0.100 |
| norm\_condition:egoistic\_center | 1.63 | 4 | 0.803 |
| framing\_condition:hedonic\_center | 1.03 | 2 | 0.598 |
| norm\_condition:hedonic\_center | 1.81 | 4 | 0.770 |
| framing\_condition:ingroup\_center | 0.34 | 2 | 0.845 |
| norm\_condition:ingroup\_center | 1.29 | 4 | 0.864 |
| framing\_condition:norm\_condition:biospheric\_center | 6.92 | 8 | 0.545 |
| framing\_condition:norm\_condition:altruistic\_center | 11.18 | 8 | 0.192 |
| framing\_condition:norm\_condition:egoistic\_center | 5.05 | 8 | 0.752 |
| framing\_condition:norm\_condition:hedonic\_center | 6.10 | 8 | 0.637 |
| framing\_condition:norm\_condition:ingroup\_center | 4.39 | 8 | 0.821 |

### Imputed data 3

anova\_mod2$analyses[[3]] %>%  
 knitr::kable(digits = c(2,2,3))

|  | LR Chisq | Df | Pr(>Chisq) |
| --- | --- | --- | --- |
| framing\_condition | 12.87 | 2 | 0.002 |
| norm\_condition | 2.25 | 4 | 0.690 |
| biospheric\_center | 23.48 | 1 | 0.000 |
| altruistic\_center | 2.26 | 1 | 0.133 |
| egoistic\_center | 61.07 | 1 | 0.000 |
| hedonic\_center | 0.01 | 1 | 0.931 |
| ingroup\_center | 0.00 | 1 | 0.986 |
| self\_dec\_center | 6.88 | 1 | 0.009 |
| impress\_manag\_center | 6.62 | 1 | 0.010 |
| clothing\_center | 0.18 | 1 | 0.669 |
| Gender | 0.00 | 1 | 0.945 |
| Age\_center | 6.85 | 1 | 0.009 |
| framing\_condition:norm\_condition | 7.57 | 8 | 0.476 |
| framing\_condition:biospheric\_center | 3.84 | 2 | 0.147 |
| norm\_condition:biospheric\_center | 2.84 | 4 | 0.585 |
| framing\_condition:altruistic\_center | 10.10 | 2 | 0.006 |
| norm\_condition:altruistic\_center | 9.66 | 4 | 0.047 |
| framing\_condition:egoistic\_center | 5.40 | 2 | 0.067 |
| norm\_condition:egoistic\_center | 2.88 | 4 | 0.578 |
| framing\_condition:hedonic\_center | 0.51 | 2 | 0.776 |
| norm\_condition:hedonic\_center | 2.30 | 4 | 0.681 |
| framing\_condition:ingroup\_center | 0.18 | 2 | 0.913 |
| norm\_condition:ingroup\_center | 1.17 | 4 | 0.883 |
| framing\_condition:norm\_condition:biospheric\_center | 8.11 | 8 | 0.422 |
| framing\_condition:norm\_condition:altruistic\_center | 10.96 | 8 | 0.204 |
| framing\_condition:norm\_condition:egoistic\_center | 6.37 | 8 | 0.605 |
| framing\_condition:norm\_condition:hedonic\_center | 6.76 | 8 | 0.563 |
| framing\_condition:norm\_condition:ingroup\_center | 3.57 | 8 | 0.893 |

### Imputed data 4

anova\_mod2$analyses[[4]] %>%  
 knitr::kable(digits = c(2,2,3))

|  | LR Chisq | Df | Pr(>Chisq) |
| --- | --- | --- | --- |
| framing\_condition | 11.21 | 2 | 0.004 |
| norm\_condition | 1.49 | 4 | 0.829 |
| biospheric\_center | 25.40 | 1 | 0.000 |
| altruistic\_center | 2.42 | 1 | 0.120 |
| egoistic\_center | 57.67 | 1 | 0.000 |
| hedonic\_center | 0.04 | 1 | 0.844 |
| ingroup\_center | 0.06 | 1 | 0.813 |
| self\_dec\_center | 6.82 | 1 | 0.009 |
| impress\_manag\_center | 6.36 | 1 | 0.012 |
| clothing\_center | 0.32 | 1 | 0.570 |
| Gender | 0.01 | 1 | 0.904 |
| Age\_center | 2.17 | 1 | 0.141 |
| framing\_condition:norm\_condition | 6.45 | 8 | 0.597 |
| framing\_condition:biospheric\_center | 3.61 | 2 | 0.165 |
| norm\_condition:biospheric\_center | 3.83 | 4 | 0.430 |
| framing\_condition:altruistic\_center | 9.96 | 2 | 0.007 |
| norm\_condition:altruistic\_center | 10.23 | 4 | 0.037 |
| framing\_condition:egoistic\_center | 5.63 | 2 | 0.060 |
| norm\_condition:egoistic\_center | 1.74 | 4 | 0.783 |
| framing\_condition:hedonic\_center | 0.57 | 2 | 0.751 |
| norm\_condition:hedonic\_center | 2.02 | 4 | 0.732 |
| framing\_condition:ingroup\_center | 0.38 | 2 | 0.829 |
| norm\_condition:ingroup\_center | 1.06 | 4 | 0.900 |
| framing\_condition:norm\_condition:biospheric\_center | 6.67 | 8 | 0.573 |
| framing\_condition:norm\_condition:altruistic\_center | 10.10 | 8 | 0.258 |
| framing\_condition:norm\_condition:egoistic\_center | 5.22 | 8 | 0.733 |
| framing\_condition:norm\_condition:hedonic\_center | 6.27 | 8 | 0.617 |
| framing\_condition:norm\_condition:ingroup\_center | 3.65 | 8 | 0.887 |

### Imputed data 5

anova\_mod2$analyses[[5]] %>%  
 knitr::kable(digits = c(2,2,3))

|  | LR Chisq | Df | Pr(>Chisq) |
| --- | --- | --- | --- |
| framing\_condition | 11.26 | 2 | 0.004 |
| norm\_condition | 1.40 | 4 | 0.845 |
| biospheric\_center | 22.81 | 1 | 0.000 |
| altruistic\_center | 2.69 | 1 | 0.101 |
| egoistic\_center | 65.27 | 1 | 0.000 |
| hedonic\_center | 0.03 | 1 | 0.860 |
| ingroup\_center | 0.04 | 1 | 0.846 |
| self\_dec\_center | 6.75 | 1 | 0.009 |
| impress\_manag\_center | 6.06 | 1 | 0.014 |
| clothing\_center | 0.33 | 1 | 0.566 |
| Gender | 0.00 | 1 | 0.993 |
| Age\_center | 4.82 | 1 | 0.028 |
| framing\_condition:norm\_condition | 7.41 | 8 | 0.494 |
| framing\_condition:biospheric\_center | 4.56 | 2 | 0.102 |
| norm\_condition:biospheric\_center | 4.48 | 4 | 0.345 |
| framing\_condition:altruistic\_center | 10.71 | 2 | 0.005 |
| norm\_condition:altruistic\_center | 10.15 | 4 | 0.038 |
| framing\_condition:egoistic\_center | 4.43 | 2 | 0.109 |
| norm\_condition:egoistic\_center | 2.05 | 4 | 0.727 |
| framing\_condition:hedonic\_center | 0.63 | 2 | 0.730 |
| norm\_condition:hedonic\_center | 1.91 | 4 | 0.752 |
| framing\_condition:ingroup\_center | 0.15 | 2 | 0.928 |
| norm\_condition:ingroup\_center | 1.02 | 4 | 0.907 |
| framing\_condition:norm\_condition:biospheric\_center | 6.32 | 8 | 0.612 |
| framing\_condition:norm\_condition:altruistic\_center | 10.75 | 8 | 0.217 |
| framing\_condition:norm\_condition:egoistic\_center | 6.89 | 8 | 0.548 |
| framing\_condition:norm\_condition:hedonic\_center | 6.32 | 8 | 0.612 |
| framing\_condition:norm\_condition:ingroup\_center | 5.00 | 8 | 0.758 |

### Main Effects

Framing

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[1]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[1]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[1]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[1]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[1]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[1]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[1]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[1]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[1]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[1]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(2, 11621.44)=5.905 p=0.00273 F(2, 11621.44)=5.905 p=0.00273 F(2, 11621.44)=5.905 p=0.00273 F(2, 11621.44)=5.905 p=0.00273 F(2, 11621.44)=5.905 p=0.00273

Norm

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[2]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[2]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[2]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[2]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[2]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[2]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[2]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[2]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[2]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[2]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(4, 1795.26)=0.417 p=0.79664 F(4, 1795.26)=0.417 p=0.79664 F(4, 1795.26)=0.417 p=0.79664 F(4, 1795.26)=0.417 p=0.79664 F(4, 1795.26)=0.417 p=0.79664

Biospheric

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[3]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[3]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[3]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[3]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[3]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[3]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[3]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[3]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[3]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[3]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 18929.79)=23.764 p=0 F(1, 18929.79)=23.764 p=0 F(1, 18929.79)=23.764 p=0 F(1, 18929.79)=23.764 p=0 F(1, 18929.79)=23.764 p=0

Altruistic

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[4]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[4]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[4]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[4]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[4]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[4]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[4]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[4]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[4]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[4]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 15316.29)=2.332 p=0.12676 F(1, 15316.29)=2.332 p=0.12676 F(1, 15316.29)=2.332 p=0.12676 F(1, 15316.29)=2.332 p=0.12676 F(1, 15316.29)=2.332 p=0.12676

Egoistic

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[5]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[5]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[5]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[5]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[5]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[5]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[5]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[5]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[5]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[5]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 3235.1)=59.346 p=0 F(1, 3235.1)=59.346 p=0 F(1, 3235.1)=59.346 p=0 F(1, 3235.1)=59.346 p=0 F(1, 3235.1)=59.346 p=0

Hedonic

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[6]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[6]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[6]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[6]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[6]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[6]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[6]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[6]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[6]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[6]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 345328.62)=0.018 p=0.8931 F(1, 345328.62)=0.018 p=0.8931 F(1, 345328.62)=0.018 p=0.8931 F(1, 345328.62)=0.018 p=0.8931 F(1, 345328.62)=0.018 p=0.8931

Ingroup

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[7]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[7]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[7]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[7]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[7]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[7]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[7]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[7]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[7]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[7]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 8926.29)=0.006 p=0.93816 F(1, 8926.29)=0.006 p=0.93816 F(1, 8926.29)=0.006 p=0.93816 F(1, 8926.29)=0.006 p=0.93816 F(1, 8926.29)=0.006 p=0.93816

Self-deceptive enhancement

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[8]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[8]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[8]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[8]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[8]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[8]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[8]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[8]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[8]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[8]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 1151271.3)=6.93 p=0.00848 F(1, 1151271.3)=6.93 p=0.00848 F(1, 1151271.3)=6.93 p=0.00848 F(1, 1151271.3)=6.93 p=0.00848 F(1, 1151271.3)=6.93 p=0.00848

Impression management

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[9]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[9]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[9]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[9]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[9]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[9]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[9]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[9]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[9]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[9]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 25780.06)=6.594 p=0.01024 F(1, 25780.06)=6.594 p=0.01024 F(1, 25780.06)=6.594 p=0.01024 F(1, 25780.06)=6.594 p=0.01024 F(1, 25780.06)=6.594 p=0.01024

Clothing interest

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[10]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[10]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[10]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[10]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[10]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[10]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[10]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[10]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[10]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[10]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 44602.45)=0.283 p=0.59493 F(1, 44602.45)=0.283 p=0.59493 F(1, 44602.45)=0.283 p=0.59493 F(1, 44602.45)=0.283 p=0.59493 F(1, 44602.45)=0.283 p=0.59493

Gender

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[11]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[11]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[11]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[11]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[11]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[11]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[11]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[11]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[11]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[11]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 981.23)=-0.005 p=1 F(1, 981.23)=-0.005 p=1 F(1, 981.23)=-0.005 p=1 F(1, 981.23)=-0.005 p=1 F(1, 981.23)=-0.005 p=1

Age

chi\_sq1 <- anova\_mod2$analyses[[1]]$`LR Chisq`[[12]]  
chi\_sq2 <- anova\_mod2$analyses[[2]]$`LR Chisq`[[12]]  
chi\_sq3 <- anova\_mod2$analyses[[3]]$`LR Chisq`[[12]]  
chi\_sq4 <- anova\_mod2$analyses[[4]]$`LR Chisq`[[12]]  
chi\_sq5 <- anova\_mod2$analyses[[5]]$`LR Chisq`[[12]]  
  
chi\_sq <- cbind(chi\_sq1, chi\_sq2, chi\_sq3, chi\_sq4, chi\_sq5)  
  
df1 <- anova\_mod2$analyses[[1]]$Df[[12]]  
df2 <- anova\_mod2$analyses[[2]]$Df[[12]]  
df3 <- anova\_mod2$analyses[[3]]$Df[[12]]  
df4 <- anova\_mod2$analyses[[4]]$Df[[12]]  
df5 <- anova\_mod2$analyses[[5]]$Df[[12]]  
  
df <- cbind(df1, df2, df3, df4, df5)

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(1, 77.38)=3.027 p=0.08584 F(1, 77.38)=3.027 p=0.08584 F(1, 77.38)=3.027 p=0.08584 F(1, 77.38)=3.027 p=0.08584 F(1, 77.38)=3.027 p=0.08584

### Interaction effects

FramingXNorm Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(8, 11802.27)=0.854 p=0.55449 F(8, 11802.27)=0.854 p=0.55449 F(8, 11802.27)=0.854 p=0.55449 F(8, 11802.27)=0.854 p=0.55449 F(8, 11802.27)=0.854 p=0.55449

FramingXBio Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(2, 31941.74)=1.951 p=0.14211 F(2, 31941.74)=1.951 p=0.14211 F(2, 31941.74)=1.951 p=0.14211 F(2, 31941.74)=1.951 p=0.14211 F(2, 31941.74)=1.951 p=0.14211

NormXBio Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(4, 2157.91)=0.874 p=0.47844 F(4, 2157.91)=0.874 p=0.47844 F(4, 2157.91)=0.874 p=0.47844 F(4, 2157.91)=0.874 p=0.47844 F(4, 2157.91)=0.874 p=0.47844

FrameXAlt Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(2, 289927.89)=5.106 p=0.00606 F(2, 289927.89)=5.106 p=0.00606 F(2, 289927.89)=5.106 p=0.00606 F(2, 289927.89)=5.106 p=0.00606 F(2, 289927.89)=5.106 p=0.00606

NormXAlt Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(4, 10056.48)=2.347 p=0.05222 F(4, 10056.48)=2.347 p=0.05222 F(4, 10056.48)=2.347 p=0.05222 F(4, 10056.48)=2.347 p=0.05222 F(4, 10056.48)=2.347 p=0.05222

FrameXEgo Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(2, 5639.24)=2.351 p=0.09538 F(2, 5639.24)=2.351 p=0.09538 F(2, 5639.24)=2.351 p=0.09538 F(2, 5639.24)=2.351 p=0.09538 F(2, 5639.24)=2.351 p=0.09538

NormxEgo Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(4, 1739.09)=0.448 p=0.77425 F(4, 1739.09)=0.448 p=0.77425 F(4, 1739.09)=0.448 p=0.77425 F(4, 1739.09)=0.448 p=0.77425 F(4, 1739.09)=0.448 p=0.77425

FrameXHed Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(2, 10144.25)=0.316 p=0.72942 F(2, 10144.25)=0.316 p=0.72942 F(2, 10144.25)=0.316 p=0.72942 F(2, 10144.25)=0.316 p=0.72942 F(2, 10144.25)=0.316 p=0.72942

NormXHed Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(4, 73732.36)=0.491 p=0.74237 F(4, 73732.36)=0.491 p=0.74237 F(4, 73732.36)=0.491 p=0.74237 F(4, 73732.36)=0.491 p=0.74237 F(4, 73732.36)=0.491 p=0.74237

FrameXIngroup Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(2, 18834.69)=0.105 p=0.90056 F(2, 18834.69)=0.105 p=0.90056 F(2, 18834.69)=0.105 p=0.90056 F(2, 18834.69)=0.105 p=0.90056 F(2, 18834.69)=0.105 p=0.90056

NormXIngroup Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(4, 9488.21)=0.239 p=0.91638 F(4, 9488.21)=0.239 p=0.91638 F(4, 9488.21)=0.239 p=0.91638 F(4, 9488.21)=0.239 p=0.91638 F(4, 9488.21)=0.239 p=0.91638

frameXnormXbio Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(8, 1981.71)=0.798 p=0.60394 F(8, 1981.71)=0.798 p=0.60394 F(8, 1981.71)=0.798 p=0.60394 F(8, 1981.71)=0.798 p=0.60394 F(8, 1981.71)=0.798 p=0.60394

frameXnormXalt Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(8, 49675.93)=1.334 p=0.2208 F(8, 49675.93)=1.334 p=0.2208 F(8, 49675.93)=1.334 p=0.2208 F(8, 49675.93)=1.334 p=0.2208 F(8, 49675.93)=1.334 p=0.2208

frameXnormXego Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(8, 1320.93)=0.668 p=0.72028 F(8, 1320.93)=0.668 p=0.72028 F(8, 1320.93)=0.668 p=0.72028 F(8, 1320.93)=0.668 p=0.72028 F(8, 1320.93)=0.668 p=0.72028

frameXnormXhed Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(8, 24721.97)=0.763 p=0.6352 F(8, 24721.97)=0.763 p=0.6352 F(8, 24721.97)=0.763 p=0.6352 F(8, 24721.97)=0.763 p=0.6352 F(8, 24721.97)=0.763 p=0.6352

frameXnormXingroup Interaction

micombine.chisquare(chi\_sq, df, display=TRUE, version=1)

## Combination of Chi Square Statistics for Multiply Imputed Data  
## Using 5 Imputed Data Sets  
## F(8, 830.24)=0.421 p=0.90885 F(8, 830.24)=0.421 p=0.90885 F(8, 830.24)=0.421 p=0.90885 F(8, 830.24)=0.421 p=0.90885 F(8, 830.24)=0.421 p=0.90885

# Simple Effects

## Framing Condition

H1: Consumer intentions/behaviors will be lower in the self-enhancing framing than in the pro-environmental or control framing conditions.

EM Means

# logit scale  
frame\_emmeans\_logit <- emmeans(log\_mice, ~ framing\_condition)  
frame\_emmeans\_logit %>%  
 knitr::kable(digits = 2)

| framing\_condition | emmean | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| control\_framing | -0.38 | 0.13 | Inf | -0.63 | -0.14 |
| pro\_env\_framing | 0.18 | 0.13 | Inf | -0.06 | 0.43 |
| self\_enh\_framing | -0.26 | 0.12 | Inf | -0.50 | -0.02 |

# probability scale  
frame\_emmeans\_prob <- emmeans(log\_mice, ~ framing\_condition, type = "response")  
frame\_emmeans\_prob %>%  
 knitr::kable(digits = 2)

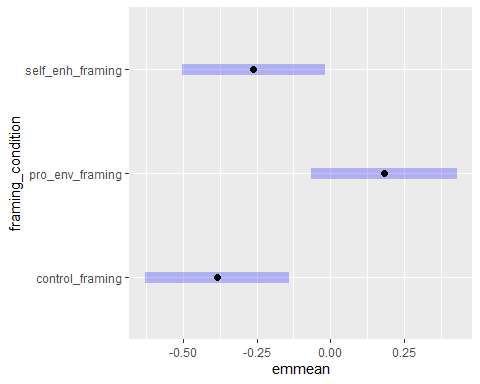
| framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| control\_framing | 0.41 | 0.03 | Inf | 0.35 | 0.47 |
| pro\_env\_framing | 0.55 | 0.03 | Inf | 0.48 | 0.61 |
| self\_enh\_framing | 0.44 | 0.03 | Inf | 0.38 | 0.50 |

Text Settings

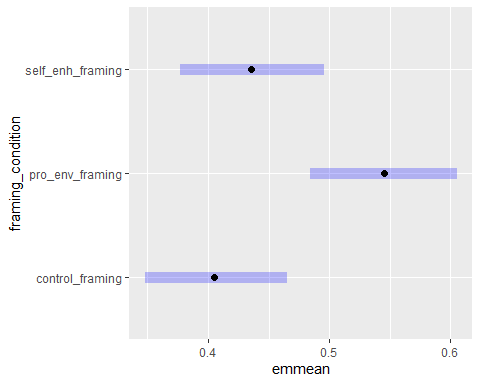
text\_settings <- theme(text = element\_text(size = 20)) +  
 theme(plot.title = element\_text(size = 20, face = 'bold')) +  
 theme(axis.title.x = element\_text(face = 'bold')) +  
 theme(axis.title.y = element\_text(face = 'bold')) +  
 theme(axis.text.x = element\_text(size = 20)) +  
 theme(axis.text.y = element\_text(size = 20)) +  
 theme(axis.ticks = element\_blank())

Visualization

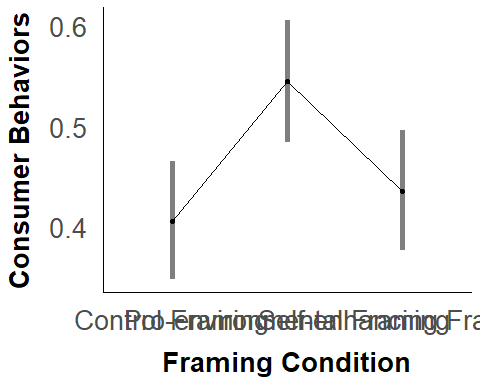
# logit scale  
plot(frame\_emmeans\_logit)



# probability scale  
plot(frame\_emmeans\_prob)



emmip(log\_mice, ~ framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 2, alpha = 0.5), xlab = "Framing Condition", ylab = "Consumer Behaviors") + scale\_x\_discrete(breaks=c("control\_framing","pro\_env\_framing","self\_enh\_framing"),  
 labels=c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) + theme\_apa() + text\_settings



Planned comparisons

# custom contrasts  
SE\_F\_EMM <- c(0,0,1)  
C\_F\_EMM <- c(1,0,0)  
PE\_F\_EMM <- c(0,1,0)  
  
# logit scale  
framing\_comparisons <- contrast(frame\_emmeans\_logit,   
 method = list("SE Frame - Control Frame" = SE\_F\_EMM - C\_F\_EMM,  
 "PE Frame - SE Frame" = PE\_F\_EMM - SE\_F\_EMM,  
 "PE Frame - Control" = PE\_F\_EMM - C\_F\_EMM), adjust = "none")  
   
framing\_comparisons %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | estimate | SE | df | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- |
| SE Frame - Control Frame | 0.12 | 0.17 | Inf | 0.71 | 0.48 |
| PE Frame - SE Frame | 0.44 | 0.18 | Inf | 2.52 | 0.01 |
| PE Frame - Control | 0.57 | 0.17 | Inf | 3.25 | 0.00 |

# confidence intervals  
framing\_comparisons %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | estimate | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SE Frame - Control Frame | 0.12 | 0.17 | Inf | -0.22 | 0.46 |
| PE Frame - SE Frame | 0.44 | 0.18 | Inf | 0.10 | 0.79 |
| PE Frame - Control | 0.57 | 0.17 | Inf | 0.23 | 0.91 |

# probability scale  
framing\_comparisons <- contrast(frame\_emmeans\_prob,   
 method = list("SE Frame - Control Frame" = SE\_F\_EMM - C\_F\_EMM,  
 "PE Frame - SE Frame" = PE\_F\_EMM - SE\_F\_EMM,  
 "PE Frame - Control" = PE\_F\_EMM - C\_F\_EMM), adjust = "none")  
   
framing\_comparisons %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| SE Frame / Control Frame | 1.13 | 0.20 | Inf | 1 | 0.71 | 0.479 |
| PE Frame / SE Frame | 1.56 | 0.27 | Inf | 1 | 2.52 | 0.012 |
| PE Frame / Control | 1.76 | 0.31 | Inf | 1 | 3.25 | 0.001 |

# confidence intervals  
framing\_comparisons %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SE Frame / Control Frame | 1.13 | 0.20 | Inf | 0.80 | 1.59 |
| PE Frame / SE Frame | 1.56 | 0.27 | Inf | 1.10 | 2.20 |
| PE Frame / Control | 1.76 | 0.31 | Inf | 1.25 | 2.48 |

## Norm Condition

EM Means

norm\_emmeans\_logit <- emmeans(log\_mice, ~ norm\_condition)  
norm\_emmeans\_logit %>%  
 knitr::kable(digits = 2)

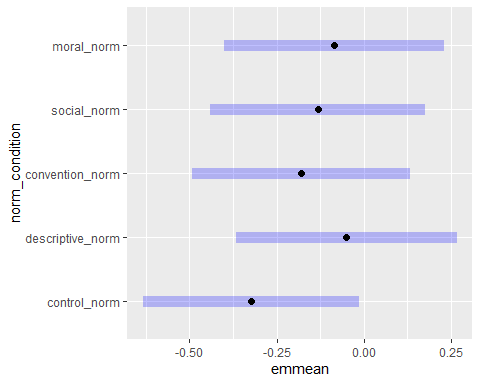
| norm\_condition | emmean | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| control\_norm | -0.32 | 0.16 | Inf | -0.63 | -0.01 |
| descriptive\_norm | -0.05 | 0.16 | Inf | -0.37 | 0.27 |
| convention\_norm | -0.18 | 0.16 | Inf | -0.49 | 0.13 |
| social\_norm | -0.13 | 0.16 | Inf | -0.44 | 0.18 |
| moral\_norm | -0.09 | 0.16 | Inf | -0.40 | 0.23 |

norm\_emmeans\_prob <- emmeans(log\_mice, ~ norm\_condition, type = "response")  
norm\_emmeans\_prob %>%  
 knitr::kable(digits = 2)

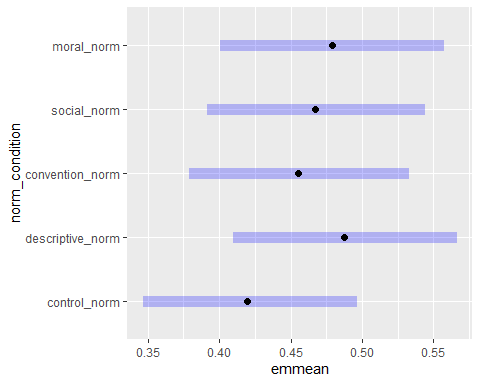
| norm\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| control\_norm | 0.42 | 0.04 | Inf | 0.35 | 0.50 |
| descriptive\_norm | 0.49 | 0.04 | Inf | 0.41 | 0.57 |
| convention\_norm | 0.46 | 0.04 | Inf | 0.38 | 0.53 |
| social\_norm | 0.47 | 0.04 | Inf | 0.39 | 0.54 |
| moral\_norm | 0.48 | 0.04 | Inf | 0.40 | 0.56 |

Visualization

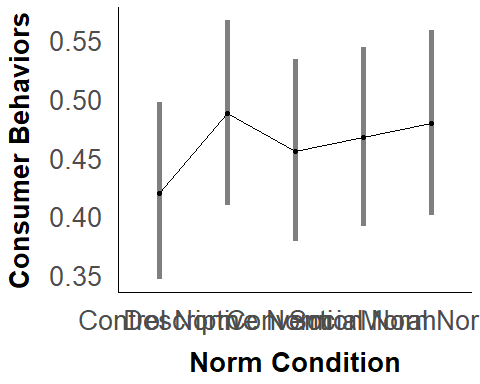
# logit scale  
plot(norm\_emmeans\_logit)



# probability scale  
plot(norm\_emmeans\_prob)



emmip(log\_mice, ~ norm\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 2, alpha = 0.5), xlab = "Norm Condition", ylab = "Consumer Behaviors") + scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"),  
 labels=c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) + theme\_apa() + text\_settings



Planned comparisons

# custom contrasts  
Control\_N\_EMM <- c(1,0,0,0,0)  
DN\_EMM <- c(0,1,0,0,0)  
Conv\_EMM <- c(0,0,1,0,0)  
SN\_EMM <- c(0,0,0,1,0)  
MN\_EMM <- c(0,0,0,0,1)  
  
# logit scale  
norm\_comparisons <- contrast(norm\_emmeans\_logit,   
 method = list("Descriptive Norm - Control" = DN\_EMM - Control\_N\_EMM,  
 "Convention - Control" = Conv\_EMM - Control\_N\_EMM,  
 "Social Norm - Control" = SN\_EMM - Control\_N\_EMM,  
 "Moral Norm - Control" = MN\_EMM - Control\_N\_EMM), adjust = "none")  
  
   
norm\_comparisons %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | estimate | SE | df | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- |
| Descriptive Norm - Control | 0.27 | 0.23 | Inf | 1.22 | 0.22 |
| Convention - Control | 0.14 | 0.22 | Inf | 0.65 | 0.52 |
| Social Norm - Control | 0.19 | 0.22 | Inf | 0.87 | 0.39 |
| Moral Norm - Control | 0.24 | 0.22 | Inf | 1.06 | 0.29 |

# confidence intervals  
norm\_comparisons %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | estimate | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Descriptive Norm - Control | 0.27 | 0.23 | Inf | -0.17 | 0.71 |
| Convention - Control | 0.14 | 0.22 | Inf | -0.29 | 0.58 |
| Social Norm - Control | 0.19 | 0.22 | Inf | -0.24 | 0.62 |
| Moral Norm - Control | 0.24 | 0.22 | Inf | -0.20 | 0.68 |

# probability scale  
norm\_comparisons <- contrast(norm\_emmeans\_prob,   
 method = list("Descriptive Norm - Control" = DN\_EMM - Control\_N\_EMM,  
 "Convention - Control" = Conv\_EMM - Control\_N\_EMM,  
 "Social Norm - Control" = SN\_EMM - Control\_N\_EMM,  
 "Moral Norm - Control" = MN\_EMM - Control\_N\_EMM), adjust = "none")  
  
   
norm\_comparisons %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Descriptive Norm / Control | 1.31 | 0.30 | Inf | 1 | 1.22 | 0.224 |
| Convention / Control | 1.15 | 0.26 | Inf | 1 | 0.65 | 0.518 |
| Social Norm / Control | 1.21 | 0.27 | Inf | 1 | 0.87 | 0.386 |
| Moral Norm / Control | 1.27 | 0.28 | Inf | 1 | 1.06 | 0.288 |

# confidence intervals  
norm\_comparisons %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Descriptive Norm / Control | 1.31 | 0.30 | Inf | 0.85 | 2.04 |
| Convention / Control | 1.15 | 0.26 | Inf | 0.75 | 1.78 |
| Social Norm / Control | 1.21 | 0.27 | Inf | 0.79 | 1.87 |
| Moral Norm / Control | 1.27 | 0.28 | Inf | 0.82 | 1.97 |

## Framing x Norm

EM Means

cell\_emmeans\_logit <- emmeans(log\_mice, ~ norm\_condition\*framing\_condition)  
cell\_emmeans\_logit %>%  
 knitr::kable(digits = c(NA,NA,2,2,2,2,3))

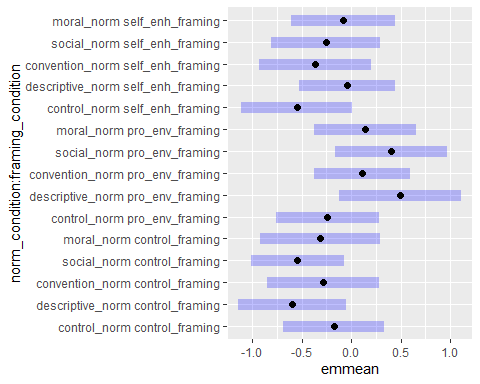
| norm\_condition | framing\_condition | emmean | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| control\_norm | control\_framing | -0.18 | 0.26 | Inf | -0.69 | 0.336 |
| descriptive\_norm | control\_framing | -0.60 | 0.28 | Inf | -1.14 | -0.057 |
| convention\_norm | control\_framing | -0.29 | 0.29 | Inf | -0.85 | 0.281 |
| social\_norm | control\_framing | -0.54 | 0.24 | Inf | -1.01 | -0.077 |
| moral\_norm | control\_framing | -0.31 | 0.31 | Inf | -0.92 | 0.289 |
| control\_norm | pro\_env\_framing | -0.24 | 0.27 | Inf | -0.76 | 0.279 |
| descriptive\_norm | pro\_env\_framing | 0.50 | 0.31 | Inf | -0.12 | 1.110 |
| convention\_norm | pro\_env\_framing | 0.11 | 0.25 | Inf | -0.37 | 0.598 |
| social\_norm | pro\_env\_framing | 0.40 | 0.29 | Inf | -0.17 | 0.971 |
| moral\_norm | pro\_env\_framing | 0.14 | 0.26 | Inf | -0.37 | 0.655 |
| control\_norm | self\_enh\_framing | -0.55 | 0.29 | Inf | -1.11 | 0.009 |
| descriptive\_norm | self\_enh\_framing | -0.05 | 0.25 | Inf | -0.53 | 0.440 |
| convention\_norm | self\_enh\_framing | -0.37 | 0.29 | Inf | -0.94 | 0.198 |
| social\_norm | self\_enh\_framing | -0.26 | 0.28 | Inf | -0.81 | 0.296 |
| moral\_norm | self\_enh\_framing | -0.08 | 0.27 | Inf | -0.61 | 0.447 |

cell\_emmeans\_prob <- emmeans(log\_mice, ~ norm\_condition\*framing\_condition, type = "response")  
cell\_emmeans\_prob %>%  
 knitr::kable(digits = c(NA,NA,2,2,2,2,3))

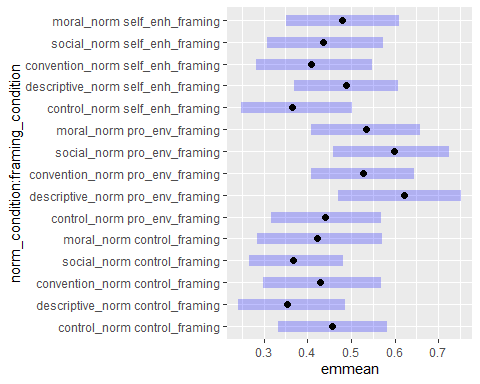
| norm\_condition | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| control\_norm | control\_framing | 0.46 | 0.07 | Inf | 0.33 | 0.583 |
| descriptive\_norm | control\_framing | 0.35 | 0.06 | Inf | 0.24 | 0.486 |
| convention\_norm | control\_framing | 0.43 | 0.07 | Inf | 0.30 | 0.570 |
| social\_norm | control\_framing | 0.37 | 0.06 | Inf | 0.27 | 0.481 |
| moral\_norm | control\_framing | 0.42 | 0.08 | Inf | 0.29 | 0.572 |
| control\_norm | pro\_env\_framing | 0.44 | 0.07 | Inf | 0.32 | 0.569 |
| descriptive\_norm | pro\_env\_framing | 0.62 | 0.07 | Inf | 0.47 | 0.752 |
| convention\_norm | pro\_env\_framing | 0.53 | 0.06 | Inf | 0.41 | 0.645 |
| social\_norm | pro\_env\_framing | 0.60 | 0.07 | Inf | 0.46 | 0.725 |
| moral\_norm | pro\_env\_framing | 0.54 | 0.07 | Inf | 0.41 | 0.658 |
| control\_norm | self\_enh\_framing | 0.37 | 0.07 | Inf | 0.25 | 0.502 |
| descriptive\_norm | self\_enh\_framing | 0.49 | 0.06 | Inf | 0.37 | 0.608 |
| convention\_norm | self\_enh\_framing | 0.41 | 0.07 | Inf | 0.28 | 0.549 |
| social\_norm | self\_enh\_framing | 0.44 | 0.07 | Inf | 0.31 | 0.573 |
| moral\_norm | self\_enh\_framing | 0.48 | 0.07 | Inf | 0.35 | 0.610 |

Visualization

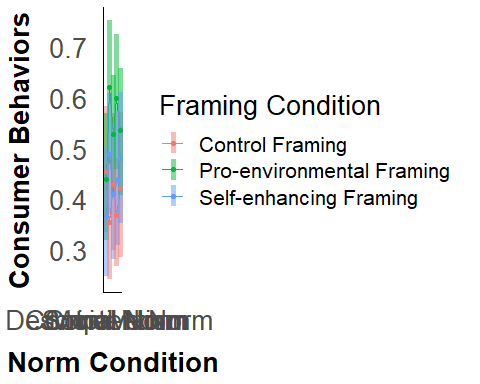
plot(cell\_emmeans\_logit)



plot(cell\_emmeans\_prob)



emmip(log\_mice, framing\_condition ~ norm\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 2, alpha = 0.5), xlab = "Norm Condition", ylab = "Consumer Behaviors") + scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"),  
 labels=c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) + scale\_colour\_discrete(name = "Framing Condition", breaks=c("control\_framing","pro\_env\_framing","self\_enh\_framing"), labels=c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) + theme\_apa() + text\_settings



Planned comparisons

# custom contrasts  
cf\_cn\_emm <- c(1,rep(0,14)) ## control framings  
cf\_dn\_emm <- c(0,1,rep(0,13))  
cf\_conv\_emm <- c(0,0,1,rep(0,12))  
cf\_sn\_emm <- c(0,0,0,1,rep(0,11))  
cf\_mn\_emm <- c(0,0,0,0,1,rep(0,10))  
  
pf\_cn\_emm <- c(0,0,0,0,0,1,rep(0,9)) ## pro-environmental framings  
pf\_dn\_emm <- c(0,0,0,0,0,0,1,rep(0,8))  
pf\_conv\_emm <- c(rep(0,7),1,(rep(0,7)))  
pf\_sn\_emm <- c(rep(0,8),1,(rep(0,6)))  
pf\_mn\_emm <- c(rep(0,9),1,(rep(0,5)))  
  
sf\_cn\_emm <- c(rep(0,10),1,(rep(0,4))) ## self-enhancing framings  
sf\_dn\_emm <- c(rep(0,11),1,(rep(0,3)))  
sf\_conv\_emm <- c(rep(0,12),1,(rep(0,2)))  
sf\_sn\_emm <- c(rep(0,13),1,0)  
sf\_mn\_emm <- c(rep(0,14),1)  
  
  
# logit scale  
FxN\_comparisons\_logit <- contrast(cell\_emmeans\_logit,   
 method = list("Control Frame + DN - Control Frame + Ctrl" = cf\_dn\_emm - cf\_cn\_emm,  
 "Control Frame + Conv - Control Frame + Ctrl" = cf\_conv\_emm - cf\_cn\_emm,  
 "Control Frame + SN - Control Frame + Ctrl" = cf\_sn\_emm - cf\_cn\_emm,  
 "Control Frame + MN - Control Frame + Ctrl" = cf\_mn\_emm - cf\_cn\_emm,  
 "PE Frame + DN - PE Frame + Ctrl" = pf\_dn\_emm - pf\_cn\_emm,  
 "PE Frame + Conv - PE Frame + Ctrl" = pf\_conv\_emm - pf\_cn\_emm,  
 "PE Frame + SN - PE Frame + Ctrl" = pf\_sn\_emm - pf\_cn\_emm,  
 "PE Frame + MN - PE Frame + Ctrl" = pf\_mn\_emm - pf\_cn\_emm,  
 "SE Frame + DN - SE Frame + Ctrl" = sf\_dn\_emm - sf\_cn\_emm,  
 "SE Frame + Conv - SE Frame + Ctrl" = sf\_conv\_emm - sf\_cn\_emm,  
 "SE Frame + SN - SE Frame + Ctrl" = sf\_sn\_emm - sf\_cn\_emm,  
 "SE Frame + MN - SE Frame + Ctrl" = sf\_mn\_emm - sf\_cn\_emm), adjust = "none")  
  
FxN\_comparisons\_logit %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | estimate | SE | df | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- |
| Control Frame + DN - Control Frame + Ctrl | -0.42 | 0.38 | Inf | -1.11 | 0.27 |
| Control Frame + Conv - Control Frame + Ctrl | -0.11 | 0.39 | Inf | -0.28 | 0.78 |
| Control Frame + SN - Control Frame + Ctrl | -0.36 | 0.35 | Inf | -1.03 | 0.30 |
| Control Frame + MN - Control Frame + Ctrl | -0.14 | 0.40 | Inf | -0.34 | 0.74 |
| PE Frame + DN - PE Frame + Ctrl | 0.74 | 0.41 | Inf | 1.80 | 0.07 |
| PE Frame + Conv - PE Frame + Ctrl | 0.36 | 0.36 | Inf | 0.98 | 0.33 |
| PE Frame + SN - PE Frame + Ctrl | 0.64 | 0.39 | Inf | 1.64 | 0.10 |
| PE Frame + MN - PE Frame + Ctrl | 0.38 | 0.37 | Inf | 1.03 | 0.31 |
| SE Frame + DN - SE Frame + Ctrl | 0.51 | 0.38 | Inf | 1.34 | 0.18 |
| SE Frame + Conv - SE Frame + Ctrl | 0.18 | 0.40 | Inf | 0.45 | 0.65 |
| SE Frame + SN - SE Frame + Ctrl | 0.29 | 0.40 | Inf | 0.73 | 0.46 |
| SE Frame + MN - SE Frame + Ctrl | 0.47 | 0.39 | Inf | 1.19 | 0.23 |

# confidence intervals  
FxN\_comparisons\_logit %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | estimate | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control Frame + DN - Control Frame + Ctrl | -0.42 | 0.38 | Inf | -1.16 | 0.32 |
| Control Frame + Conv - Control Frame + Ctrl | -0.11 | 0.39 | Inf | -0.87 | 0.66 |
| Control Frame + SN - Control Frame + Ctrl | -0.36 | 0.35 | Inf | -1.06 | 0.33 |
| Control Frame + MN - Control Frame + Ctrl | -0.14 | 0.40 | Inf | -0.93 | 0.65 |
| PE Frame + DN - PE Frame + Ctrl | 0.74 | 0.41 | Inf | -0.07 | 1.54 |
| PE Frame + Conv - PE Frame + Ctrl | 0.36 | 0.36 | Inf | -0.35 | 1.07 |
| PE Frame + SN - PE Frame + Ctrl | 0.64 | 0.39 | Inf | -0.12 | 1.41 |
| PE Frame + MN - PE Frame + Ctrl | 0.38 | 0.37 | Inf | -0.35 | 1.11 |
| SE Frame + DN - SE Frame + Ctrl | 0.51 | 0.38 | Inf | -0.23 | 1.24 |
| SE Frame + Conv - SE Frame + Ctrl | 0.18 | 0.40 | Inf | -0.61 | 0.97 |
| SE Frame + SN - SE Frame + Ctrl | 0.29 | 0.40 | Inf | -0.49 | 1.08 |
| SE Frame + MN - SE Frame + Ctrl | 0.47 | 0.39 | Inf | -0.30 | 1.24 |

# probability scale  
FxN\_comparisons\_prob <- contrast(cell\_emmeans\_prob,   
 method = list("Control Frame + DN - Control Frame + Ctrl" = cf\_dn\_emm - cf\_cn\_emm,  
 "Control Frame + Conv - Control Frame + Ctrl" = cf\_conv\_emm - cf\_cn\_emm,  
 "Control Frame + SN - Control Frame + Ctrl" = cf\_sn\_emm - cf\_cn\_emm,  
 "Control Frame + MN - Control Frame + Ctrl" = cf\_mn\_emm - cf\_cn\_emm,  
 "PE Frame + DN - PE Frame + Ctrl" = pf\_dn\_emm - pf\_cn\_emm,  
 "PE Frame + Conv - PE Frame + Ctrl" = pf\_conv\_emm - pf\_cn\_emm,  
 "PE Frame + SN - PE Frame + Ctrl" = pf\_sn\_emm - pf\_cn\_emm,  
 "PE Frame + MN - PE Frame + Ctrl" = pf\_mn\_emm - pf\_cn\_emm,  
 "SE Frame + DN - SE Frame + Ctrl" = sf\_dn\_emm - sf\_cn\_emm,  
 "SE Frame + Conv - SE Frame + Ctrl" = sf\_conv\_emm - sf\_cn\_emm,  
 "SE Frame + SN - SE Frame + Ctrl" = sf\_sn\_emm - sf\_cn\_emm,  
 "SE Frame + MN - SE Frame + Ctrl" = sf\_mn\_emm - sf\_cn\_emm), adjust = "none")  
  
FxN\_comparisons\_prob %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control Frame + DN / Control Frame + Ctrl | 0.66 | 0.25 | Inf | 1 | -1.11 | 0.266 |
| Control Frame + Conv / Control Frame + Ctrl | 0.90 | 0.35 | Inf | 1 | -0.28 | 0.782 |
| Control Frame + SN / Control Frame + Ctrl | 0.69 | 0.24 | Inf | 1 | -1.03 | 0.301 |
| Control Frame + MN / Control Frame + Ctrl | 0.87 | 0.35 | Inf | 1 | -0.34 | 0.735 |
| PE Frame + DN / PE Frame + Ctrl | 2.09 | 0.86 | Inf | 1 | 1.80 | 0.072 |
| PE Frame + Conv / PE Frame + Ctrl | 1.43 | 0.52 | Inf | 1 | 0.98 | 0.326 |
| PE Frame + SN / PE Frame + Ctrl | 1.91 | 0.75 | Inf | 1 | 1.64 | 0.100 |
| PE Frame + MN / PE Frame + Ctrl | 1.47 | 0.55 | Inf | 1 | 1.03 | 0.305 |
| SE Frame + DN / SE Frame + Ctrl | 1.66 | 0.62 | Inf | 1 | 1.34 | 0.180 |
| SE Frame + Conv / SE Frame + Ctrl | 1.20 | 0.48 | Inf | 1 | 0.45 | 0.653 |
| SE Frame + SN / SE Frame + Ctrl | 1.34 | 0.54 | Inf | 1 | 0.73 | 0.464 |
| SE Frame + MN / SE Frame + Ctrl | 1.60 | 0.63 | Inf | 1 | 1.19 | 0.232 |

# confidence intervals  
FxN\_comparisons\_prob %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control Frame + DN / Control Frame + Ctrl | 0.66 | 0.25 | Inf | 0.31 | 1.38 |
| Control Frame + Conv / Control Frame + Ctrl | 0.90 | 0.35 | Inf | 0.42 | 1.93 |
| Control Frame + SN / Control Frame + Ctrl | 0.69 | 0.24 | Inf | 0.35 | 1.39 |
| Control Frame + MN / Control Frame + Ctrl | 0.87 | 0.35 | Inf | 0.40 | 1.92 |
| PE Frame + DN / PE Frame + Ctrl | 2.09 | 0.86 | Inf | 0.94 | 4.67 |
| PE Frame + Conv / PE Frame + Ctrl | 1.43 | 0.52 | Inf | 0.70 | 2.90 |
| PE Frame + SN / PE Frame + Ctrl | 1.91 | 0.75 | Inf | 0.88 | 4.11 |
| PE Frame + MN / PE Frame + Ctrl | 1.47 | 0.55 | Inf | 0.71 | 3.05 |
| SE Frame + DN / SE Frame + Ctrl | 1.66 | 0.62 | Inf | 0.79 | 3.47 |
| SE Frame + Conv / SE Frame + Ctrl | 1.20 | 0.48 | Inf | 0.54 | 2.64 |
| SE Frame + SN / SE Frame + Ctrl | 1.34 | 0.54 | Inf | 0.61 | 2.94 |
| SE Frame + MN / SE Frame + Ctrl | 1.60 | 0.63 | Inf | 0.74 | 3.45 |

Planned comparisons of comparisons

# convert odds ratios to log OR  
FxN\_comparisons\_prob %>%  
 knitr::kable(digits = 8)

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control Frame + DN / Control Frame + Ctrl | 0.6561187 | 0.2484442 | Inf | 1 | -1.1129152 | 0.26574483 |
| Control Frame + Conv / Control Frame + Ctrl | 0.8977581 | 0.3500453 | Inf | 1 | -0.2766139 | 0.78207659 |
| Control Frame + SN / Control Frame + Ctrl | 0.6945434 | 0.2446919 | Inf | 1 | -1.0346131 | 0.30084961 |
| Control Frame + MN / Control Frame + Ctrl | 0.8725906 | 0.3517633 | Inf | 1 | -0.3380805 | 0.73530256 |
| PE Frame + DN / PE Frame + Ctrl | 2.0902685 | 0.8578687 | Inf | 1 | 1.7964745 | 0.07241908 |
| PE Frame + Conv / PE Frame + Ctrl | 1.4270474 | 0.5170541 | Inf | 1 | 0.9814618 | 0.32636504 |
| PE Frame + SN / PE Frame + Ctrl | 1.9059225 | 0.7480687 | Inf | 1 | 1.6432387 | 0.10033355 |
| PE Frame + MN / PE Frame + Ctrl | 1.4663723 | 0.5472816 | Inf | 1 | 1.0256419 | 0.30506041 |
| SE Frame + DN / SE Frame + Ctrl | 1.6572961 | 0.6238446 | Inf | 1 | 1.3420734 | 0.17957221 |
| SE Frame + Conv / SE Frame + Ctrl | 1.1991170 | 0.4836775 | Inf | 1 | 0.4501804 | 0.65258036 |
| SE Frame + SN / SE Frame + Ctrl | 1.3415565 | 0.5379552 | Inf | 1 | 0.7327566 | 0.46370689 |
| SE Frame + MN / SE Frame + Ctrl | 1.5980479 | 0.6271797 | Inf | 1 | 1.1944542 | 0.23230034 |

ORs <- c(0.6561187, 0.8977581, 0.6945434, 0.8725906, 2.0902685, 1.4270474, 1.9059225, 1.4663723, 1.6572961, 1.1991170, 1.3415565, 1.5980479)  
ORs

## [1] 0.6561187 0.8977581 0.6945434 0.8725906 2.0902685 1.4270474 1.9059225  
## [8] 1.4663723 1.6572961 1.1991170 1.3415565 1.5980479

log\_ORs <- log(ORs)  
log\_ORs

## [1] -0.4214136 -0.1078546 -0.3645006 -0.1362888 0.7372925 0.3556076  
## [7] 0.6449661 0.3827915 0.5051874 0.1815855 0.2938305 0.4687828

log\_ORs %>% knitr::kable(digits = 2)

| x |
| --- |
| -0.42 |
| -0.11 |
| -0.36 |
| -0.14 |
| 0.74 |
| 0.36 |
| 0.64 |
| 0.38 |
| 0.51 |
| 0.18 |
| 0.29 |
| 0.47 |

SEs <- c(0.2484442, 0.3500453, 0.2446919, 0.3517633, 0.8578687, 0.5170541, 0.7480687, 0.5472816, 0.6238446, 0.4836775, 0.5379552, 0.6271797)  
  
# effect of descriptive norm   
## PE vs control  
diff <- log\_ORs[5] - log\_ORs[1]  
diff

## [1] 1.158706

SE\_combine <- sqrt(SEs[5]^2 + SEs[1]^2)  
SE\_combine

## [1] 0.8931199

z <- diff/SE\_combine  
z

## [1] 1.297369

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.1945043

## SE vs control  
diff <- log\_ORs[9] - log\_ORs[1]  
diff

## [1] 0.926601

SE\_combine <- sqrt(SEs[9]^2 + SEs[1]^2)  
SE\_combine

## [1] 0.6714958

z <- diff/SE\_combine  
z

## [1] 1.379906

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.1676156

## SE vs PE  
diff <- log\_ORs[9] - log\_ORs[5]  
diff

## [1] -0.2321051

SE\_combine <- sqrt(SEs[9]^2 + SEs[5]^2)  
SE\_combine

## [1] 1.060717

z <- diff/SE\_combine  
z

## [1] -0.218819

p <- 2\*pnorm(q=z, lower.tail=TRUE)  
p

## [1] 0.826791

# effect of convention  
## PE vs control  
diff <- log\_ORs[6] - log\_ORs[2]  
diff

## [1] 0.4634622

SE\_combine <- sqrt(SEs[6]^2 + SEs[2]^2)  
SE\_combine

## [1] 0.624401

z <- diff/SE\_combine  
z

## [1] 0.7422508

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.4579354

## SE vs control  
diff <- log\_ORs[10] - log\_ORs[2]  
diff

## [1] 0.2894401

SE\_combine <- sqrt(SEs[10]^2 + SEs[2]^2)  
SE\_combine

## [1] 0.5970558

z <- diff/SE\_combine  
z

## [1] 0.4847789

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.6278332

## SE vs PE  
diff <- log\_ORs[10] - log\_ORs[6]  
diff

## [1] -0.1740221

SE\_combine <- sqrt(SEs[10]^2 + SEs[6]^2)  
SE\_combine

## [1] 0.7080176

z <- diff/SE\_combine  
z

## [1] -0.2457878

p <- 2\*pnorm(q=z, lower.tail=TRUE)  
p

## [1] 0.8058465

# effect of social norm  
## PE vs control  
diff <- log\_ORs[7] - log\_ORs[3]  
diff

## [1] 1.009467

SE\_combine <- sqrt(SEs[7]^2 + SEs[3]^2)  
SE\_combine

## [1] 0.7870711

z <- diff/SE\_combine  
z

## [1] 1.282561

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.1996459

## SE vs control  
diff <- log\_ORs[11] - log\_ORs[3]  
diff

## [1] 0.6583311

SE\_combine <- sqrt(SEs[11]^2 + SEs[3]^2)  
SE\_combine

## [1] 0.5909906

z <- diff/SE\_combine  
z

## [1] 1.113945

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.2653027

## SE vs PE  
diff <- log\_ORs[11] - log\_ORs[7]  
diff

## [1] -0.3511356

SE\_combine <- sqrt(SEs[11]^2 + SEs[7]^2)  
SE\_combine

## [1] 0.9214134

z <- diff/SE\_combine  
z

## [1] -0.3810837

p <- 2\*pnorm(q=z, lower.tail=TRUE)  
p

## [1] 0.7031411

# effect of moral norm  
## PE vs control  
diff <- log\_ORs[8] - log\_ORs[4]  
diff

## [1] 0.5190803

SE\_combine <- sqrt(SEs[8]^2 + SEs[4]^2)  
SE\_combine

## [1] 0.6505802

z <- diff/SE\_combine  
z

## [1] 0.7978729

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.4249442

## SE vs control  
diff <- log\_ORs[12] - log\_ORs[4]  
diff

## [1] 0.6050716

SE\_combine <- sqrt(SEs[12]^2 + SEs[4]^2)  
SE\_combine

## [1] 0.719091

z <- diff/SE\_combine  
z

## [1] 0.8414396

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.4001017

## SE vs PE  
diff <- log\_ORs[12] - log\_ORs[8]  
diff

## [1] 0.08599129

SE\_combine <- sqrt(SEs[12]^2 + SEs[8]^2)  
SE\_combine

## [1] 0.832389

z <- diff/SE\_combine  
z

## [1] 0.1033066

p <- 2\*pnorm(q=z, lower.tail=FALSE)  
p

## [1] 0.9177196

## Exploratory RQ2: Cell differences from control

Exploratory RQ2: Which combination of framing and norm condition produced the strongest reductions in consumer intentions compared to the control condition?

# custom contrasts  
cf\_cn\_emm <- c(1,rep(0,14)) ## control framings  
cf\_dn\_emm <- c(0,1,rep(0,13))  
cf\_conv\_emm <- c(0,0,1,rep(0,12))  
cf\_sn\_emm <- c(0,0,0,1,rep(0,11))  
cf\_mn\_emm <- c(0,0,0,0,1,rep(0,10))  
  
pf\_cn\_emm <- c(0,0,0,0,0,1,rep(0,9)) ## pro-environmental framings  
pf\_dn\_emm <- c(0,0,0,0,0,0,1,rep(0,8))  
pf\_conv\_emm <- c(rep(0,7),1,(rep(0,7)))  
pf\_sn\_emm <- c(rep(0,8),1,(rep(0,6)))  
pf\_mn\_emm <- c(rep(0,9),1,(rep(0,5)))  
  
sf\_cn\_emm <- c(rep(0,10),1,(rep(0,4))) ## self-enhancing framings  
sf\_dn\_emm <- c(rep(0,11),1,(rep(0,3)))  
sf\_conv\_emm <- c(rep(0,12),1,(rep(0,2)))  
sf\_sn\_emm <- c(rep(0,13),1,0)  
sf\_mn\_emm <- c(rep(0,14),1)  
  
  
  
# logit scale  
RQ2 <- contrast(cell\_emmeans\_logit,   
 method = list("Pro-env Frame + Control vs Control" = pf\_cn\_emm - cf\_cn\_emm,  
 "Pro-env Frame + DN vs Control" = pf\_dn\_emm - cf\_cn\_emm,  
 "Pro-env Frame + Conv vs Control" = pf\_conv\_emm - cf\_cn\_emm,  
 "Pro-env Frame + SN vs Control" = pf\_sn\_emm - cf\_cn\_emm,  
 "Pro-env Frame + MN vs Control" = pf\_mn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + Control vs Control" = sf\_cn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + DN vs Control" = sf\_dn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + Conv vs Control" = sf\_conv\_emm - cf\_cn\_emm,  
 "Self-enh Frame + SN vs Control" = sf\_sn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + MN vs Control" = sf\_mn\_emm - cf\_cn\_emm), adjust = "sidak")  
  
RQ2 %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | estimate | SE | df | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- |
| Pro-env Frame + Control vs Control | -0.06 | 0.37 | Inf | -0.17 | 1.00 |
| Pro-env Frame + DN vs Control | 0.67 | 0.41 | Inf | 1.64 | 0.66 |
| Pro-env Frame + Conv vs Control | 0.29 | 0.36 | Inf | 0.81 | 1.00 |
| Pro-env Frame + SN vs Control | 0.58 | 0.39 | Inf | 1.49 | 0.77 |
| Pro-env Frame + MN vs Control | 0.32 | 0.37 | Inf | 0.86 | 0.99 |
| Self-enh Frame + Control vs Control | -0.37 | 0.39 | Inf | -0.96 | 0.98 |
| Self-enh Frame + DN vs Control | 0.13 | 0.36 | Inf | 0.37 | 1.00 |
| Self-enh Frame + Conv vs Control | -0.19 | 0.38 | Inf | -0.50 | 1.00 |
| Self-enh Frame + SN vs Control | -0.08 | 0.38 | Inf | -0.21 | 1.00 |
| Self-enh Frame + MN vs Control | 0.10 | 0.38 | Inf | 0.25 | 1.00 |

# confidence intervals  
RQ2 %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | estimate | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Pro-env Frame + Control vs Control | -0.06 | 0.37 | Inf | -1.10 | 0.97 |
| Pro-env Frame + DN vs Control | 0.67 | 0.41 | Inf | -0.48 | 1.83 |
| Pro-env Frame + Conv vs Control | 0.29 | 0.36 | Inf | -0.72 | 1.30 |
| Pro-env Frame + SN vs Control | 0.58 | 0.39 | Inf | -0.51 | 1.67 |
| Pro-env Frame + MN vs Control | 0.32 | 0.37 | Inf | -0.71 | 1.35 |
| Self-enh Frame + Control vs Control | -0.37 | 0.39 | Inf | -1.45 | 0.71 |
| Self-enh Frame + DN vs Control | 0.13 | 0.36 | Inf | -0.88 | 1.14 |
| Self-enh Frame + Conv vs Control | -0.19 | 0.38 | Inf | -1.26 | 0.88 |
| Self-enh Frame + SN vs Control | -0.08 | 0.38 | Inf | -1.15 | 1.00 |
| Self-enh Frame + MN vs Control | 0.10 | 0.38 | Inf | -0.96 | 1.15 |

# probability scale  
RQ2 <- contrast(cell\_emmeans\_prob,   
 method = list("Pro-env Frame + Control vs Control" = pf\_cn\_emm - cf\_cn\_emm,  
 "Pro-env Frame + DN vs Control" = pf\_dn\_emm - cf\_cn\_emm,  
 "Pro-env Frame + Conv vs Control" = pf\_conv\_emm - cf\_cn\_emm,  
 "Pro-env Frame + SN vs Control" = pf\_sn\_emm - cf\_cn\_emm,  
 "Pro-env Frame + MN vs Control" = pf\_mn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + Control vs Control" = sf\_cn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + DN vs Control" = sf\_dn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + Conv vs Control" = sf\_conv\_emm - cf\_cn\_emm,  
 "Self-enh Frame + SN vs Control" = sf\_sn\_emm - cf\_cn\_emm,  
 "Self-enh Frame + MN vs Control" = sf\_mn\_emm - cf\_cn\_emm), adjust = "sidak")  
  
RQ2 %>%  
 knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Pro-env Frame + Control vs Control | 0.94 | 0.35 | Inf | 1 | -0.17 | 1.000 |
| Pro-env Frame + DN vs Control | 1.96 | 0.81 | Inf | 1 | 1.64 | 0.659 |
| Pro-env Frame + Conv vs Control | 1.34 | 0.48 | Inf | 1 | 0.81 | 0.996 |
| Pro-env Frame + SN vs Control | 1.79 | 0.70 | Inf | 1 | 1.49 | 0.771 |
| Pro-env Frame + MN vs Control | 1.38 | 0.51 | Inf | 1 | 0.86 | 0.993 |
| Self-enh Frame + Control vs Control | 0.69 | 0.27 | Inf | 1 | -0.96 | 0.983 |
| Self-enh Frame + DN vs Control | 1.14 | 0.41 | Inf | 1 | 0.37 | 1.000 |
| Self-enh Frame + Conv vs Control | 0.83 | 0.32 | Inf | 1 | -0.50 | 1.000 |
| Self-enh Frame + SN vs Control | 0.92 | 0.35 | Inf | 1 | -0.21 | 1.000 |
| Self-enh Frame + MN vs Control | 1.10 | 0.42 | Inf | 1 | 0.25 | 1.000 |

# confidence intervals  
RQ2 %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Pro-env Frame + Control vs Control | 0.94 | 0.35 | Inf | 0.33 | 2.65 |
| Pro-env Frame + DN vs Control | 1.96 | 0.81 | Inf | 0.62 | 6.20 |
| Pro-env Frame + Conv vs Control | 1.34 | 0.48 | Inf | 0.49 | 3.66 |
| Pro-env Frame + SN vs Control | 1.79 | 0.70 | Inf | 0.60 | 5.33 |
| Pro-env Frame + MN vs Control | 1.38 | 0.51 | Inf | 0.49 | 3.86 |
| Self-enh Frame + Control vs Control | 0.69 | 0.27 | Inf | 0.23 | 2.03 |
| Self-enh Frame + DN vs Control | 1.14 | 0.41 | Inf | 0.42 | 3.13 |
| Self-enh Frame + Conv vs Control | 0.83 | 0.32 | Inf | 0.28 | 2.42 |
| Self-enh Frame + SN vs Control | 0.92 | 0.35 | Inf | 0.32 | 2.71 |
| Self-enh Frame + MN vs Control | 1.10 | 0.42 | Inf | 0.38 | 3.17 |

# Values and Ingroup Interactions

H4: There will be a three-way interaction between values (biospheric, egoistic, altruistic, hedonic), framing condition, & norm condition such that when a pro-environmental or control framing is used, values will moderate the effect of each norm condition, but not when a self-enhancing framing is used.

Labels to use with facet\_wrap

norm\_labs <- c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")  
names(norm\_labs) <- c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm")  
  
frame\_labs <- c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")  
names(frame\_labs) <- c("control\_framing","pro\_env\_framing","self\_enh\_framing")

Averaging scores across imputations

complete\_data\_subset <- complete\_data %>%  
 dplyr::select(.imp, .id, consumer\_intentions, consumer\_behaviors, Gender, framing\_condition, norm\_condition, biospheric\_center, altruistic\_center, egoistic\_center, hedonic\_center, ingroup\_center, Age\_center, clothing\_center, self\_dec\_center, impress\_manag\_center)  
  
average\_df <- complete\_data\_subset %>%   
 group\_by(.id) %>%  
 transmute(.imp = .imp,   
 consumer\_behaviors = consumer\_behaviors,   
 Gender = Gender,  
 framing\_condition = framing\_condition,  
 norm\_condition = norm\_condition,  
 biospheric\_center = mean(biospheric\_center),  
 altruistic\_center = mean(altruistic\_center),  
 egoistic\_center = mean(egoistic\_center),  
 hedonic\_center = mean(hedonic\_center),  
 ingroup\_center = mean(ingroup\_center),  
 Age\_center = mean(Age\_center),  
 clothing\_center = mean(clothing\_center),  
 self\_dec\_center = mean(self\_dec\_center),  
 impress\_manag\_center = mean(impress\_manag\_center),  
 consumer\_intentions = mean(consumer\_intentions))  
  
  
average\_df <- average\_df %>%  
 filter(.imp == 1)

## Biospheric values

### Overall effect

Storing low (-1SD) and high (+1SD) biospheric values

sd\_below <- mean(average\_df$biospheric\_center) - sd(average\_df$biospheric\_center)  
  
sd\_above <- mean(average\_df$biospheric\_center) + sd(average\_df$biospheric\_center)

EMM for low and high bio

# emmeans  
atlist <- list(biospheric\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ biospheric\_center, at = atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| biospheric\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| -0.99 | 0.34 | 0.03 | Inf | 0.29 | 0.40 |
| 0.99 | 0.59 | 0.03 | Inf | 0.53 | 0.65 |

Compare EMM for low and high bio

# custom contrast  
low\_bio <- c(1,0)  
hi\_bio <- c(0,1)  
  
# compare  
effect\_bio <- contrast(emms, method = list("High Bio - Low Bio" = hi\_bio - low\_bio), adjust = "none")  
effect\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| High Bio / Low Bio | 2.74 | 0.58 | Inf | 1 | 4.8 | 0 |

# confidence intervals  
effect\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| High Bio / Low Bio | 2.74 | 0.58 | Inf | 1.82 | 4.14 |

### Framing Condition

EMM for low vs high bio in each framing

atlist <- list(biospheric\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ biospheric\_center\*framing\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| biospheric\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.99 | control\_framing | 0.30 | 0.05 | Inf | 0.21 | 0.41 |
| 0.99 | control\_framing | 0.52 | 0.05 | Inf | 0.42 | 0.62 |
| -0.99 | pro\_env\_framing | 0.36 | 0.04 | Inf | 0.28 | 0.45 |
| 0.99 | pro\_env\_framing | 0.72 | 0.04 | Inf | 0.63 | 0.80 |
| -0.99 | self\_enh\_framing | 0.37 | 0.05 | Inf | 0.27 | 0.48 |
| 0.99 | self\_enh\_framing | 0.51 | 0.06 | Inf | 0.40 | 0.61 |

Compare EMMs for low vs high bio in each framing

# custom contrasts  
control\_low\_bio <- c(1,0,0,0,0,0)  
control\_hi\_bio <- c(0,1,0,0,0,0)  
proenv\_low\_bio <- c(0,0,1,0,0,0)  
proenv\_hi\_bio <- c(0,0,0,1,0,0)  
selfenh\_low\_bio <- c(0,0,0,0,1,0)  
self\_enh\_hi\_bio <- c(0,0,0,0,0,1)  
  
# compare  
effect\_frame\_bio <- contrast(emms, method = list("Control: High Bio - Low Bio" = control\_hi\_bio - control\_low\_bio,  
 "Pro-env: High Bio - Low Bio" = proenv\_hi\_bio - proenv\_low\_bio,  
 "Self-enh: High Bio - Low Bio" = self\_enh\_hi\_bio - selfenh\_low\_bio), adjust = "none")  
effect\_frame\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High Bio / Low Bio | 2.55 | 0.98 | Inf | 1 | 2.44 | 0.015 |
| Pro-env: High Bio / Low Bio | 4.60 | 1.50 | Inf | 1 | 4.67 | 0.000 |
| Self-enh: High Bio / Low Bio | 1.76 | 0.66 | Inf | 1 | 1.50 | 0.133 |

# confidence intervals  
effect\_frame\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High Bio / Low Bio | 2.55 | 0.98 | Inf | 1.20 | 5.40 |
| Pro-env: High Bio / Low Bio | 4.60 | 1.50 | Inf | 2.42 | 8.72 |
| Self-enh: High Bio / Low Bio | 1.76 | 0.66 | Inf | 0.84 | 3.68 |

### Norm Condition

EMM for low vs high bio in each norm

atlist <- list(biospheric\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ biospheric\_center\*norm\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| biospheric\_center | norm\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.99 | control\_norm | 0.38 | 0.06 | Inf | 0.27 | 0.51 |
| 0.99 | control\_norm | 0.46 | 0.07 | Inf | 0.33 | 0.59 |
| -0.99 | descriptive\_norm | 0.32 | 0.06 | Inf | 0.21 | 0.46 |
| 0.99 | descriptive\_norm | 0.66 | 0.07 | Inf | 0.52 | 0.77 |
| -0.99 | convention\_norm | 0.31 | 0.06 | Inf | 0.21 | 0.44 |
| 0.99 | convention\_norm | 0.61 | 0.07 | Inf | 0.47 | 0.73 |
| -0.99 | social\_norm | 0.34 | 0.06 | Inf | 0.24 | 0.47 |
| 0.99 | social\_norm | 0.59 | 0.07 | Inf | 0.46 | 0.72 |
| -0.99 | moral\_norm | 0.35 | 0.08 | Inf | 0.21 | 0.51 |
| 0.99 | moral\_norm | 0.61 | 0.07 | Inf | 0.48 | 0.73 |

Compare EMMs for low vs high bio in each framing

# custom contrasts  
control\_low\_bio <- c(1,rep(0,9))  
control\_hi\_bio <- c(0,1,rep(0,8))  
dn\_low\_bio <- c(0,0,1,rep(0,7))  
dn\_hi\_bio <- c(0,0,0,1,rep(0,6))  
conv\_low\_bio <- c(0,0,0,0,1,rep(0,5))  
conv\_hi\_bio <- c(rep(0,5),1,rep(0,4))  
sn\_low\_bio <- c(rep(0,6),1,0,0,0)  
sn\_hi\_bio <- c(rep(0,7),1,0,0)  
mn\_low\_bio <- c(rep(0,8),1,0)  
mn\_hi\_bio <- c(rep(0,9),1)  
  
# compare  
effect\_norm\_bio <- contrast(emms, method = list("Control: High Bio - Low Bio" = control\_hi\_bio - control\_low\_bio,  
 "DN: High Bio - Low Bio" = dn\_hi\_bio - dn\_low\_bio,  
 "Conv: High Bio - Low Bio" = conv\_hi\_bio - conv\_low\_bio,  
 "SN: High Bio - Low Bio" = sn\_hi\_bio - sn\_low\_bio,  
 "MN: High Bio - Low Bio" = mn\_hi\_bio - mn\_low\_bio), adjust = "none")  
effect\_norm\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High Bio / Low Bio | 1.35 | 0.56 | Inf | 1 | 0.73 | 0.467 |
| DN: High Bio / Low Bio | 4.01 | 1.98 | Inf | 1 | 2.82 | 0.005 |
| Conv: High Bio / Low Bio | 3.37 | 1.53 | Inf | 1 | 2.67 | 0.008 |
| SN: High Bio / Low Bio | 2.81 | 1.26 | Inf | 1 | 2.31 | 0.021 |
| MN: High Bio / Low Bio | 3.02 | 1.62 | Inf | 1 | 2.06 | 0.040 |

# confidence intervals  
effect\_norm\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High Bio / Low Bio | 1.35 | 0.56 | Inf | 0.60 | 3.05 |
| DN: High Bio / Low Bio | 4.01 | 1.98 | Inf | 1.53 | 10.53 |
| Conv: High Bio / Low Bio | 3.37 | 1.53 | Inf | 1.38 | 8.23 |
| SN: High Bio / Low Bio | 2.81 | 1.26 | Inf | 1.17 | 6.77 |
| MN: High Bio / Low Bio | 3.02 | 1.62 | Inf | 1.05 | 8.64 |

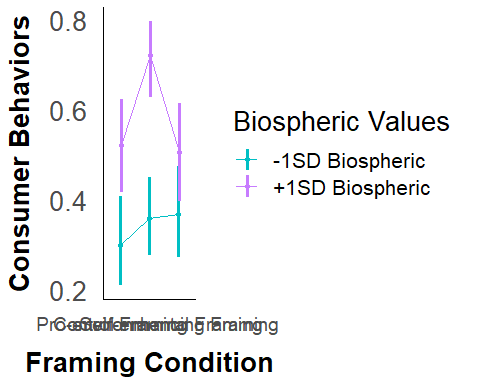
Is the difference between Control Norm and Other Norm different for people low vs high on biospheric values? Does this vary across framing conditions?

### Visualization

text\_settings <- theme(text = element\_text(size = 20)) +  
 theme(plot.title = element\_text(size = 20, face = 'bold')) +  
 theme(axis.title.x = element\_text(face = 'bold')) +  
 theme(axis.title.y = element\_text(face = 'bold')) +  
 theme(axis.text.x = element\_text(size = 14)) +  
 theme(axis.text.y = element\_text(size = 20)) +  
 theme(axis.ticks = element\_blank())

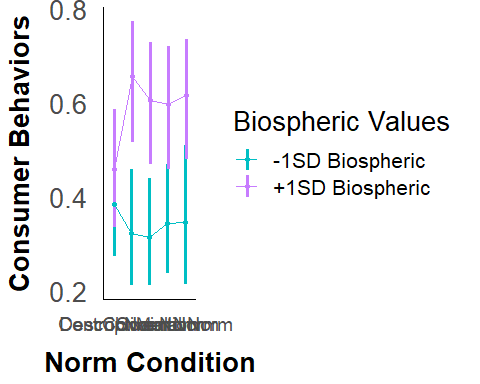
#### Bio x Framing

sd\_below <- mean(average\_df$biospheric\_center) - sd(average\_df$biospheric\_center)  
sd\_above <- mean(average\_df$biospheric\_center) + sd(average\_df$biospheric\_center)  
  
at\_list <- list(biospheric\_center = c(sd\_below, sd\_above))  
  
emmip(log\_mice, biospheric\_center ~ framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Framing Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_framing","pro\_env\_framing", "self\_enh\_framing"), labels = c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Biospheric Values", breaks = c(-0.992493391146803, 0.992493391146803), labels = c("-1SD Biospheric", "+1SD Biospheric"), values = c("#00BFC4","#C77CFF"))



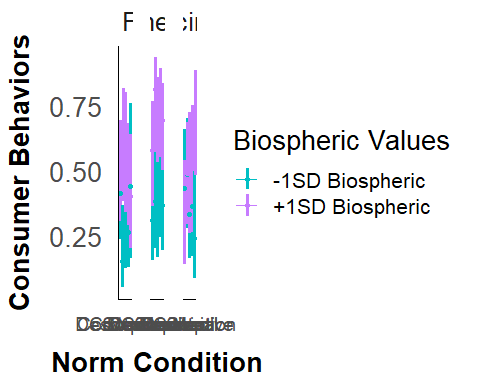
#### Bio x Norm

emmip(log\_mice, biospheric\_center ~ norm\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Biospheric Values", breaks = c(-0.992493391146803, 0.992493391146803), labels = c("-1SD Biospheric", "+1SD Biospheric"), values = c("#00BFC4","#C77CFF"))



#### Bio, Framing, & Norm

emmip(log\_mice, biospheric\_center ~ norm\_condition | framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control", "Descriptive", "Convention", "Social", "Moral")) +  
 facet\_wrap(~framing\_condition, labeller = labeller(framing\_condition = frame\_labs)) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Biospheric Values", breaks = c(-0.992493391146803, 0.992493391146803), labels = c("-1SD Biospheric", "+1SD Biospheric"), values = c("#00BFC4","#C77CFF"))



### Planned Comparisons

#### Storing low (-1SD) and high (+1SD) biospheric values

sd\_below <- mean(average\_df$biospheric\_center) - sd(average\_df$biospheric\_center)  
sd\_above <- mean(average\_df$biospheric\_center) + sd(average\_df$biospheric\_center)

#### Calculate EM Means at low and high bio

atlist <- list(biospheric\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*biospheric\_center\*framing\_condition, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | biospheric\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -0.99 | control\_framing | 0.41 | 0.10 | Inf | 0.24 | 0.62 |
| descriptive\_norm | -0.99 | control\_framing | 0.15 | 0.08 | Inf | 0.05 | 0.37 |
| convention\_norm | -0.99 | control\_framing | 0.28 | 0.10 | Inf | 0.13 | 0.51 |
| social\_norm | -0.99 | control\_framing | 0.26 | 0.09 | Inf | 0.13 | 0.46 |
| moral\_norm | -0.99 | control\_framing | 0.44 | 0.18 | Inf | 0.16 | 0.76 |
| control\_norm | 0.99 | control\_framing | 0.50 | 0.10 | Inf | 0.31 | 0.69 |
| descriptive\_norm | 0.99 | control\_framing | 0.62 | 0.12 | Inf | 0.38 | 0.82 |
| convention\_norm | 0.99 | control\_framing | 0.59 | 0.13 | Inf | 0.34 | 0.80 |
| social\_norm | 0.99 | control\_framing | 0.49 | 0.10 | Inf | 0.29 | 0.68 |
| moral\_norm | 0.99 | control\_framing | 0.40 | 0.12 | Inf | 0.20 | 0.64 |
| control\_norm | -0.99 | pro\_env\_framing | 0.31 | 0.09 | Inf | 0.16 | 0.52 |
| descriptive\_norm | -0.99 | pro\_env\_framing | 0.38 | 0.11 | Inf | 0.20 | 0.60 |
| convention\_norm | -0.99 | pro\_env\_framing | 0.33 | 0.10 | Inf | 0.17 | 0.53 |
| social\_norm | -0.99 | pro\_env\_framing | 0.41 | 0.09 | Inf | 0.24 | 0.60 |
| moral\_norm | -0.99 | pro\_env\_framing | 0.37 | 0.10 | Inf | 0.20 | 0.58 |
| control\_norm | 0.99 | pro\_env\_framing | 0.58 | 0.11 | Inf | 0.36 | 0.77 |
| descriptive\_norm | 0.99 | pro\_env\_framing | 0.81 | 0.09 | Inf | 0.57 | 0.93 |
| convention\_norm | 0.99 | pro\_env\_framing | 0.72 | 0.08 | Inf | 0.53 | 0.86 |
| social\_norm | 0.99 | pro\_env\_framing | 0.76 | 0.09 | Inf | 0.55 | 0.89 |
| moral\_norm | 0.99 | pro\_env\_framing | 0.69 | 0.09 | Inf | 0.50 | 0.84 |
| control\_norm | -0.99 | self\_enh\_framing | 0.43 | 0.12 | Inf | 0.23 | 0.66 |
| descriptive\_norm | -0.99 | self\_enh\_framing | 0.49 | 0.11 | Inf | 0.28 | 0.70 |
| convention\_norm | -0.99 | self\_enh\_framing | 0.33 | 0.11 | Inf | 0.16 | 0.56 |
| social\_norm | -0.99 | self\_enh\_framing | 0.36 | 0.12 | Inf | 0.17 | 0.61 |
| moral\_norm | -0.99 | self\_enh\_framing | 0.24 | 0.11 | Inf | 0.09 | 0.51 |
| control\_norm | 0.99 | self\_enh\_framing | 0.30 | 0.11 | Inf | 0.14 | 0.54 |
| descriptive\_norm | 0.99 | self\_enh\_framing | 0.49 | 0.11 | Inf | 0.30 | 0.69 |
| convention\_norm | 0.99 | self\_enh\_framing | 0.49 | 0.13 | Inf | 0.26 | 0.72 |
| social\_norm | 0.99 | self\_enh\_framing | 0.51 | 0.14 | Inf | 0.27 | 0.75 |
| moral\_norm | 0.99 | self\_enh\_framing | 0.73 | 0.11 | Inf | 0.48 | 0.88 |

#### Custom contrasts

cf\_cn\_low\_bio <- c(1, rep(0,29)) # control framing  
cf\_dn\_low\_bio <- c(0,1,rep(0,28))  
cf\_conv\_low\_bio <- c(0,0,1,rep(0,27))  
cf\_sn\_low\_bio <- c(0,0,0,1,rep(0,26))  
cf\_mn\_low\_bio <- c(rep(0,4),1,(rep(0,25)))  
  
cf\_cn\_hi\_bio <- c(rep(0,5),1,(rep(0,24)))   
cf\_dn\_hi\_bio <- c(rep(0,6),1,(rep(0,23)))  
cf\_conv\_hi\_bio <- c(rep(0,7),1,(rep(0,22)))  
cf\_sn\_hi\_bio <- c(rep(0,8),1,(rep(0,21)))  
cf\_mn\_hi\_bio <- c(rep(0,9),1,(rep(0,20)))  
  
  
pf\_cn\_low\_bio <- c(rep(0,10),1,(rep(0,19))) # pro-environmental framing  
pf\_dn\_low\_bio <- c(rep(0,11),1,(rep(0,18)))  
pf\_conv\_low\_bio <- c(rep(0,12),1,(rep(0,17)))  
pf\_sn\_low\_bio <- c(rep(0,13),1,(rep(0,16)))  
pf\_mn\_low\_bio <- c(rep(0,14),1,(rep(0,15)))  
  
pf\_cn\_hi\_bio <- c(rep(0,15),1,(rep(0,14)))   
pf\_dn\_hi\_bio <- c(rep(0,16),1,(rep(0,13)))  
pf\_conv\_hi\_bio <- c(rep(0,17),1,(rep(0,12)))  
pf\_sn\_hi\_bio <- c(rep(0,18),1,(rep(0,11)))  
pf\_mn\_hi\_bio <- c(rep(0,19),1,(rep(0,10)))  
  
  
sf\_cn\_low\_bio <- c(rep(0,20),1,(rep(0,9))) # self-enhancing framing  
sf\_dn\_low\_bio <- c(rep(0,21),1,(rep(0,8)))  
sf\_conv\_low\_bio <- c(rep(0,22),1,(rep(0,7)))  
sf\_sn\_low\_bio <- c(rep(0,23),1,(rep(0,6)))  
sf\_mn\_low\_bio <- c(rep(0,24),1,(rep(0,5)))  
  
sf\_cn\_hi\_bio <- c(rep(0,25),1,(rep(0,4)))   
sf\_dn\_hi\_bio <- c(rep(0,26),1,(rep(0,3)))  
sf\_conv\_hi\_bio <- c(rep(0,27),1,(rep(0,2)))  
sf\_sn\_hi\_bio <- c(rep(0,28),1,(rep(0,1)))  
sf\_mn\_hi\_bio <- c(rep(0,29),1)

Effect of norm for people low vs high on biospheric values across framing conditions

#### Control framing

controlframe\_lowvshi\_bio <- contrast(combinations,   
 method = list("CF/DN/LowBio - CF/CN/LowBio" = cf\_dn\_low\_bio - cf\_cn\_low\_bio,  
 "CF/Conv/LowBio - CF/CN/LowBio" = cf\_conv\_low\_bio - cf\_cn\_low\_bio,  
 "CF/SN/LowBio - CF/CN/LowBio" = cf\_sn\_low\_bio - cf\_cn\_low\_bio,  
 "CF/MN/LowBio - CF/CN/LowBio" = cf\_mn\_low\_bio - cf\_cn\_low\_bio,  
 "CF/DN/HiBio - CF/CN/HiBio" = cf\_dn\_hi\_bio - cf\_cn\_hi\_bio,  
 "CF/Conv/HiBio - CF/CN/HiBio" = cf\_conv\_hi\_bio - cf\_cn\_hi\_bio,  
 "CF/SN/HiBio - CF/CN/HiBio" = cf\_sn\_hi\_bio - cf\_cn\_hi\_bio,  
 "CF/MN/HiBio - CF/CN/HiBio" = cf\_mn\_hi\_bio - cf\_cn\_hi\_bio),   
 adjust = "none")  
  
controlframe\_lowvshi\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| CF/DN/LowBio / CF/CN/LowBio | 0.26 | 0.19 | Inf | 1 | -1.86 | 0.063 |
| CF/Conv/LowBio / CF/CN/LowBio | 0.55 | 0.36 | Inf | 1 | -0.90 | 0.367 |
| CF/SN/LowBio / CF/CN/LowBio | 0.51 | 0.31 | Inf | 1 | -1.09 | 0.274 |
| CF/MN/LowBio / CF/CN/LowBio | 1.12 | 0.91 | Inf | 1 | 0.14 | 0.888 |
| CF/DN/HiBio / CF/CN/HiBio | 1.67 | 1.08 | Inf | 1 | 0.79 | 0.431 |
| CF/Conv/HiBio / CF/CN/HiBio | 1.45 | 0.97 | Inf | 1 | 0.56 | 0.575 |
| CF/SN/HiBio / CF/CN/HiBio | 0.95 | 0.56 | Inf | 1 | -0.09 | 0.930 |
| CF/MN/HiBio / CF/CN/HiBio | 0.68 | 0.44 | Inf | 1 | -0.60 | 0.547 |

# confidence intervals  
controlframe\_lowvshi\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| CF/DN/LowBio / CF/CN/LowBio | 0.26 | 0.19 | Inf | 0.06 | 1.07 |
| CF/Conv/LowBio / CF/CN/LowBio | 0.55 | 0.36 | Inf | 0.15 | 2.00 |
| CF/SN/LowBio / CF/CN/LowBio | 0.51 | 0.31 | Inf | 0.15 | 1.71 |
| CF/MN/LowBio / CF/CN/LowBio | 1.12 | 0.91 | Inf | 0.23 | 5.52 |
| CF/DN/HiBio / CF/CN/HiBio | 1.67 | 1.08 | Inf | 0.47 | 5.94 |
| CF/Conv/HiBio / CF/CN/HiBio | 1.45 | 0.97 | Inf | 0.39 | 5.36 |
| CF/SN/HiBio / CF/CN/HiBio | 0.95 | 0.56 | Inf | 0.30 | 3.05 |
| CF/MN/HiBio / CF/CN/HiBio | 0.68 | 0.44 | Inf | 0.19 | 2.40 |

Planned comparisons

Custom contrasts

controlframe\_lowvshi\_bio

## contrast odds.ratio SE df null z.ratio p.value  
## CF/DN/LowBio / CF/CN/LowBio 0.258 0.188 Inf 1 -1.861 0.0628  
## CF/Conv/LowBio / CF/CN/LowBio 0.555 0.362 Inf 1 -0.902 0.3672  
## CF/SN/LowBio / CF/CN/LowBio 0.508 0.315 Inf 1 -1.093 0.2744  
## CF/MN/LowBio / CF/CN/LowBio 1.122 0.912 Inf 1 0.141 0.8875  
## CF/DN/HiBio / CF/CN/HiBio 1.667 1.081 Inf 1 0.788 0.4308  
## CF/Conv/HiBio / CF/CN/HiBio 1.452 0.967 Inf 1 0.560 0.5752  
## CF/SN/HiBio / CF/CN/HiBio 0.949 0.565 Inf 1 -0.088 0.9301  
## CF/MN/HiBio / CF/CN/HiBio 0.679 0.437 Inf 1 -0.602 0.5474  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_lowbio <- c(1,rep(0,7))  
conv\_vs\_c\_lowbio <- c(0,1,rep(0,6))  
sn\_vs\_c\_lowbio <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_lowbio <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_hibio <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_hibio <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_hibio <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_hibio <- c(rep(0,7),1)

compare\_bio <- contrast(controlframe\_lowvshi\_bio, method = list("Effect of DN (Low - High Bio)" = dn\_vs\_c\_lowbio - dn\_vs\_c\_hibio,   
 "Effect of Conv (Low - High Bio)" = conv\_vs\_c\_lowbio - conv\_vs\_c\_hibio,  
 "Effect of SN (Low - High Bio)" = sn\_vs\_c\_lowbio - sn\_vs\_c\_hibio,  
 "Effect of MN (Low - High Bio)" = mn\_vs\_c\_lowbio - mn\_vs\_c\_hibio), adjust = "none")  
  
compare\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High Bio) | 0.15 | 0.18 | Inf | 1 | -1.62 | 0.105 |
| Effect of Conv (Low / High Bio) | 0.38 | 0.41 | Inf | 1 | -0.90 | 0.366 |
| Effect of SN (Low / High Bio) | 0.54 | 0.53 | Inf | 1 | -0.63 | 0.528 |
| Effect of MN (Low / High Bio) | 1.65 | 2.03 | Inf | 1 | 0.41 | 0.682 |

# confidence intervals  
compare\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High Bio) | 0.15 | 0.18 | Inf | 0.02 | 1.48 |
| Effect of Conv (Low / High Bio) | 0.38 | 0.41 | Inf | 0.05 | 3.07 |
| Effect of SN (Low / High Bio) | 0.54 | 0.53 | Inf | 0.08 | 3.72 |
| Effect of MN (Low / High Bio) | 1.65 | 2.03 | Inf | 0.15 | 18.25 |

#### Pro-environmental framing

proenvframe\_lowvshi\_bio <- contrast(combinations,   
 method = list("PF/DN/LowBio - PF/CN/LowBio" = pf\_dn\_low\_bio - pf\_cn\_low\_bio,  
 "PF/Conv/LowBio - PF/CN/LowBio" = pf\_conv\_low\_bio - pf\_cn\_low\_bio,  
 "PF/SN/LowBio - PF/CN/LowBio" = pf\_sn\_low\_bio - pf\_cn\_low\_bio,  
 "PF/MN/LowBio - PF/CN/LowBio" = pf\_mn\_low\_bio - pf\_cn\_low\_bio,  
 "PF/DN/HiBio - PF/CN/HiBio" = pf\_dn\_hi\_bio - pf\_cn\_hi\_bio,  
 "PF/Conv/HiBio - PF/CN/HiBio" = pf\_conv\_hi\_bio - pf\_cn\_hi\_bio,  
 "PF/SN/HiBio - PF/CN/HiBio" = pf\_sn\_hi\_bio - pf\_cn\_hi\_bio,  
 "PF/MN/HiBio - PF/CN/HiBio" = pf\_mn\_hi\_bio - pf\_cn\_hi\_bio),   
 adjust = "none")  
  
proenvframe\_lowvshi\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| PF/DN/LowBio / PF/CN/LowBio | 1.38 | 0.87 | Inf | 1 | 0.50 | 0.614 |
| PF/Conv/LowBio / PF/CN/LowBio | 1.07 | 0.67 | Inf | 1 | 0.11 | 0.913 |
| PF/SN/LowBio / PF/CN/LowBio | 1.55 | 0.91 | Inf | 1 | 0.74 | 0.460 |
| PF/MN/LowBio / PF/CN/LowBio | 1.30 | 0.81 | Inf | 1 | 0.42 | 0.677 |
| PF/DN/HiBio / PF/CN/HiBio | 3.17 | 2.37 | Inf | 1 | 1.55 | 0.122 |
| PF/Conv/HiBio / PF/CN/HiBio | 1.90 | 1.17 | Inf | 1 | 1.05 | 0.295 |
| PF/SN/HiBio / PF/CN/HiBio | 2.35 | 1.55 | Inf | 1 | 1.29 | 0.196 |
| PF/MN/HiBio / PF/CN/HiBio | 1.66 | 1.01 | Inf | 1 | 0.83 | 0.406 |

# confidence intervals  
proenvframe\_lowvshi\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| PF/DN/LowBio / PF/CN/LowBio | 1.38 | 0.87 | Inf | 0.40 | 4.78 |
| PF/Conv/LowBio / PF/CN/LowBio | 1.07 | 0.67 | Inf | 0.31 | 3.65 |
| PF/SN/LowBio / PF/CN/LowBio | 1.55 | 0.91 | Inf | 0.49 | 4.91 |
| PF/MN/LowBio / PF/CN/LowBio | 1.30 | 0.81 | Inf | 0.38 | 4.42 |
| PF/DN/HiBio / PF/CN/HiBio | 3.17 | 2.37 | Inf | 0.73 | 13.71 |
| PF/Conv/HiBio / PF/CN/HiBio | 1.90 | 1.17 | Inf | 0.57 | 6.34 |
| PF/SN/HiBio / PF/CN/HiBio | 2.35 | 1.55 | Inf | 0.64 | 8.57 |
| PF/MN/HiBio / PF/CN/HiBio | 1.66 | 1.01 | Inf | 0.50 | 5.45 |

Planned comparisons

Custom contrasts

proenvframe\_lowvshi\_bio

## contrast odds.ratio SE df null z.ratio p.value  
## PF/DN/LowBio / PF/CN/LowBio 1.38 0.875 Inf 1 0.504 0.6142  
## PF/Conv/LowBio / PF/CN/LowBio 1.07 0.669 Inf 1 0.110 0.9126  
## PF/SN/LowBio / PF/CN/LowBio 1.55 0.912 Inf 1 0.740 0.4595  
## PF/MN/LowBio / PF/CN/LowBio 1.30 0.811 Inf 1 0.417 0.6766  
## PF/DN/HiBio / PF/CN/HiBio 3.17 2.369 Inf 1 1.546 0.1221  
## PF/Conv/HiBio / PF/CN/HiBio 1.90 1.168 Inf 1 1.046 0.2954  
## PF/SN/HiBio / PF/CN/HiBio 2.35 1.551 Inf 1 1.293 0.1961  
## PF/MN/HiBio / PF/CN/HiBio 1.66 1.007 Inf 1 0.831 0.4062  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_lowbio <- c(1,rep(0,7))  
conv\_vs\_c\_lowbio <- c(0,1,rep(0,6))  
sn\_vs\_c\_lowbio <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_lowbio <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_hibio <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_hibio <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_hibio <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_hibio <- c(rep(0,7),1)

compare\_bio <- contrast(proenvframe\_lowvshi\_bio, method = list("Effect of DN (Low - High Bio)" = dn\_vs\_c\_lowbio - dn\_vs\_c\_hibio,   
 "Effect of Conv (Low - High Bio)" = conv\_vs\_c\_lowbio - conv\_vs\_c\_hibio,  
 "Effect of SN (Low - High Bio)" = sn\_vs\_c\_lowbio - sn\_vs\_c\_hibio,  
 "Effect of MN (Low - High Bio)" = mn\_vs\_c\_lowbio - mn\_vs\_c\_hibio), adjust = "none")  
  
compare\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High Bio) | 0.43 | 0.49 | Inf | 1 | -0.75 | 0.455 |
| Effect of Conv (Low / High Bio) | 0.56 | 0.57 | Inf | 1 | -0.57 | 0.568 |
| Effect of SN (Low / High Bio) | 0.66 | 0.64 | Inf | 1 | -0.43 | 0.669 |
| Effect of MN (Low / High Bio) | 0.78 | 0.77 | Inf | 1 | -0.25 | 0.804 |

# confidence intervals  
compare\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High Bio) | 0.43 | 0.49 | Inf | 0.05 | 3.88 |
| Effect of Conv (Low / High Bio) | 0.56 | 0.57 | Inf | 0.08 | 4.04 |
| Effect of SN (Low / High Bio) | 0.66 | 0.64 | Inf | 0.10 | 4.46 |
| Effect of MN (Low / High Bio) | 0.78 | 0.77 | Inf | 0.11 | 5.36 |

#### Self-enhancing framing

selfenhframe\_lowvshi\_bio <- contrast(combinations,   
 method = list("SF/DN/LowBio - SF/CN/LowBio" = sf\_dn\_low\_bio - sf\_cn\_low\_bio,  
 "SF/Conv/LowBio - SF/CN/LowBio" = sf\_conv\_low\_bio - sf\_cn\_low\_bio,  
 "SF/SN/LowBio - SF/CN/LowBio" = sf\_sn\_low\_bio - sf\_cn\_low\_bio,  
 "SF/MN/LowBio - SF/CN/LowBio" = sf\_mn\_low\_bio - sf\_cn\_low\_bio,  
 "SF/DN/HiBio - SF/CN/HiBio" = sf\_dn\_hi\_bio - sf\_cn\_hi\_bio,  
 "SF/Conv/HiBio - SF/CN/HiBio" = sf\_conv\_hi\_bio - sf\_cn\_hi\_bio,  
 "SF/SN/HiBio - SF/CN/HiBio" = sf\_sn\_hi\_bio - sf\_cn\_hi\_bio,  
 "SF/MN/HiBio - SF/CN/HiBio" = sf\_mn\_hi\_bio - sf\_cn\_hi\_bio),   
 adjust = "none")  
  
selfenhframe\_lowvshi\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| SF/DN/LowBio / SF/CN/LowBio | 1.25 | 0.83 | Inf | 1 | 0.34 | 0.735 |
| SF/Conv/LowBio / SF/CN/LowBio | 0.66 | 0.44 | Inf | 1 | -0.62 | 0.534 |
| SF/SN/LowBio / SF/CN/LowBio | 0.75 | 0.53 | Inf | 1 | -0.40 | 0.689 |
| SF/MN/LowBio / SF/CN/LowBio | 0.42 | 0.32 | Inf | 1 | -1.13 | 0.259 |
| SF/DN/HiBio / SF/CN/HiBio | 2.19 | 1.44 | Inf | 1 | 1.20 | 0.232 |
| SF/Conv/HiBio / SF/CN/HiBio | 2.19 | 1.58 | Inf | 1 | 1.09 | 0.277 |
| SF/SN/HiBio / SF/CN/HiBio | 2.39 | 1.76 | Inf | 1 | 1.18 | 0.239 |
| SF/MN/HiBio / SF/CN/HiBio | 6.06 | 4.44 | Inf | 1 | 2.46 | 0.014 |

# confidence intervals  
selfenhframe\_lowvshi\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SF/DN/LowBio / SF/CN/LowBio | 1.25 | 0.83 | Inf | 0.34 | 4.57 |
| SF/Conv/LowBio / SF/CN/LowBio | 0.66 | 0.44 | Inf | 0.18 | 2.47 |
| SF/SN/LowBio / SF/CN/LowBio | 0.75 | 0.53 | Inf | 0.19 | 3.00 |
| SF/MN/LowBio / SF/CN/LowBio | 0.42 | 0.32 | Inf | 0.09 | 1.89 |
| SF/DN/HiBio / SF/CN/HiBio | 2.19 | 1.44 | Inf | 0.61 | 7.96 |
| SF/Conv/HiBio / SF/CN/HiBio | 2.19 | 1.58 | Inf | 0.53 | 8.97 |
| SF/SN/HiBio / SF/CN/HiBio | 2.39 | 1.76 | Inf | 0.56 | 10.14 |
| SF/MN/HiBio / SF/CN/HiBio | 6.06 | 4.44 | Inf | 1.44 | 25.46 |

Planned comparisons

Custom contrasts

selfenhframe\_lowvshi\_bio

## contrast odds.ratio SE df null z.ratio p.value  
## SF/DN/LowBio / SF/CN/LowBio 1.251 0.827 Inf 1 0.339 0.7345  
## SF/Conv/LowBio / SF/CN/LowBio 0.657 0.443 Inf 1 -0.622 0.5340  
## SF/SN/LowBio / SF/CN/LowBio 0.754 0.531 Inf 1 -0.400 0.6892  
## SF/MN/LowBio / SF/CN/LowBio 0.421 0.323 Inf 1 -1.128 0.2594  
## SF/DN/HiBio / SF/CN/HiBio 2.195 1.442 Inf 1 1.196 0.2315  
## SF/Conv/HiBio / SF/CN/HiBio 2.187 1.575 Inf 1 1.087 0.2773  
## SF/SN/HiBio / SF/CN/HiBio 2.385 1.761 Inf 1 1.177 0.2391  
## SF/MN/HiBio / SF/CN/HiBio 6.061 4.439 Inf 1 2.460 0.0139  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_lowbio <- c(1,rep(0,7))  
conv\_vs\_c\_lowbio <- c(0,1,rep(0,6))  
sn\_vs\_c\_lowbio <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_lowbio <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_hibio <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_hibio <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_hibio <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_hibio <- c(rep(0,7),1)

compare\_bio <- contrast(selfenhframe\_lowvshi\_bio, method = list("Effect of DN (Low - High Bio)" = dn\_vs\_c\_lowbio - dn\_vs\_c\_hibio,   
 "Effect of Conv (Low - High Bio)" = conv\_vs\_c\_lowbio - conv\_vs\_c\_hibio,  
 "Effect of SN (Low - High Bio)" = sn\_vs\_c\_lowbio - sn\_vs\_c\_hibio,  
 "Effect of MN (Low - High Bio)" = mn\_vs\_c\_lowbio - mn\_vs\_c\_hibio), adjust = "none")  
  
compare\_bio %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High Bio) | 0.57 | 0.62 | Inf | 1 | -0.52 | 0.604 |
| Effect of Conv (Low / High Bio) | 0.30 | 0.34 | Inf | 1 | -1.06 | 0.291 |
| Effect of SN (Low / High Bio) | 0.32 | 0.38 | Inf | 1 | -0.96 | 0.337 |
| Effect of MN (Low / High Bio) | 0.07 | 0.09 | Inf | 1 | -2.09 | 0.037 |

# confidence intervals  
compare\_bio %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High Bio) | 0.57 | 0.62 | Inf | 0.07 | 4.75 |
| Effect of Conv (Low / High Bio) | 0.30 | 0.34 | Inf | 0.03 | 2.80 |
| Effect of SN (Low / High Bio) | 0.32 | 0.38 | Inf | 0.03 | 3.32 |
| Effect of MN (Low / High Bio) | 0.07 | 0.09 | Inf | 0.01 | 0.85 |

## Altruistic values

### Overall effect

Storing low (-1SD) and high (+1SD) altruistic values

sd\_below <- mean(average\_df$altruistic\_center) - sd(average\_df$altruistic\_center)  
  
sd\_above <- mean(average\_df$altruistic\_center) + sd(average\_df$altruistic\_center)

EMM for low and high alt

# emmeans  
atlist <- list(altruistic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ altruistic\_center, at = atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| altruistic\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| -0.8 | 0.42 | 0.03 | Inf | 0.35 | 0.48 |
| 0.8 | 0.51 | 0.03 | Inf | 0.44 | 0.57 |

Compare EMM for low and high alt

# custom contrast  
low\_alt <- c(1,0)  
hi\_alt <- c(0,1)  
  
# compare  
effect\_alt <- contrast(emms, method = list("High alt - Low alt" = hi\_alt - low\_alt), adjust = "none")  
effect\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| High alt / Low alt | 1.44 | 0.34 | Inf | 1 | 1.53 | 0.127 |

# confidence intervals  
effect\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| High alt / Low alt | 1.44 | 0.34 | Inf | 0.9 | 2.29 |

### Framing Condition

EMM for low vs high alt in each framing

atlist <- list(altruistic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ altruistic\_center\*framing\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| altruistic\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.8 | control\_framing | 0.38 | 0.05 | Inf | 0.29 | 0.48 |
| 0.8 | control\_framing | 0.43 | 0.06 | Inf | 0.32 | 0.55 |
| -0.8 | pro\_env\_framing | 0.60 | 0.06 | Inf | 0.48 | 0.71 |
| 0.8 | pro\_env\_framing | 0.49 | 0.06 | Inf | 0.38 | 0.60 |
| -0.8 | self\_enh\_framing | 0.28 | 0.05 | Inf | 0.19 | 0.40 |
| 0.8 | self\_enh\_framing | 0.60 | 0.06 | Inf | 0.48 | 0.71 |

Compare EMMs for low vs high alt in each framing

# custom contrasts  
control\_low\_alt <- c(1,0,0,0,0,0)  
control\_hi\_alt <- c(0,1,0,0,0,0)  
proenv\_low\_alt <- c(0,0,1,0,0,0)  
proenv\_hi\_alt <- c(0,0,0,1,0,0)  
selfenh\_low\_alt <- c(0,0,0,0,1,0)  
self\_enh\_hi\_alt <- c(0,0,0,0,0,1)  
  
# compare  
effect\_frame\_alt <- contrast(emms, method = list("Control: High alt - Low alt" = control\_hi\_alt - control\_low\_alt,  
 "Pro-env: High alt - Low alt" = proenv\_hi\_alt - proenv\_low\_alt,  
 "Self-enh: High alt - Low alt" = self\_enh\_hi\_alt - selfenh\_low\_alt), adjust = "none")  
effect\_frame\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High alt / Low alt | 1.23 | 0.47 | Inf | 1 | 0.55 | 0.580 |
| Pro-env: High alt / Low alt | 0.63 | 0.25 | Inf | 1 | -1.16 | 0.248 |
| Self-enh: High alt / Low alt | 3.81 | 1.65 | Inf | 1 | 3.08 | 0.002 |

# confidence intervals  
effect\_frame\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High alt / Low alt | 1.23 | 0.47 | Inf | 0.59 | 2.59 |
| Pro-env: High alt / Low alt | 0.63 | 0.25 | Inf | 0.29 | 1.38 |
| Self-enh: High alt / Low alt | 3.81 | 1.65 | Inf | 1.63 | 8.92 |

### Norm Condition

EMM for low vs high alt in each norm

atlist <- list(altruistic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ altruistic\_center\*norm\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| altruistic\_center | norm\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.8 | control\_norm | 0.34 | 0.07 | Inf | 0.21 | 0.49 |
| 0.8 | control\_norm | 0.50 | 0.08 | Inf | 0.36 | 0.65 |
| -0.8 | descriptive\_norm | 0.62 | 0.08 | Inf | 0.46 | 0.76 |
| 0.8 | descriptive\_norm | 0.36 | 0.07 | Inf | 0.24 | 0.50 |
| -0.8 | convention\_norm | 0.36 | 0.07 | Inf | 0.24 | 0.51 |
| 0.8 | convention\_norm | 0.55 | 0.07 | Inf | 0.42 | 0.68 |
| -0.8 | social\_norm | 0.39 | 0.08 | Inf | 0.25 | 0.54 |
| 0.8 | social\_norm | 0.55 | 0.07 | Inf | 0.40 | 0.68 |
| -0.8 | moral\_norm | 0.38 | 0.06 | Inf | 0.27 | 0.51 |
| 0.8 | moral\_norm | 0.58 | 0.08 | Inf | 0.42 | 0.72 |

Compare EMMs for low vs high alt in each framing

# custom contrasts  
control\_low\_alt <- c(1,rep(0,9))  
control\_hi\_alt <- c(0,1,rep(0,8))  
dn\_low\_alt <- c(0,0,1,rep(0,7))  
dn\_hi\_alt <- c(0,0,0,1,rep(0,6))  
conv\_low\_alt <- c(0,0,0,0,1,rep(0,5))  
conv\_hi\_alt <- c(rep(0,5),1,rep(0,4))  
sn\_low\_alt <- c(rep(0,6),1,0,0,0)  
sn\_hi\_alt <- c(rep(0,7),1,0,0)  
mn\_low\_alt <- c(rep(0,8),1,0)  
mn\_hi\_alt <- c(rep(0,9),1)  
  
# compare  
effect\_norm\_alt <- contrast(emms, method = list("Control: High alt - Low alt" = control\_hi\_alt - control\_low\_alt,  
 "DN: High alt - Low alt" = dn\_hi\_alt - dn\_low\_alt,  
 "Conv: High alt - Low alt" = conv\_hi\_alt - conv\_low\_alt,  
 "SN: High alt - Low alt" = sn\_hi\_alt - sn\_low\_alt,  
 "MN: High alt - Low alt" = mn\_hi\_alt - mn\_low\_alt), adjust = "none")  
effect\_norm\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High alt / Low alt | 1.97 | 1.09 | Inf | 1 | 1.23 | 0.218 |
| DN: High alt / Low alt | 0.34 | 0.19 | Inf | 1 | -1.93 | 0.053 |
| Conv: High alt / Low alt | 2.19 | 1.07 | Inf | 1 | 1.61 | 0.107 |
| SN: High alt / Low alt | 1.89 | 1.00 | Inf | 1 | 1.21 | 0.228 |
| MN: High alt / Low alt | 2.18 | 1.06 | Inf | 1 | 1.61 | 0.108 |

# confidence intervals  
effect\_norm\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High alt / Low alt | 1.97 | 1.09 | Inf | 0.67 | 5.84 |
| DN: High alt / Low alt | 0.34 | 0.19 | Inf | 0.12 | 1.01 |
| Conv: High alt / Low alt | 2.19 | 1.07 | Inf | 0.84 | 5.69 |
| SN: High alt / Low alt | 1.89 | 1.00 | Inf | 0.67 | 5.32 |
| MN: High alt / Low alt | 2.18 | 1.06 | Inf | 0.84 | 5.66 |

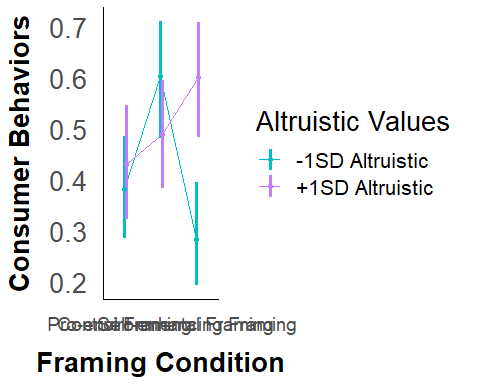
Is the difference between Control Norm and Other Norm different for people low vs high on altruistic values? Does this vary across framing conditions?

### Visualization

text\_settings <- theme(text = element\_text(size = 20)) +  
 theme(plot.title = element\_text(size = 20, face = 'bold')) +  
 theme(axis.title.x = element\_text(face = 'bold')) +  
 theme(axis.title.y = element\_text(face = 'bold')) +  
 theme(axis.text.x = element\_text(size = 14)) +  
 theme(axis.text.y = element\_text(size = 20)) +  
 theme(axis.ticks = element\_blank())

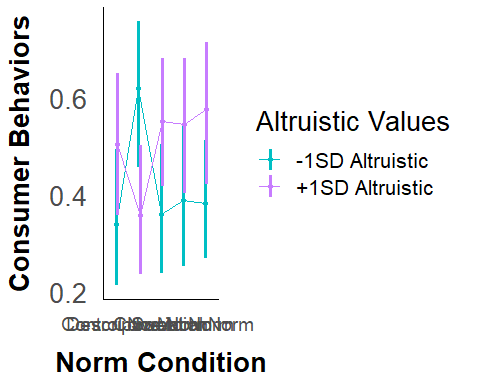
#### Alt x Framing

sd\_below <- mean(average\_df$altruistic\_center) - sd(average\_df$altruistic\_center)  
sd\_above <- mean(average\_df$altruistic\_center) + sd(average\_df$altruistic\_center)  
  
at\_list <- list(altruistic\_center = c(sd\_below, sd\_above))  
  
emmip(log\_mice, altruistic\_center ~ framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Framing Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_framing","pro\_env\_framing", "self\_enh\_framing"), labels = c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Altruistic Values", breaks = c(-0.802959343713252, 0.802959343713252), labels = c("-1SD Altruistic", "+1SD Altruistic"), values = c("#00BFC4","#C77CFF"))



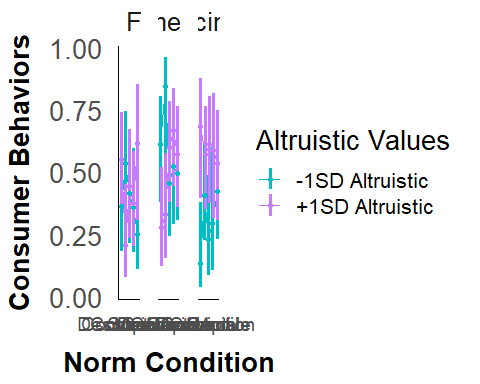
#### Alt x Norm

emmip(log\_mice, altruistic\_center ~ norm\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Altruistic Values", breaks = c(-0.802959343713252, 0.802959343713252), labels = c("-1SD Altruistic", "+1SD Altruistic"), values = c("#00BFC4","#C77CFF"))



#### Alt, Framing, Norm

emmip(log\_mice, altruistic\_center ~ norm\_condition | framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control", "Descriptive", "Convention", "Social", "Moral")) +  
 facet\_wrap(~framing\_condition, labeller = labeller(framing\_condition = frame\_labs)) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Altruistic Values", breaks = c(-0.802959343713252, 0.802959343713252), labels = c("-1SD Altruistic", "+1SD Altruistic"), values = c("#00BFC4","#C77CFF"))



### Planned Comparisons

#### Storing low (-1SD) and high (+1SD) altspheric values

sd\_below <- mean(average\_df$altruistic\_center) - sd(average\_df$altruistic\_center)  
sd\_above <- mean(average\_df$altruistic\_center) + sd(average\_df$altruistic\_center)

#### Calculate EM Means at low and high alt

atlist <- list(altruistic\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*altruistic\_center\*framing\_condition, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | altruistic\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -0.8 | control\_framing | 0.36 | 0.11 | Inf | 0.18 | 0.59 |
| descriptive\_norm | -0.8 | control\_framing | 0.54 | 0.12 | Inf | 0.31 | 0.74 |
| convention\_norm | -0.8 | control\_framing | 0.41 | 0.12 | Inf | 0.21 | 0.65 |
| social\_norm | -0.8 | control\_framing | 0.36 | 0.11 | Inf | 0.18 | 0.60 |
| moral\_norm | -0.8 | control\_framing | 0.25 | 0.09 | Inf | 0.11 | 0.47 |
| control\_norm | 0.8 | control\_framing | 0.55 | 0.10 | Inf | 0.35 | 0.74 |
| descriptive\_norm | 0.8 | control\_framing | 0.21 | 0.10 | Inf | 0.08 | 0.45 |
| convention\_norm | 0.8 | control\_framing | 0.44 | 0.12 | Inf | 0.24 | 0.67 |
| social\_norm | 0.8 | control\_framing | 0.37 | 0.10 | Inf | 0.20 | 0.59 |
| moral\_norm | 0.8 | control\_framing | 0.62 | 0.15 | Inf | 0.31 | 0.85 |
| control\_norm | -0.8 | pro\_env\_framing | 0.61 | 0.12 | Inf | 0.38 | 0.81 |
| descriptive\_norm | -0.8 | pro\_env\_framing | 0.84 | 0.10 | Inf | 0.54 | 0.96 |
| convention\_norm | -0.8 | pro\_env\_framing | 0.46 | 0.12 | Inf | 0.24 | 0.69 |
| social\_norm | -0.8 | pro\_env\_framing | 0.52 | 0.13 | Inf | 0.29 | 0.75 |
| moral\_norm | -0.8 | pro\_env\_framing | 0.50 | 0.10 | Inf | 0.31 | 0.69 |
| control\_norm | 0.8 | pro\_env\_framing | 0.28 | 0.11 | Inf | 0.12 | 0.52 |
| descriptive\_norm | 0.8 | pro\_env\_framing | 0.33 | 0.11 | Inf | 0.15 | 0.58 |
| convention\_norm | 0.8 | pro\_env\_framing | 0.60 | 0.11 | Inf | 0.38 | 0.79 |
| social\_norm | 0.8 | pro\_env\_framing | 0.67 | 0.11 | Inf | 0.44 | 0.84 |
| moral\_norm | 0.8 | pro\_env\_framing | 0.57 | 0.11 | Inf | 0.36 | 0.76 |
| control\_norm | -0.8 | self\_enh\_framing | 0.13 | 0.08 | Inf | 0.04 | 0.38 |
| descriptive\_norm | -0.8 | self\_enh\_framing | 0.41 | 0.10 | Inf | 0.23 | 0.61 |
| convention\_norm | -0.8 | self\_enh\_framing | 0.23 | 0.10 | Inf | 0.09 | 0.49 |
| social\_norm | -0.8 | self\_enh\_framing | 0.29 | 0.14 | Inf | 0.10 | 0.60 |
| moral\_norm | -0.8 | self\_enh\_framing | 0.42 | 0.11 | Inf | 0.23 | 0.64 |
| control\_norm | 0.8 | self\_enh\_framing | 0.69 | 0.13 | Inf | 0.40 | 0.88 |
| descriptive\_norm | 0.8 | self\_enh\_framing | 0.57 | 0.11 | Inf | 0.35 | 0.77 |
| convention\_norm | 0.8 | self\_enh\_framing | 0.61 | 0.12 | Inf | 0.37 | 0.81 |
| social\_norm | 0.8 | self\_enh\_framing | 0.59 | 0.14 | Inf | 0.31 | 0.82 |
| moral\_norm | 0.8 | self\_enh\_framing | 0.54 | 0.12 | Inf | 0.31 | 0.75 |

### Custom contrasts

cf\_cn\_low\_alt <- c(1, rep(0,29)) # control framing  
cf\_dn\_low\_alt <- c(0,1,rep(0,28))  
cf\_conv\_low\_alt <- c(0,0,1,rep(0,27))  
cf\_sn\_low\_alt <- c(0,0,0,1,rep(0,26))  
cf\_mn\_low\_alt <- c(rep(0,4),1,(rep(0,25)))  
  
cf\_cn\_hi\_alt <- c(rep(0,5),1,(rep(0,24)))   
cf\_dn\_hi\_alt <- c(rep(0,6),1,(rep(0,23)))  
cf\_conv\_hi\_alt <- c(rep(0,7),1,(rep(0,22)))  
cf\_sn\_hi\_alt <- c(rep(0,8),1,(rep(0,21)))  
cf\_mn\_hi\_alt <- c(rep(0,9),1,(rep(0,20)))  
  
  
pf\_cn\_low\_alt <- c(rep(0,10),1,(rep(0,19))) # pro-environmental framing  
pf\_dn\_low\_alt <- c(rep(0,11),1,(rep(0,18)))  
pf\_conv\_low\_alt <- c(rep(0,12),1,(rep(0,17)))  
pf\_sn\_low\_alt <- c(rep(0,13),1,(rep(0,16)))  
pf\_mn\_low\_alt <- c(rep(0,14),1,(rep(0,15)))  
  
pf\_cn\_hi\_alt <- c(rep(0,15),1,(rep(0,14)))   
pf\_dn\_hi\_alt <- c(rep(0,16),1,(rep(0,13)))  
pf\_conv\_hi\_alt <- c(rep(0,17),1,(rep(0,12)))  
pf\_sn\_hi\_alt <- c(rep(0,18),1,(rep(0,11)))  
pf\_mn\_hi\_alt <- c(rep(0,19),1,(rep(0,10)))  
  
  
sf\_cn\_low\_alt <- c(rep(0,20),1,(rep(0,9))) # self-enhancing framing  
sf\_dn\_low\_alt <- c(rep(0,21),1,(rep(0,8)))  
sf\_conv\_low\_alt <- c(rep(0,22),1,(rep(0,7)))  
sf\_sn\_low\_alt <- c(rep(0,23),1,(rep(0,6)))  
sf\_mn\_low\_alt <- c(rep(0,24),1,(rep(0,5)))  
  
sf\_cn\_hi\_alt <- c(rep(0,25),1,(rep(0,4)))   
sf\_dn\_hi\_alt <- c(rep(0,26),1,(rep(0,3)))  
sf\_conv\_hi\_alt <- c(rep(0,27),1,(rep(0,2)))  
sf\_sn\_hi\_alt <- c(rep(0,28),1,(rep(0,1)))  
sf\_mn\_hi\_alt <- c(rep(0,29),1)

Effect of norm for people low vs high on altruistic values across framing conditions

#### Control framing

controlframe\_lowvshi\_alt <- contrast(combinations,   
 method = list("CF/DN/LowAlt - CF/CN/LowAlt" = cf\_dn\_low\_alt - cf\_cn\_low\_alt,  
 "CF/Conv/LowAlt - CF/CN/LowAlt" = cf\_conv\_low\_alt - cf\_cn\_low\_alt,  
 "CF/SN/LowAlt - CF/CN/LowAlt" = cf\_sn\_low\_alt - cf\_cn\_low\_alt,  
 "CF/MN/LowAlt - CF/CN/LowAlt" = cf\_mn\_low\_alt - cf\_cn\_low\_alt,  
 "CF/DN/HiAlt - CF/CN/HiAlt" = cf\_dn\_hi\_alt - cf\_cn\_hi\_alt,  
 "CF/Conv/HiAlt - CF/CN/HiAlt" = cf\_conv\_hi\_alt - cf\_cn\_hi\_alt,  
 "CF/SN/HiAlt - CF/CN/HiAlt" = cf\_sn\_hi\_alt - cf\_cn\_hi\_alt,  
 "CF/MN/HiAlt - CF/CN/HiAlt" = cf\_mn\_hi\_alt - cf\_cn\_hi\_alt),   
 adjust = "none")  
  
controlframe\_lowvshi\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| CF/DN/LowAlt / CF/CN/LowAlt | 2.04 | 1.36 | Inf | 1 | 1.06 | 0.287 |
| CF/Conv/LowAlt / CF/CN/LowAlt | 1.25 | 0.85 | Inf | 1 | 0.33 | 0.744 |
| CF/SN/LowAlt / CF/CN/LowAlt | 1.00 | 0.68 | Inf | 1 | -0.01 | 0.995 |
| CF/MN/LowAlt / CF/CN/LowAlt | 0.59 | 0.40 | Inf | 1 | -0.77 | 0.439 |
| CF/DN/HiAlt / CF/CN/HiAlt | 0.21 | 0.15 | Inf | 1 | -2.17 | 0.030 |
| CF/Conv/HiAlt / CF/CN/HiAlt | 0.64 | 0.41 | Inf | 1 | -0.68 | 0.495 |
| CF/SN/HiAlt / CF/CN/HiAlt | 0.48 | 0.30 | Inf | 1 | -1.18 | 0.238 |
| CF/MN/HiAlt / CF/CN/HiAlt | 1.30 | 0.99 | Inf | 1 | 0.34 | 0.734 |

# confidence intervals  
controlframe\_lowvshi\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| CF/DN/LowAlt / CF/CN/LowAlt | 2.04 | 1.36 | Inf | 0.55 | 7.56 |
| CF/Conv/LowAlt / CF/CN/LowAlt | 1.25 | 0.85 | Inf | 0.33 | 4.75 |
| CF/SN/LowAlt / CF/CN/LowAlt | 1.00 | 0.68 | Inf | 0.26 | 3.81 |
| CF/MN/LowAlt / CF/CN/LowAlt | 0.59 | 0.40 | Inf | 0.15 | 2.26 |
| CF/DN/HiAlt / CF/CN/HiAlt | 0.21 | 0.15 | Inf | 0.05 | 0.86 |
| CF/Conv/HiAlt / CF/CN/HiAlt | 0.64 | 0.41 | Inf | 0.18 | 2.27 |
| CF/SN/HiAlt / CF/CN/HiAlt | 0.48 | 0.30 | Inf | 0.15 | 1.61 |
| CF/MN/HiAlt / CF/CN/HiAlt | 1.30 | 0.99 | Inf | 0.29 | 5.82 |

Planned Comparisons

Custom contrasts

controlframe\_lowvshi\_alt

## contrast odds.ratio SE df null z.ratio p.value  
## CF/DN/LowAlt / CF/CN/LowAlt 2.037 1.362 Inf 1 1.064 0.2873  
## CF/Conv/LowAlt / CF/CN/LowAlt 1.250 0.851 Inf 1 0.327 0.7436  
## CF/SN/LowAlt / CF/CN/LowAlt 0.996 0.682 Inf 1 -0.006 0.9952  
## CF/MN/LowAlt / CF/CN/LowAlt 0.587 0.404 Inf 1 -0.774 0.4392  
## CF/DN/HiAlt / CF/CN/HiAlt 0.211 0.152 Inf 1 -2.167 0.0302  
## CF/Conv/HiAlt / CF/CN/HiAlt 0.645 0.414 Inf 1 -0.683 0.4946  
## CF/SN/HiAlt / CF/CN/HiAlt 0.484 0.298 Inf 1 -1.180 0.2381  
## CF/MN/HiAlt / CF/CN/HiAlt 1.297 0.994 Inf 1 0.339 0.7343  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowAlt <- c(1,rep(0,7))  
conv\_vs\_c\_LowAlt <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowAlt <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowAlt <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiAlt <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiAlt <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiAlt <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiAlt <- c(rep(0,7),1)

compare\_alt <- contrast(controlframe\_lowvshi\_alt, method = list("Effect of DN (Low - High alt)" = dn\_vs\_c\_LowAlt - dn\_vs\_c\_HiAlt,   
 "Effect of Conv (Low - High alt)" = conv\_vs\_c\_LowAlt - conv\_vs\_c\_HiAlt,  
 "Effect of SN (Low - High alt)" = sn\_vs\_c\_LowAlt - sn\_vs\_c\_HiAlt,  
 "Effect of MN (Low - High alt)" = mn\_vs\_c\_LowAlt - mn\_vs\_c\_HiAlt), adjust = "none")  
  
compare\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High alt) | 9.64 | 11.20 | Inf | 1 | 1.95 | 0.051 |
| Effect of Conv (Low / High alt) | 1.94 | 2.07 | Inf | 1 | 0.62 | 0.536 |
| Effect of SN (Low / High alt) | 2.06 | 2.25 | Inf | 1 | 0.66 | 0.510 |
| Effect of MN (Low / High alt) | 0.45 | 0.55 | Inf | 1 | -0.65 | 0.514 |

# confidence intervals  
compare\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High alt) | 9.64 | 11.20 | Inf | 0.99 | 94.00 |
| Effect of Conv (Low / High alt) | 1.94 | 2.07 | Inf | 0.24 | 15.78 |
| Effect of SN (Low / High alt) | 2.06 | 2.25 | Inf | 0.24 | 17.55 |
| Effect of MN (Low / High alt) | 0.45 | 0.55 | Inf | 0.04 | 4.88 |

#### Pro-environmental framing

proenvframe\_lowvshi\_alt <- contrast(combinations,   
 method = list("PF/DN/LowAlt - PF/CN/LowAlt" = pf\_dn\_low\_alt - pf\_cn\_low\_alt,  
 "PF/Conv/LowAlt - PF/CN/LowAlt" = pf\_conv\_low\_alt - pf\_cn\_low\_alt,  
 "PF/SN/LowAlt - PF/CN/LowAlt" = pf\_sn\_low\_alt - pf\_cn\_low\_alt,  
 "PF/MN/LowAlt - PF/CN/LowAlt" = pf\_mn\_low\_alt - pf\_cn\_low\_alt,  
 "PF/DN/HiAlt - PF/CN/HiAlt" = pf\_dn\_hi\_alt - pf\_cn\_hi\_alt,  
 "PF/Conv/HiAlt - PF/CN/HiAlt" = pf\_conv\_hi\_alt - pf\_cn\_hi\_alt,  
 "PF/SN/HiAlt - PF/CN/HiAlt" = pf\_sn\_hi\_alt - pf\_cn\_hi\_alt,  
 "PF/MN/HiAlt - PF/CN/HiAlt" = pf\_mn\_hi\_alt - pf\_cn\_hi\_alt),   
 adjust = "none")  
  
proenvframe\_lowvshi\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| PF/DN/LowAlt / PF/CN/LowAlt | 3.41 | 3.14 | Inf | 1 | 1.33 | 0.183 |
| PF/Conv/LowAlt / PF/CN/LowAlt | 0.53 | 0.36 | Inf | 1 | -0.93 | 0.355 |
| PF/SN/LowAlt / PF/CN/LowAlt | 0.69 | 0.49 | Inf | 1 | -0.52 | 0.600 |
| PF/MN/LowAlt / PF/CN/LowAlt | 0.62 | 0.39 | Inf | 1 | -0.76 | 0.449 |
| PF/DN/HiAlt / PF/CN/HiAlt | 1.28 | 0.94 | Inf | 1 | 0.34 | 0.736 |
| PF/Conv/HiAlt / PF/CN/HiAlt | 3.85 | 2.67 | Inf | 1 | 1.95 | 0.051 |
| PF/SN/HiAlt / PF/CN/HiAlt | 5.25 | 3.69 | Inf | 1 | 2.36 | 0.018 |
| PF/MN/HiAlt / PF/CN/HiAlt | 3.48 | 2.38 | Inf | 1 | 1.82 | 0.069 |

# confidence intervals  
proenvframe\_lowvshi\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| PF/DN/LowAlt / PF/CN/LowAlt | 3.41 | 3.14 | Inf | 0.56 | 20.78 |
| PF/Conv/LowAlt / PF/CN/LowAlt | 0.53 | 0.36 | Inf | 0.14 | 2.04 |
| PF/SN/LowAlt / PF/CN/LowAlt | 0.69 | 0.49 | Inf | 0.17 | 2.74 |
| PF/MN/LowAlt / PF/CN/LowAlt | 0.62 | 0.39 | Inf | 0.18 | 2.15 |
| PF/DN/HiAlt / PF/CN/HiAlt | 1.28 | 0.94 | Inf | 0.30 | 5.41 |
| PF/Conv/HiAlt / PF/CN/HiAlt | 3.85 | 2.67 | Inf | 0.99 | 14.96 |
| PF/SN/HiAlt / PF/CN/HiAlt | 5.25 | 3.69 | Inf | 1.32 | 20.84 |
| PF/MN/HiAlt / PF/CN/HiAlt | 3.48 | 2.38 | Inf | 0.91 | 13.32 |

Planned Comparisons

Custom contrasts

proenvframe\_lowvshi\_alt

## contrast odds.ratio SE df null z.ratio p.value  
## PF/DN/LowAlt / PF/CN/LowAlt 3.410 3.144 Inf 1 1.330 0.1834  
## PF/Conv/LowAlt / PF/CN/LowAlt 0.529 0.364 Inf 1 -0.926 0.3546  
## PF/SN/LowAlt / PF/CN/LowAlt 0.692 0.486 Inf 1 -0.525 0.5999  
## PF/MN/LowAlt / PF/CN/LowAlt 0.618 0.393 Inf 1 -0.756 0.4494  
## PF/DN/HiAlt / PF/CN/HiAlt 1.281 0.942 Inf 1 0.337 0.7359  
## PF/Conv/HiAlt / PF/CN/HiAlt 3.853 2.666 Inf 1 1.949 0.0513  
## PF/SN/HiAlt / PF/CN/HiAlt 5.253 3.693 Inf 1 2.359 0.0183  
## PF/MN/HiAlt / PF/CN/HiAlt 3.478 2.383 Inf 1 1.819 0.0689  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowAlt <- c(1,rep(0,7))  
conv\_vs\_c\_LowAlt <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowAlt <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowAlt <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiAlt <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiAlt <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiAlt <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiAlt <- c(rep(0,7),1)

compare\_alt <- contrast(proenvframe\_lowvshi\_alt, method = list("Effect of DN (Low - High alt)" = dn\_vs\_c\_LowAlt - dn\_vs\_c\_HiAlt,   
 "Effect of Conv (Low - High alt)" = conv\_vs\_c\_LowAlt - conv\_vs\_c\_HiAlt,  
 "Effect of SN (Low - High alt)" = sn\_vs\_c\_LowAlt - sn\_vs\_c\_HiAlt,  
 "Effect of MN (Low - High alt)" = mn\_vs\_c\_LowAlt - mn\_vs\_c\_HiAlt), adjust = "none")  
  
compare\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High alt) | 2.66 | 3.86 | Inf | 1 | 0.67 | 0.500 |
| Effect of Conv (Low / High alt) | 0.14 | 0.16 | Inf | 1 | -1.69 | 0.091 |
| Effect of SN (Low / High alt) | 0.13 | 0.15 | Inf | 1 | -1.74 | 0.082 |
| Effect of MN (Low / High alt) | 0.18 | 0.19 | Inf | 1 | -1.58 | 0.113 |

# confidence intervals  
compare\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High alt) | 2.66 | 3.86 | Inf | 0.15 | 45.76 |
| Effect of Conv (Low / High alt) | 0.14 | 0.16 | Inf | 0.01 | 1.37 |
| Effect of SN (Low / High alt) | 0.13 | 0.15 | Inf | 0.01 | 1.30 |
| Effect of MN (Low / High alt) | 0.18 | 0.19 | Inf | 0.02 | 1.51 |

#### Self-enhancing framing

selfenhframe\_lowvshi\_alt <- contrast(combinations,   
 method = list("SF/DN/LowAlt - SF/CN/LowAlt" = sf\_dn\_low\_alt - sf\_cn\_low\_alt,  
 "SF/Conv/LowAlt - SF/CN/LowAlt" = sf\_conv\_low\_alt - sf\_cn\_low\_alt,  
 "SF/SN/LowAlt - SF/CN/LowAlt" = sf\_sn\_low\_alt - sf\_cn\_low\_alt,  
 "SF/MN/LowAlt - SF/CN/LowAlt" = sf\_mn\_low\_alt - sf\_cn\_low\_alt,  
 "SF/DN/HiAlt - SF/CN/HiAlt" = sf\_dn\_hi\_alt - sf\_cn\_hi\_alt,  
 "SF/Conv/HiAlt - SF/CN/HiAlt" = sf\_conv\_hi\_alt - sf\_cn\_hi\_alt,  
 "SF/SN/HiAlt - SF/CN/HiAlt" = sf\_sn\_hi\_alt - sf\_cn\_hi\_alt,  
 "SF/MN/HiAlt - SF/CN/HiAlt" = sf\_mn\_hi\_alt - sf\_cn\_hi\_alt),   
 adjust = "none")  
  
selfenhframe\_lowvshi\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| SF/DN/LowAlt / SF/CN/LowAlt | 4.51 | 3.76 | Inf | 1 | 1.81 | 0.071 |
| SF/Conv/LowAlt / SF/CN/LowAlt | 1.99 | 1.84 | Inf | 1 | 0.75 | 0.455 |
| SF/SN/LowAlt / SF/CN/LowAlt | 2.75 | 2.65 | Inf | 1 | 1.05 | 0.293 |
| SF/MN/LowAlt / SF/CN/LowAlt | 4.84 | 4.10 | Inf | 1 | 1.86 | 0.062 |
| SF/DN/HiAlt / SF/CN/HiAlt | 0.61 | 0.47 | Inf | 1 | -0.65 | 0.518 |
| SF/Conv/HiAlt / SF/CN/HiAlt | 0.72 | 0.57 | Inf | 1 | -0.42 | 0.678 |
| SF/SN/HiAlt / SF/CN/HiAlt | 0.65 | 0.55 | Inf | 1 | -0.50 | 0.614 |
| SF/MN/HiAlt / SF/CN/HiAlt | 0.53 | 0.41 | Inf | 1 | -0.82 | 0.412 |

# confidence intervals  
selfenhframe\_lowvshi\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SF/DN/LowAlt / SF/CN/LowAlt | 4.51 | 3.76 | Inf | 0.88 | 23.07 |
| SF/Conv/LowAlt / SF/CN/LowAlt | 1.99 | 1.84 | Inf | 0.33 | 12.13 |
| SF/SN/LowAlt / SF/CN/LowAlt | 2.75 | 2.65 | Inf | 0.42 | 18.20 |
| SF/MN/LowAlt / SF/CN/LowAlt | 4.84 | 4.10 | Inf | 0.92 | 25.47 |
| SF/DN/HiAlt / SF/CN/HiAlt | 0.61 | 0.47 | Inf | 0.14 | 2.74 |
| SF/Conv/HiAlt / SF/CN/HiAlt | 0.72 | 0.57 | Inf | 0.16 | 3.35 |
| SF/SN/HiAlt / SF/CN/HiAlt | 0.65 | 0.55 | Inf | 0.13 | 3.41 |
| SF/MN/HiAlt / SF/CN/HiAlt | 0.53 | 0.41 | Inf | 0.11 | 2.43 |

Planned Comparisons

Custom contrasts

selfenhframe\_lowvshi\_alt

## contrast odds.ratio SE df null z.ratio p.value  
## SF/DN/LowAlt / SF/CN/LowAlt 4.509 3.756 Inf 1 1.808 0.0706  
## SF/Conv/LowAlt / SF/CN/LowAlt 1.991 1.836 Inf 1 0.747 0.4552  
## SF/SN/LowAlt / SF/CN/LowAlt 2.754 2.653 Inf 1 1.052 0.2930  
## SF/MN/LowAlt / SF/CN/LowAlt 4.844 4.102 Inf 1 1.863 0.0624  
## SF/DN/HiAlt / SF/CN/HiAlt 0.609 0.467 Inf 1 -0.647 0.5177  
## SF/Conv/HiAlt / SF/CN/HiAlt 0.722 0.566 Inf 1 -0.415 0.6779  
## SF/SN/HiAlt / SF/CN/HiAlt 0.654 0.551 Inf 1 -0.504 0.6140  
## SF/MN/HiAlt / SF/CN/HiAlt 0.527 0.411 Inf 1 -0.821 0.4115  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowAlt <- c(1,rep(0,7))  
conv\_vs\_c\_LowAlt <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowAlt <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowAlt <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiAlt <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiAlt <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiAlt <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiAlt <- c(rep(0,7),1)

compare\_alt <- contrast(selfenhframe\_lowvshi\_alt, method = list("Effect of DN (Low - High alt)" = dn\_vs\_c\_LowAlt - dn\_vs\_c\_HiAlt,   
 "Effect of Conv (Low - High alt)" = conv\_vs\_c\_LowAlt - conv\_vs\_c\_HiAlt,  
 "Effect of SN (Low - High alt)" = sn\_vs\_c\_LowAlt - sn\_vs\_c\_HiAlt,  
 "Effect of MN (Low - High alt)" = mn\_vs\_c\_LowAlt - mn\_vs\_c\_HiAlt), adjust = "none")  
  
compare\_alt %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High alt) | 7.40 | 10.46 | Inf | 1 | 1.42 | 0.156 |
| Effect of Conv (Low / High alt) | 2.76 | 4.16 | Inf | 1 | 0.67 | 0.502 |
| Effect of SN (Low / High alt) | 4.21 | 6.84 | Inf | 1 | 0.89 | 0.376 |
| Effect of MN (Low / High alt) | 9.19 | 13.10 | Inf | 1 | 1.56 | 0.120 |

# confidence intervals  
compare\_alt %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High alt) | 7.40 | 10.46 | Inf | 0.46 | 117.97 |
| Effect of Conv (Low / High alt) | 2.76 | 4.16 | Inf | 0.14 | 53.07 |
| Effect of SN (Low / High alt) | 4.21 | 6.84 | Inf | 0.17 | 101.51 |
| Effect of MN (Low / High alt) | 9.19 | 13.10 | Inf | 0.56 | 150.36 |

## Egoistic values

### Overall effect

Storing low (-1SD) and high (+1SD) egoistic values

sd\_below <- mean(average\_df$egoistic\_center) - sd(average\_df$egoistic\_center)  
  
sd\_above <- mean(average\_df$egoistic\_center) + sd(average\_df$egoistic\_center)

EMM for low and high ego

# emmeans  
atlist <- list(egoistic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ egoistic\_center, at = atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| egoistic\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| -0.92 | 0.63 | 0.03 | Inf | 0.57 | 0.68 |
| 0.92 | 0.31 | 0.02 | Inf | 0.26 | 0.35 |

Compare EMM for low and high ego

# custom contrast  
low\_ego <- c(1,0)  
hi\_ego <- c(0,1)  
  
# compare  
effect\_ego <- contrast(emms, method = list("High ego - Low ego" = hi\_ego - low\_ego), adjust = "none")  
effect\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| High ego / Low ego | 0.26 | 0.05 | Inf | 1 | -7.29 | 0 |

# confidence intervals  
effect\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| High ego / Low ego | 0.26 | 0.05 | Inf | 0.18 | 0.38 |

### Framing Condition

EMM for low vs high ego in each framing

atlist <- list(egoistic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ egoistic\_center\*framing\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| egoistic\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.92 | control\_framing | 0.51 | 0.05 | Inf | 0.41 | 0.60 |
| 0.92 | control\_framing | 0.31 | 0.04 | Inf | 0.24 | 0.40 |
| -0.92 | pro\_env\_framing | 0.71 | 0.04 | Inf | 0.62 | 0.79 |
| 0.92 | pro\_env\_framing | 0.37 | 0.04 | Inf | 0.29 | 0.45 |
| -0.92 | self\_enh\_framing | 0.65 | 0.05 | Inf | 0.55 | 0.73 |
| 0.92 | self\_enh\_framing | 0.25 | 0.04 | Inf | 0.18 | 0.33 |

Compare EMMs for low vs high ego in each framing

# custom contrasts  
control\_low\_ego <- c(1,0,0,0,0,0)  
control\_hi\_ego <- c(0,1,0,0,0,0)  
proenv\_low\_ego <- c(0,0,1,0,0,0)  
proenv\_hi\_ego <- c(0,0,0,1,0,0)  
selfenh\_low\_ego <- c(0,0,0,0,1,0)  
self\_enh\_hi\_ego <- c(0,0,0,0,0,1)  
  
# compare  
effect\_frame\_ego <- contrast(emms, method = list("Control: High ego - Low ego" = control\_hi\_ego - control\_low\_ego,  
 "Pro-env: High ego - Low ego" = proenv\_hi\_ego - proenv\_low\_ego,  
 "Self-enh: High ego - Low ego" = self\_enh\_hi\_ego - selfenh\_low\_ego), adjust = "none")  
effect\_frame\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High ego / Low ego | 0.44 | 0.13 | Inf | 1 | -2.77 | 0.006 |
| Pro-env: High ego / Low ego | 0.23 | 0.07 | Inf | 1 | -4.79 | 0.000 |
| Self-enh: High ego / Low ego | 0.18 | 0.06 | Inf | 1 | -5.30 | 0.000 |

# confidence intervals  
effect\_frame\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High ego / Low ego | 0.44 | 0.13 | Inf | 0.25 | 0.79 |
| Pro-env: High ego / Low ego | 0.23 | 0.07 | Inf | 0.13 | 0.42 |
| Self-enh: High ego / Low ego | 0.18 | 0.06 | Inf | 0.09 | 0.34 |

### Norm Condition

EMM for low vs high ego in each norm

atlist <- list(egoistic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ egoistic\_center\*norm\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| egoistic\_center | norm\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.92 | control\_norm | 0.58 | 0.06 | Inf | 0.47 | 0.69 |
| 0.92 | control\_norm | 0.27 | 0.05 | Inf | 0.18 | 0.39 |
| -0.92 | descriptive\_norm | 0.64 | 0.07 | Inf | 0.50 | 0.76 |
| 0.92 | descriptive\_norm | 0.34 | 0.06 | Inf | 0.24 | 0.45 |
| -0.92 | convention\_norm | 0.64 | 0.05 | Inf | 0.53 | 0.74 |
| 0.92 | convention\_norm | 0.28 | 0.05 | Inf | 0.19 | 0.39 |
| -0.92 | social\_norm | 0.59 | 0.06 | Inf | 0.47 | 0.70 |
| 0.92 | social\_norm | 0.35 | 0.05 | Inf | 0.26 | 0.46 |
| -0.92 | moral\_norm | 0.67 | 0.06 | Inf | 0.54 | 0.78 |
| 0.92 | moral\_norm | 0.29 | 0.05 | Inf | 0.20 | 0.40 |

Compare EMMs for low vs high ego in each framing

# custom contrasts  
control\_low\_ego <- c(1,rep(0,9))  
control\_hi\_ego <- c(0,1,rep(0,8))  
dn\_low\_ego <- c(0,0,1,rep(0,7))  
dn\_hi\_ego <- c(0,0,0,1,rep(0,6))  
conv\_low\_ego <- c(0,0,0,0,1,rep(0,5))  
conv\_hi\_ego <- c(rep(0,5),1,rep(0,4))  
sn\_low\_ego <- c(rep(0,6),1,0,0,0)  
sn\_hi\_ego <- c(rep(0,7),1,0,0)  
mn\_low\_ego <- c(rep(0,8),1,0)  
mn\_hi\_ego <- c(rep(0,9),1)  
  
# compare  
effect\_norm\_ego <- contrast(emms, method = list("Control: High ego - Low ego" = control\_hi\_ego - control\_low\_ego,  
 "DN: High ego - Low ego" = dn\_hi\_ego - dn\_low\_ego,  
 "Conv: High ego - Low ego" = conv\_hi\_ego - conv\_low\_ego,  
 "SN: High ego - Low ego" = sn\_hi\_ego - sn\_low\_ego,  
 "MN: High ego - Low ego" = mn\_hi\_ego - mn\_low\_ego), adjust = "none")  
effect\_norm\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High ego / Low ego | 0.27 | 0.10 | Inf | 1 | -3.36 | 0.001 |
| DN: High ego / Low ego | 0.29 | 0.12 | Inf | 1 | -2.88 | 0.004 |
| Conv: High ego / Low ego | 0.21 | 0.08 | Inf | 1 | -4.15 | 0.000 |
| SN: High ego / Low ego | 0.38 | 0.14 | Inf | 1 | -2.62 | 0.009 |
| MN: High ego / Low ego | 0.20 | 0.08 | Inf | 1 | -3.80 | 0.000 |

# confidence intervals  
effect\_norm\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High ego / Low ego | 0.27 | 0.10 | Inf | 0.12 | 0.58 |
| DN: High ego / Low ego | 0.29 | 0.12 | Inf | 0.12 | 0.67 |
| Conv: High ego / Low ego | 0.21 | 0.08 | Inf | 0.10 | 0.44 |
| SN: High ego / Low ego | 0.38 | 0.14 | Inf | 0.19 | 0.79 |
| MN: High ego / Low ego | 0.20 | 0.08 | Inf | 0.09 | 0.46 |

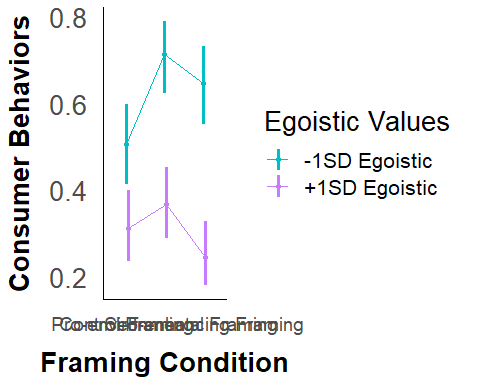
Is the difference between Control Norm and Other Norm different for people low vs high on egoistic values? Does this vary across framing conditions?

### Visualization

text\_settings <- theme(text = element\_text(size = 20)) +  
 theme(plot.title = element\_text(size = 20, face = 'bold')) +  
 theme(axis.title.x = element\_text(face = 'bold')) +  
 theme(axis.title.y = element\_text(face = 'bold')) +  
 theme(axis.text.x = element\_text(size = 14)) +  
 theme(axis.text.y = element\_text(size = 20)) +  
 theme(axis.ticks = element\_blank())

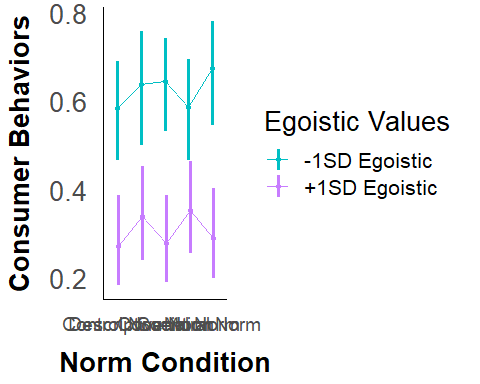
#### Ego x Framing

sd\_below <- mean(average\_df$egoistic\_center) - sd(average\_df$egoistic\_center)  
sd\_above <- mean(average\_df$egoistic\_center) + sd(average\_df$egoistic\_center)  
  
at\_list <- list(egoistic\_center = c(sd\_below, sd\_above))  
  
emmip(log\_mice, egoistic\_center ~ framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Framing Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_framing","pro\_env\_framing", "self\_enh\_framing"), labels = c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Egoistic Values", breaks = c(-0.91717706890615, 0.917177068906151), labels = c("-1SD Egoistic", "+1SD Egoistic"), values = c("#00BFC4","#C77CFF"))



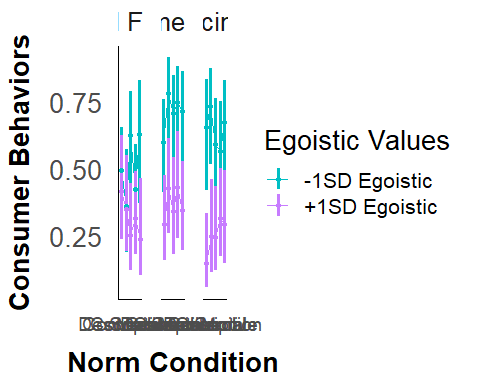
#### Ego x Norm

emmip(log\_mice, egoistic\_center ~ norm\_condition, CIs = TRUE, type = "response", CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Egoistic Values", breaks = c(-0.91717706890615, 0.917177068906151), labels = c("-1SD Egoistic", "+1SD Egoistic"), values = c("#00BFC4","#C77CFF"))



#### Ego, Norm, Framing

emmip(log\_mice, egoistic\_center ~ norm\_condition | framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control", "Descriptive", "Convention", "Social", "Moral")) +  
 facet\_wrap(~framing\_condition, labeller = labeller(framing\_condition = frame\_labs)) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Egoistic Values", breaks = c(-0.91717706890615, 0.917177068906151), labels = c("-1SD Egoistic", "+1SD Egoistic"), values = c("#00BFC4","#C77CFF"))



### Planned Comparisons

#### Storing low (-1SD) and high (+1SD) egoistic values

sd\_below <- mean(average\_df$egoistic\_center) - sd(average\_df$egoistic\_center)  
sd\_above <- mean(average\_df$egoistic\_center) + sd(average\_df$egoistic\_center)

#### Calculate EM Means at low and high ego

atlist <- list(egoistic\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*egoistic\_center\*framing\_condition, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | egoistic\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -0.92 | control\_framing | 0.49 | 0.08 | Inf | 0.33 | 0.65 |
| descriptive\_norm | -0.92 | control\_framing | 0.36 | 0.10 | Inf | 0.19 | 0.57 |
| convention\_norm | -0.92 | control\_framing | 0.63 | 0.10 | Inf | 0.43 | 0.79 |
| social\_norm | -0.92 | control\_framing | 0.42 | 0.08 | Inf | 0.27 | 0.59 |
| moral\_norm | -0.92 | control\_framing | 0.63 | 0.12 | Inf | 0.37 | 0.83 |
| control\_norm | 0.92 | control\_framing | 0.42 | 0.10 | Inf | 0.24 | 0.62 |
| descriptive\_norm | 0.92 | control\_framing | 0.35 | 0.09 | Inf | 0.19 | 0.55 |
| convention\_norm | 0.92 | control\_framing | 0.25 | 0.08 | Inf | 0.12 | 0.45 |
| social\_norm | 0.92 | control\_framing | 0.32 | 0.08 | Inf | 0.18 | 0.49 |
| moral\_norm | 0.92 | control\_framing | 0.24 | 0.09 | Inf | 0.10 | 0.46 |
| control\_norm | -0.92 | pro\_env\_framing | 0.60 | 0.09 | Inf | 0.41 | 0.76 |
| descriptive\_norm | -0.92 | pro\_env\_framing | 0.78 | 0.10 | Inf | 0.54 | 0.92 |
| convention\_norm | -0.92 | pro\_env\_framing | 0.71 | 0.09 | Inf | 0.51 | 0.85 |
| social\_norm | -0.92 | pro\_env\_framing | 0.75 | 0.09 | Inf | 0.54 | 0.88 |
| moral\_norm | -0.92 | pro\_env\_framing | 0.72 | 0.09 | Inf | 0.50 | 0.86 |
| control\_norm | 0.92 | pro\_env\_framing | 0.29 | 0.08 | Inf | 0.16 | 0.48 |
| descriptive\_norm | 0.92 | pro\_env\_framing | 0.43 | 0.09 | Inf | 0.26 | 0.62 |
| convention\_norm | 0.92 | pro\_env\_framing | 0.34 | 0.10 | Inf | 0.18 | 0.54 |
| social\_norm | 0.92 | pro\_env\_framing | 0.43 | 0.11 | Inf | 0.24 | 0.64 |
| moral\_norm | 0.92 | pro\_env\_framing | 0.34 | 0.09 | Inf | 0.20 | 0.53 |
| control\_norm | -0.92 | self\_enh\_framing | 0.65 | 0.11 | Inf | 0.42 | 0.83 |
| descriptive\_norm | -0.92 | self\_enh\_framing | 0.73 | 0.09 | Inf | 0.52 | 0.88 |
| convention\_norm | -0.92 | self\_enh\_framing | 0.59 | 0.10 | Inf | 0.40 | 0.76 |
| social\_norm | -0.92 | self\_enh\_framing | 0.57 | 0.11 | Inf | 0.36 | 0.75 |
| moral\_norm | -0.92 | self\_enh\_framing | 0.67 | 0.10 | Inf | 0.46 | 0.83 |
| control\_norm | 0.92 | self\_enh\_framing | 0.15 | 0.07 | Inf | 0.06 | 0.33 |
| descriptive\_norm | 0.92 | self\_enh\_framing | 0.25 | 0.09 | Inf | 0.11 | 0.46 |
| convention\_norm | 0.92 | self\_enh\_framing | 0.25 | 0.08 | Inf | 0.12 | 0.44 |
| social\_norm | 0.92 | self\_enh\_framing | 0.31 | 0.09 | Inf | 0.17 | 0.50 |
| moral\_norm | 0.92 | self\_enh\_framing | 0.29 | 0.09 | Inf | 0.15 | 0.50 |

### Custom contrasts

cf\_cn\_low\_ego <- c(1, rep(0,29)) # control framing  
cf\_dn\_low\_ego <- c(0,1,rep(0,28))  
cf\_conv\_low\_ego <- c(0,0,1,rep(0,27))  
cf\_sn\_low\_ego <- c(0,0,0,1,rep(0,26))  
cf\_mn\_low\_ego <- c(rep(0,4),1,(rep(0,25)))  
  
cf\_cn\_hi\_ego <- c(rep(0,5),1,(rep(0,24)))   
cf\_dn\_hi\_ego <- c(rep(0,6),1,(rep(0,23)))  
cf\_conv\_hi\_ego <- c(rep(0,7),1,(rep(0,22)))  
cf\_sn\_hi\_ego <- c(rep(0,8),1,(rep(0,21)))  
cf\_mn\_hi\_ego <- c(rep(0,9),1,(rep(0,20)))  
  
  
pf\_cn\_low\_ego <- c(rep(0,10),1,(rep(0,19))) # pro-environmental framing  
pf\_dn\_low\_ego <- c(rep(0,11),1,(rep(0,18)))  
pf\_conv\_low\_ego <- c(rep(0,12),1,(rep(0,17)))  
pf\_sn\_low\_ego <- c(rep(0,13),1,(rep(0,16)))  
pf\_mn\_low\_ego <- c(rep(0,14),1,(rep(0,15)))  
  
pf\_cn\_hi\_ego <- c(rep(0,15),1,(rep(0,14)))   
pf\_dn\_hi\_ego <- c(rep(0,16),1,(rep(0,13)))  
pf\_conv\_hi\_ego <- c(rep(0,17),1,(rep(0,12)))  
pf\_sn\_hi\_ego <- c(rep(0,18),1,(rep(0,11)))  
pf\_mn\_hi\_ego <- c(rep(0,19),1,(rep(0,10)))  
  
  
sf\_cn\_low\_ego <- c(rep(0,20),1,(rep(0,9))) # self-enhancing framing  
sf\_dn\_low\_ego <- c(rep(0,21),1,(rep(0,8)))  
sf\_conv\_low\_ego <- c(rep(0,22),1,(rep(0,7)))  
sf\_sn\_low\_ego <- c(rep(0,23),1,(rep(0,6)))  
sf\_mn\_low\_ego <- c(rep(0,24),1,(rep(0,5)))  
  
sf\_cn\_hi\_ego <- c(rep(0,25),1,(rep(0,4)))   
sf\_dn\_hi\_ego <- c(rep(0,26),1,(rep(0,3)))  
sf\_conv\_hi\_ego <- c(rep(0,27),1,(rep(0,2)))  
sf\_sn\_hi\_ego <- c(rep(0,28),1,(rep(0,1)))  
sf\_mn\_hi\_ego <- c(rep(0,29),1)

Effect of norm for people low vs high on egoistic values across framing conditions

#### Control framing

controlframe\_lowvshi\_ego <- contrast(combinations,   
 method = list("CF/DN/LowEgo - CF/CN/LowEgo" = cf\_dn\_low\_ego - cf\_cn\_low\_ego,  
 "CF/Conv/LowEgo - CF/CN/LowEgo" = cf\_conv\_low\_ego - cf\_cn\_low\_ego,  
 "CF/SN/LowEgo - CF/CN/LowEgo" = cf\_sn\_low\_ego - cf\_cn\_low\_ego,  
 "CF/MN/LowEgo - CF/CN/LowEgo" = cf\_mn\_low\_ego - cf\_cn\_low\_ego,  
 "CF/DN/HiEgo - CF/CN/HiEgo" = cf\_dn\_hi\_ego - cf\_cn\_hi\_ego,  
 "CF/Conv/HiEgo - CF/CN/HiEgo" = cf\_conv\_hi\_ego - cf\_cn\_hi\_ego,  
 "CF/SN/HiEgo - CF/CN/HiEgo" = cf\_sn\_hi\_ego - cf\_cn\_hi\_ego,  
 "CF/MN/HiEgo - CF/CN/HiEgo" = cf\_mn\_hi\_ego - cf\_cn\_hi\_ego),   
 adjust = "none")  
  
controlframe\_lowvshi\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| CF/DN/LowEgo / CF/CN/LowEgo | 0.57 | 0.32 | Inf | 1 | -1.00 | 0.319 |
| CF/Conv/LowEgo / CF/CN/LowEgo | 1.72 | 0.91 | Inf | 1 | 1.03 | 0.303 |
| CF/SN/LowEgo / CF/CN/LowEgo | 0.75 | 0.36 | Inf | 1 | -0.61 | 0.544 |
| CF/MN/LowEgo / CF/CN/LowEgo | 1.74 | 1.10 | Inf | 1 | 0.87 | 0.382 |
| CF/DN/HiEgo / CF/CN/HiEgo | 0.75 | 0.45 | Inf | 1 | -0.48 | 0.630 |
| CF/Conv/HiEgo / CF/CN/HiEgo | 0.47 | 0.29 | Inf | 1 | -1.23 | 0.218 |
| CF/SN/HiEgo / CF/CN/HiEgo | 0.64 | 0.36 | Inf | 1 | -0.78 | 0.436 |
| CF/MN/HiEgo / CF/CN/HiEgo | 0.44 | 0.30 | Inf | 1 | -1.22 | 0.223 |

# confidence intervals  
controlframe\_lowvshi\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| CF/DN/LowEgo / CF/CN/LowEgo | 0.57 | 0.32 | Inf | 0.19 | 1.71 |
| CF/Conv/LowEgo / CF/CN/LowEgo | 1.72 | 0.91 | Inf | 0.61 | 4.83 |
| CF/SN/LowEgo / CF/CN/LowEgo | 0.75 | 0.36 | Inf | 0.29 | 1.91 |
| CF/MN/LowEgo / CF/CN/LowEgo | 1.74 | 1.10 | Inf | 0.50 | 6.03 |
| CF/DN/HiEgo / CF/CN/HiEgo | 0.75 | 0.45 | Inf | 0.23 | 2.41 |
| CF/Conv/HiEgo / CF/CN/HiEgo | 0.47 | 0.29 | Inf | 0.14 | 1.57 |
| CF/SN/HiEgo / CF/CN/HiEgo | 0.64 | 0.36 | Inf | 0.21 | 1.95 |
| CF/MN/HiEgo / CF/CN/HiEgo | 0.44 | 0.30 | Inf | 0.12 | 1.65 |

Planned Comparisons

Custom contrasts

controlframe\_lowvshi\_ego

## contrast odds.ratio SE df null z.ratio p.value  
## CF/DN/LowEgo / CF/CN/LowEgo 0.574 0.320 Inf 1 -0.997 0.3190  
## CF/Conv/LowEgo / CF/CN/LowEgo 1.721 0.907 Inf 1 1.031 0.3025  
## CF/SN/LowEgo / CF/CN/LowEgo 0.749 0.357 Inf 1 -0.607 0.5440  
## CF/MN/LowEgo / CF/CN/LowEgo 1.740 1.103 Inf 1 0.874 0.3820  
## CF/DN/HiEgo / CF/CN/HiEgo 0.750 0.447 Inf 1 -0.482 0.6298  
## CF/Conv/HiEgo / CF/CN/HiEgo 0.468 0.288 Inf 1 -1.232 0.2181  
## CF/SN/HiEgo / CF/CN/HiEgo 0.644 0.363 Inf 1 -0.780 0.4355  
## CF/MN/HiEgo / CF/CN/HiEgo 0.437 0.297 Inf 1 -1.218 0.2231  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowEgo <- c(1,rep(0,7))  
conv\_vs\_c\_LowEgo <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowEgo <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowEgo <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiEgo <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiEgo <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiEgo <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiEgo <- c(rep(0,7),1)

compare\_ego <- contrast(controlframe\_lowvshi\_ego, method = list("Effect of DN (Low - High ego)" = dn\_vs\_c\_LowEgo - dn\_vs\_c\_HiEgo,   
 "Effect of Conv (Low - High ego)" = conv\_vs\_c\_LowEgo - conv\_vs\_c\_HiEgo,  
 "Effect of SN (Low - High ego)" = sn\_vs\_c\_LowEgo - sn\_vs\_c\_HiEgo,  
 "Effect of MN (Low - High ego)" = mn\_vs\_c\_LowEgo - mn\_vs\_c\_HiEgo), adjust = "none")  
  
compare\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ego) | 0.76 | 0.67 | Inf | 1 | -0.31 | 0.758 |
| Effect of Conv (Low / High ego) | 3.68 | 3.09 | Inf | 1 | 1.55 | 0.121 |
| Effect of SN (Low / High ego) | 1.16 | 0.90 | Inf | 1 | 0.20 | 0.845 |
| Effect of MN (Low / High ego) | 3.98 | 4.12 | Inf | 1 | 1.33 | 0.183 |

# confidence intervals  
compare\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ego) | 0.76 | 0.67 | Inf | 0.14 | 4.22 |
| Effect of Conv (Low / High ego) | 3.68 | 3.09 | Inf | 0.71 | 19.07 |
| Effect of SN (Low / High ego) | 1.16 | 0.90 | Inf | 0.26 | 5.27 |
| Effect of MN (Low / High ego) | 3.98 | 4.12 | Inf | 0.52 | 30.34 |

#### Pro-environmental framing

proenvframe\_lowvshi\_ego <- contrast(combinations,   
 method = list("PF/DN/LowEgo - PF/CN/LowEgo" = pf\_dn\_low\_ego - pf\_cn\_low\_ego,  
 "PF/Conv/LowEgo - PF/CN/LowEgo" = pf\_conv\_low\_ego - pf\_cn\_low\_ego,  
 "PF/SN/LowEgo - PF/CN/LowEgo" = pf\_sn\_low\_ego - pf\_cn\_low\_ego,  
 "PF/MN/LowEgo - PF/CN/LowEgo" = pf\_mn\_low\_ego - pf\_cn\_low\_ego,  
 "PF/DN/HiEgo - PF/CN/HiEgo" = pf\_dn\_hi\_ego - pf\_cn\_hi\_ego,  
 "PF/Conv/HiEgo - PF/CN/HiEgo" = pf\_conv\_hi\_ego - pf\_cn\_hi\_ego,  
 "PF/SN/HiEgo - PF/CN/HiEgo" = pf\_sn\_hi\_ego - pf\_cn\_hi\_ego,  
 "PF/MN/HiEgo - PF/CN/HiEgo" = pf\_mn\_hi\_ego - pf\_cn\_hi\_ego),   
 adjust = "none")  
  
proenvframe\_lowvshi\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| PF/DN/LowEgo / PF/CN/LowEgo | 2.42 | 1.64 | Inf | 1 | 1.30 | 0.194 |
| PF/Conv/LowEgo / PF/CN/LowEgo | 1.63 | 0.93 | Inf | 1 | 0.86 | 0.390 |
| PF/SN/LowEgo / PF/CN/LowEgo | 1.99 | 1.21 | Inf | 1 | 1.13 | 0.257 |
| PF/MN/LowEgo / PF/CN/LowEgo | 1.70 | 1.02 | Inf | 1 | 0.88 | 0.378 |
| PF/DN/HiEgo / PF/CN/HiEgo | 1.81 | 1.01 | Inf | 1 | 1.06 | 0.290 |
| PF/Conv/HiEgo / PF/CN/HiEgo | 1.25 | 0.73 | Inf | 1 | 0.37 | 0.708 |
| PF/SN/HiEgo / PF/CN/HiEgo | 1.82 | 1.09 | Inf | 1 | 1.01 | 0.314 |
| PF/MN/HiEgo / PF/CN/HiEgo | 1.26 | 0.71 | Inf | 1 | 0.42 | 0.674 |

# confidence intervals  
proenvframe\_lowvshi\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| PF/DN/LowEgo / PF/CN/LowEgo | 2.42 | 1.64 | Inf | 0.64 | 9.16 |
| PF/Conv/LowEgo / PF/CN/LowEgo | 1.63 | 0.93 | Inf | 0.53 | 5.00 |
| PF/SN/LowEgo / PF/CN/LowEgo | 1.99 | 1.21 | Inf | 0.61 | 6.55 |
| PF/MN/LowEgo / PF/CN/LowEgo | 1.70 | 1.02 | Inf | 0.52 | 5.53 |
| PF/DN/HiEgo / PF/CN/HiEgo | 1.81 | 1.01 | Inf | 0.60 | 5.41 |
| PF/Conv/HiEgo / PF/CN/HiEgo | 1.25 | 0.73 | Inf | 0.39 | 3.95 |
| PF/SN/HiEgo / PF/CN/HiEgo | 1.82 | 1.09 | Inf | 0.57 | 5.87 |
| PF/MN/HiEgo / PF/CN/HiEgo | 1.26 | 0.71 | Inf | 0.42 | 3.78 |

Planned Comparisons

Custom contrasts

proenvframe\_lowvshi\_ego

## contrast odds.ratio SE df null z.ratio p.value  
## PF/DN/LowEgo / PF/CN/LowEgo 2.42 1.643 Inf 1 1.299 0.1938  
## PF/Conv/LowEgo / PF/CN/LowEgo 1.63 0.933 Inf 1 0.859 0.3903  
## PF/SN/LowEgo / PF/CN/LowEgo 1.99 1.210 Inf 1 1.134 0.2566  
## PF/MN/LowEgo / PF/CN/LowEgo 1.70 1.023 Inf 1 0.882 0.3779  
## PF/DN/HiEgo / PF/CN/HiEgo 1.81 1.011 Inf 1 1.058 0.2903  
## PF/Conv/HiEgo / PF/CN/HiEgo 1.25 0.734 Inf 1 0.374 0.7081  
## PF/SN/HiEgo / PF/CN/HiEgo 1.82 1.087 Inf 1 1.008 0.3136  
## PF/MN/HiEgo / PF/CN/HiEgo 1.26 0.707 Inf 1 0.421 0.6740  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowEgo <- c(1,rep(0,7))  
conv\_vs\_c\_LowEgo <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowEgo <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowEgo <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiEgo <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiEgo <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiEgo <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiEgo <- c(rep(0,7),1)

compare\_ego <- contrast(proenvframe\_lowvshi\_ego, method = list("Effect of DN (Low - High ego)" = dn\_vs\_c\_LowEgo - dn\_vs\_c\_HiEgo,   
 "Effect of Conv (Low - High ego)" = conv\_vs\_c\_LowEgo - conv\_vs\_c\_HiEgo,  
 "Effect of SN (Low - High ego)" = sn\_vs\_c\_LowEgo - sn\_vs\_c\_HiEgo,  
 "Effect of MN (Low - High ego)" = mn\_vs\_c\_LowEgo - mn\_vs\_c\_HiEgo), adjust = "none")  
  
compare\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ego) | 1.34 | 1.25 | Inf | 1 | 0.31 | 0.756 |
| Effect of Conv (Low / High ego) | 1.31 | 1.19 | Inf | 1 | 0.30 | 0.765 |
| Effect of SN (Low / High ego) | 1.09 | 1.00 | Inf | 1 | 0.10 | 0.923 |
| Effect of MN (Low / High ego) | 1.34 | 1.20 | Inf | 1 | 0.33 | 0.740 |

# confidence intervals  
compare\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ego) | 1.34 | 1.25 | Inf | 0.21 | 8.38 |
| Effect of Conv (Low / High ego) | 1.31 | 1.19 | Inf | 0.22 | 7.74 |
| Effect of SN (Low / High ego) | 1.09 | 1.00 | Inf | 0.18 | 6.53 |
| Effect of MN (Low / High ego) | 1.34 | 1.20 | Inf | 0.24 | 7.68 |

#### Self-enhancing framing

selfenhframe\_lowvshi\_ego <- contrast(combinations,   
 method = list("SF/DN/LowEgo - SF/CN/LowEgo" = sf\_dn\_low\_ego - sf\_cn\_low\_ego,  
 "SF/Conv/LowEgo - SF/CN/LowEgo" = sf\_conv\_low\_ego - sf\_cn\_low\_ego,  
 "SF/SN/LowEgo - SF/CN/LowEgo" = sf\_sn\_low\_ego - sf\_cn\_low\_ego,  
 "SF/MN/LowEgo - SF/CN/LowEgo" = sf\_mn\_low\_ego - sf\_cn\_low\_ego,  
 "SF/DN/HiEgo - SF/CN/HiEgo" = sf\_dn\_hi\_ego - sf\_cn\_hi\_ego,  
 "SF/Conv/HiEgo - SF/CN/HiEgo" = sf\_conv\_hi\_ego - sf\_cn\_hi\_ego,  
 "SF/SN/HiEgo - SF/CN/HiEgo" = sf\_sn\_hi\_ego - sf\_cn\_hi\_ego,  
 "SF/MN/HiEgo - SF/CN/HiEgo" = sf\_mn\_hi\_ego - sf\_cn\_hi\_ego),   
 adjust = "none")  
  
selfenhframe\_lowvshi\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| SF/DN/LowEgo / SF/CN/LowEgo | 1.45 | 1.00 | Inf | 1 | 0.54 | 0.586 |
| SF/Conv/LowEgo / SF/CN/LowEgo | 0.77 | 0.49 | Inf | 1 | -0.41 | 0.682 |
| SF/SN/LowEgo / SF/CN/LowEgo | 0.69 | 0.45 | Inf | 1 | -0.57 | 0.569 |
| SF/MN/LowEgo / SF/CN/LowEgo | 1.09 | 0.72 | Inf | 1 | 0.13 | 0.897 |
| SF/DN/HiEgo / SF/CN/HiEgo | 1.89 | 1.35 | Inf | 1 | 0.89 | 0.374 |
| SF/Conv/HiEgo / SF/CN/HiEgo | 1.86 | 1.29 | Inf | 1 | 0.90 | 0.367 |
| SF/SN/HiEgo / SF/CN/HiEgo | 2.61 | 1.75 | Inf | 1 | 1.44 | 0.151 |
| SF/MN/HiEgo / SF/CN/HiEgo | 2.34 | 1.63 | Inf | 1 | 1.22 | 0.221 |

# confidence intervals  
selfenhframe\_lowvshi\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SF/DN/LowEgo / SF/CN/LowEgo | 1.45 | 1.00 | Inf | 0.38 | 5.60 |
| SF/Conv/LowEgo / SF/CN/LowEgo | 0.77 | 0.49 | Inf | 0.22 | 2.66 |
| SF/SN/LowEgo / SF/CN/LowEgo | 0.69 | 0.45 | Inf | 0.19 | 2.49 |
| SF/MN/LowEgo / SF/CN/LowEgo | 1.09 | 0.72 | Inf | 0.30 | 3.98 |
| SF/DN/HiEgo / SF/CN/HiEgo | 1.89 | 1.35 | Inf | 0.46 | 7.67 |
| SF/Conv/HiEgo / SF/CN/HiEgo | 1.86 | 1.29 | Inf | 0.48 | 7.20 |
| SF/SN/HiEgo / SF/CN/HiEgo | 2.61 | 1.75 | Inf | 0.70 | 9.71 |
| SF/MN/HiEgo / SF/CN/HiEgo | 2.34 | 1.63 | Inf | 0.60 | 9.18 |

Planned Comparisons

Custom contrasts

selfenhframe\_lowvshi\_ego

## contrast odds.ratio SE df null z.ratio p.value  
## SF/DN/LowEgo / SF/CN/LowEgo 1.455 1.001 Inf 1 0.545 0.5859  
## SF/Conv/LowEgo / SF/CN/LowEgo 0.772 0.488 Inf 1 -0.410 0.6820  
## SF/SN/LowEgo / SF/CN/LowEgo 0.688 0.452 Inf 1 -0.569 0.5691  
## SF/MN/LowEgo / SF/CN/LowEgo 1.089 0.719 Inf 1 0.130 0.8969  
## SF/DN/HiEgo / SF/CN/HiEgo 1.888 1.351 Inf 1 0.888 0.3744  
## SF/Conv/HiEgo / SF/CN/HiEgo 1.863 1.285 Inf 1 0.901 0.3674  
## SF/SN/HiEgo / SF/CN/HiEgo 2.615 1.750 Inf 1 1.436 0.1509  
## SF/MN/HiEgo / SF/CN/HiEgo 2.344 1.633 Inf 1 1.223 0.2214  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowEgo <- c(1,rep(0,7))  
conv\_vs\_c\_LowEgo <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowEgo <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowEgo <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiEgo <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiEgo <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiEgo <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiEgo <- c(rep(0,7),1)

compare\_ego <- contrast(selfenhframe\_lowvshi\_ego, method = list("Effect of DN (Low - High ego)" = dn\_vs\_c\_LowEgo - dn\_vs\_c\_HiEgo,   
 "Effect of Conv (Low - High ego)" = conv\_vs\_c\_LowEgo - conv\_vs\_c\_HiEgo,  
 "Effect of SN (Low - High ego)" = sn\_vs\_c\_LowEgo - sn\_vs\_c\_HiEgo,  
 "Effect of MN (Low - High ego)" = mn\_vs\_c\_LowEgo - mn\_vs\_c\_HiEgo), adjust = "none")  
  
compare\_ego %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ego) | 0.77 | 0.91 | Inf | 1 | -0.22 | 0.826 |
| Effect of Conv (Low / High ego) | 0.41 | 0.43 | Inf | 1 | -0.84 | 0.401 |
| Effect of SN (Low / High ego) | 0.26 | 0.28 | Inf | 1 | -1.27 | 0.206 |
| Effect of MN (Low / High ego) | 0.46 | 0.51 | Inf | 1 | -0.69 | 0.489 |

# confidence intervals  
compare\_ego %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ego) | 0.77 | 0.91 | Inf | 0.08 | 7.86 |
| Effect of Conv (Low / High ego) | 0.41 | 0.43 | Inf | 0.05 | 3.24 |
| Effect of SN (Low / High ego) | 0.26 | 0.28 | Inf | 0.03 | 2.08 |
| Effect of MN (Low / High ego) | 0.46 | 0.51 | Inf | 0.05 | 4.07 |

## Hedonic values

### Overall effect

Storing low (-1SD) and high (+1SD) hedonic values

sd\_below <- mean(average\_df$hedonic\_center) - sd(average\_df$hedonic\_center)  
  
sd\_above <- mean(average\_df$hedonic\_center) + sd(average\_df$hedonic\_center)

EMM for low and high hed

# emmeans  
atlist <- list(hedonic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ hedonic\_center, at = atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| hedonic\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| -0.79 | 0.46 | 0.03 | Inf | 0.40 | 0.52 |
| 0.79 | 0.46 | 0.03 | Inf | 0.41 | 0.52 |

Compare EMM for low and high hed

# custom contrast  
low\_hed <- c(1,0)  
hi\_hed <- c(0,1)  
  
# compare  
effect\_hed <- contrast(emms, method = list("High hed - Low hed" = hi\_hed - low\_hed), adjust = "none")  
effect\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| High hed / Low hed | 1.01 | 0.19 | Inf | 1 | 0.07 | 0.948 |

# confidence intervals  
effect\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| High hed / Low hed | 1.01 | 0.19 | Inf | 0.7 | 1.47 |

### Framing Condition

EMM for low vs high hed in each framing

atlist <- list(hedonic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ hedonic\_center\*framing\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 6)

| hedonic\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.790767 | control\_framing | 0.381781 | 0.050041 | Inf | 0.289557 | 0.483392 |
| 0.790767 | control\_framing | 0.428985 | 0.046844 | Inf | 0.340559 | 0.522189 |
| -0.790767 | pro\_env\_framing | 0.542935 | 0.050282 | Inf | 0.443995 | 0.638600 |
| 0.790767 | pro\_env\_framing | 0.547808 | 0.052193 | Inf | 0.444938 | 0.646749 |
| -0.790767 | self\_enh\_framing | 0.457154 | 0.052171 | Inf | 0.358048 | 0.559772 |
| 0.790767 | self\_enh\_framing | 0.413447 | 0.050762 | Inf | 0.318647 | 0.515127 |

Compare EMMs for low vs high hed in each framing

# custom contrasts  
control\_low\_hed <- c(1,0,0,0,0,0)  
control\_hi\_hed <- c(0,1,0,0,0,0)  
proenv\_low\_hed <- c(0,0,1,0,0,0)  
proenv\_hi\_hed <- c(0,0,0,1,0,0)  
selfenh\_low\_hed <- c(0,0,0,0,1,0)  
self\_enh\_hi\_hed <- c(0,0,0,0,0,1)  
  
# compare  
effect\_frame\_hed <- contrast(emms, method = list("Control: High hed - Low hed" = control\_hi\_hed - control\_low\_hed,  
 "Pro-env: High hed - Low hed" = proenv\_hi\_hed - proenv\_low\_hed,  
 "Self-enh: High hed - Low hed" = self\_enh\_hi\_hed - selfenh\_low\_hed), adjust = "none")  
effect\_frame\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High hed / Low hed | 1.22 | 0.39 | Inf | 1 | 0.62 | 0.536 |
| Pro-env: High hed / Low hed | 1.02 | 0.34 | Inf | 1 | 0.06 | 0.952 |
| Self-enh: High hed / Low hed | 0.84 | 0.28 | Inf | 1 | -0.53 | 0.599 |

# confidence intervals  
effect\_frame\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High hed / Low hed | 1.22 | 0.39 | Inf | 0.65 | 2.26 |
| Pro-env: High hed / Low hed | 1.02 | 0.34 | Inf | 0.54 | 1.94 |
| Self-enh: High hed / Low hed | 0.84 | 0.28 | Inf | 0.43 | 1.62 |

### Norm Condition

EMM for low vs high hed in each norm

atlist <- list(hedonic\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ hedonic\_center\*norm\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| hedonic\_center | norm\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -0.79 | control\_norm | 0.38 | 0.07 | Inf | 0.26 | 0.52 |
| 0.79 | control\_norm | 0.46 | 0.06 | Inf | 0.35 | 0.58 |
| -0.79 | descriptive\_norm | 0.46 | 0.07 | Inf | 0.33 | 0.59 |
| 0.79 | descriptive\_norm | 0.52 | 0.07 | Inf | 0.38 | 0.65 |
| -0.79 | convention\_norm | 0.45 | 0.07 | Inf | 0.33 | 0.58 |
| 0.79 | convention\_norm | 0.46 | 0.06 | Inf | 0.34 | 0.58 |
| -0.79 | social\_norm | 0.51 | 0.07 | Inf | 0.39 | 0.64 |
| 0.79 | social\_norm | 0.42 | 0.06 | Inf | 0.30 | 0.55 |
| -0.79 | moral\_norm | 0.50 | 0.06 | Inf | 0.38 | 0.62 |
| 0.79 | moral\_norm | 0.46 | 0.06 | Inf | 0.34 | 0.58 |

Compare EMMs for low vs high hed in each framing

# custom contrasts  
control\_low\_hed <- c(1,rep(0,9))  
control\_hi\_hed <- c(0,1,rep(0,8))  
dn\_low\_hed <- c(0,0,1,rep(0,7))  
dn\_hi\_hed <- c(0,0,0,1,rep(0,6))  
conv\_low\_hed <- c(0,0,0,0,1,rep(0,5))  
conv\_hi\_hed <- c(rep(0,5),1,rep(0,4))  
sn\_low\_hed <- c(rep(0,6),1,0,0,0)  
sn\_hi\_hed <- c(rep(0,7),1,0,0)  
mn\_low\_hed <- c(rep(0,8),1,0)  
mn\_hi\_hed <- c(rep(0,9),1)  
  
# compare  
effect\_norm\_hed <- contrast(emms, method = list("Control: High hed - Low hed" = control\_hi\_hed - control\_low\_hed,  
 "DN: High hed - Low hed" = dn\_hi\_hed - dn\_low\_hed,  
 "Conv: High hed - Low hed" = conv\_hi\_hed - conv\_low\_hed,  
 "SN: High hed - Low hed" = sn\_hi\_hed - sn\_low\_hed,  
 "MN: High hed - Low hed" = mn\_hi\_hed - mn\_low\_hed), adjust = "none")  
effect\_norm\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High hed / Low hed | 1.41 | 0.60 | Inf | 1 | 0.80 | 0.425 |
| DN: High hed / Low hed | 1.29 | 0.57 | Inf | 1 | 0.57 | 0.567 |
| Conv: High hed / Low hed | 1.00 | 0.41 | Inf | 1 | 0.01 | 0.995 |
| SN: High hed / Low hed | 0.69 | 0.29 | Inf | 1 | -0.86 | 0.388 |
| MN: High hed / Low hed | 0.84 | 0.34 | Inf | 1 | -0.42 | 0.672 |

# confidence intervals  
effect\_norm\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High hed / Low hed | 1.41 | 0.60 | Inf | 0.61 | 3.27 |
| DN: High hed / Low hed | 1.29 | 0.57 | Inf | 0.54 | 3.09 |
| Conv: High hed / Low hed | 1.00 | 0.41 | Inf | 0.45 | 2.23 |
| SN: High hed / Low hed | 0.69 | 0.29 | Inf | 0.30 | 1.59 |
| MN: High hed / Low hed | 0.84 | 0.34 | Inf | 0.39 | 1.85 |

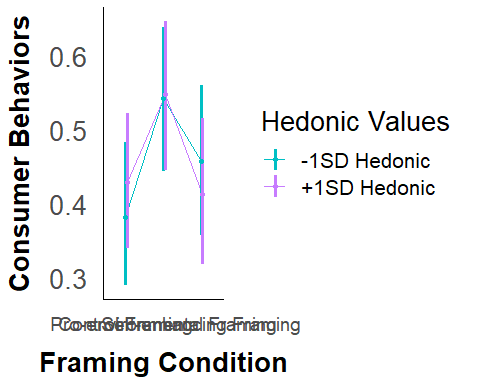
Is the difference between Control Norm and Other Norm different for people low vs high on hedonic values? Does this vary across framing conditions?

### Visualizations

text\_settings <- theme(text = element\_text(size = 20)) +  
 theme(plot.title = element\_text(size = 20, face = 'bold')) +  
 theme(axis.title.x = element\_text(face = 'bold')) +  
 theme(axis.title.y = element\_text(face = 'bold')) +  
 theme(axis.text.x = element\_text(size = 14)) +  
 theme(axis.text.y = element\_text(size = 20)) +  
 theme(axis.ticks = element\_blank())

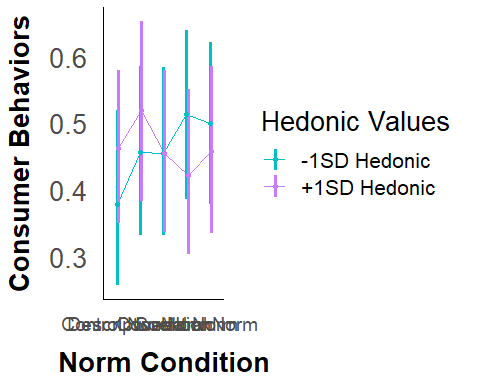
#### Hed x Framing

sd\_below <- mean(average\_df$hedonic\_center) - sd(average\_df$hedonic\_center)  
sd\_above <- mean(average\_df$hedonic\_center) + sd(average\_df$hedonic\_center)  
  
at\_list <- list(hedonic\_center = c(sd\_below, sd\_above))  
  
emmip(log\_mice, hedonic\_center ~ framing\_condition, CIs = TRUE, type = "response", CIarg = list(lwd = 1.2, alpha = 1), xlab = "Framing Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_framing","pro\_env\_framing", "self\_enh\_framing"), labels = c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Hedonic Values", breaks = c(-0.790766915042502, 0.790766915042502), labels = c("-1SD Hedonic", "+1SD Hedonic"), values = c("#00BFC4","#C77CFF"))



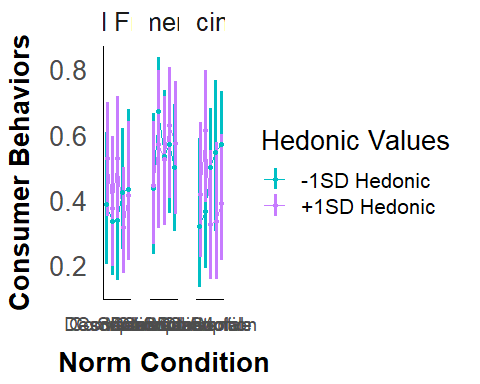
#### Hed x Norm

emmip(log\_mice, hedonic\_center ~ norm\_condition, CIs = TRUE, type = "response", CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Hedonic Values", breaks = c(-0.790766915042502, 0.790766915042502), labels = c("-1SD Hedonic", "+1SD Hedonic"), values = c("#00BFC4","#C77CFF"))



#### Hed, Norm, Framing

emmip(log\_mice, hedonic\_center ~ norm\_condition | framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control", "Descriptive", "Convention", "Social", "Moral")) +  
 facet\_wrap(~framing\_condition, labeller = labeller(framing\_condition = frame\_labs)) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Hedonic Values", breaks = c(-0.790766915042502, 0.790766915042502), labels = c("-1SD Hedonic", "+1SD Hedonic"), values = c("#00BFC4","#C77CFF"))



## Planned Comparisons

### Storing low (-1SD) and high (+1SD) hedonic values

sd\_below <- mean(average\_df$hedonic\_center) - sd(average\_df$hedonic\_center)  
sd\_above <- mean(average\_df$hedonic\_center) + sd(average\_df$hedonic\_center)

### Calculate EM Means at low and high hed

atlist <- list(hedonic\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*hedonic\_center\*framing\_condition, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | hedonic\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -0.79 | control\_framing | 0.39 | 0.11 | Inf | 0.20 | 0.61 |
| descriptive\_norm | -0.79 | control\_framing | 0.33 | 0.10 | Inf | 0.17 | 0.55 |
| convention\_norm | -0.79 | control\_framing | 0.34 | 0.12 | Inf | 0.15 | 0.59 |
| social\_norm | -0.79 | control\_framing | 0.42 | 0.10 | Inf | 0.25 | 0.62 |
| moral\_norm | -0.79 | control\_framing | 0.43 | 0.13 | Inf | 0.22 | 0.68 |
| control\_norm | 0.79 | control\_framing | 0.53 | 0.09 | Inf | 0.35 | 0.70 |
| descriptive\_norm | 0.79 | control\_framing | 0.37 | 0.11 | Inf | 0.20 | 0.60 |
| convention\_norm | 0.79 | control\_framing | 0.53 | 0.10 | Inf | 0.33 | 0.72 |
| social\_norm | 0.79 | control\_framing | 0.32 | 0.08 | Inf | 0.18 | 0.50 |
| moral\_norm | 0.79 | control\_framing | 0.41 | 0.12 | Inf | 0.22 | 0.64 |
| control\_norm | -0.79 | pro\_env\_framing | 0.44 | 0.12 | Inf | 0.23 | 0.66 |
| descriptive\_norm | -0.79 | pro\_env\_framing | 0.67 | 0.10 | Inf | 0.45 | 0.84 |
| convention\_norm | -0.79 | pro\_env\_framing | 0.53 | 0.11 | Inf | 0.32 | 0.73 |
| social\_norm | -0.79 | pro\_env\_framing | 0.57 | 0.11 | Inf | 0.36 | 0.76 |
| moral\_norm | -0.79 | pro\_env\_framing | 0.50 | 0.10 | Inf | 0.30 | 0.69 |
| control\_norm | 0.79 | pro\_env\_framing | 0.44 | 0.10 | Inf | 0.26 | 0.64 |
| descriptive\_norm | 0.79 | pro\_env\_framing | 0.57 | 0.13 | Inf | 0.31 | 0.79 |
| convention\_norm | 0.79 | pro\_env\_framing | 0.52 | 0.11 | Inf | 0.32 | 0.72 |
| social\_norm | 0.79 | pro\_env\_framing | 0.63 | 0.11 | Inf | 0.41 | 0.81 |
| moral\_norm | 0.79 | pro\_env\_framing | 0.57 | 0.11 | Inf | 0.36 | 0.76 |
| control\_norm | -0.79 | self\_enh\_framing | 0.32 | 0.12 | Inf | 0.13 | 0.59 |
| descriptive\_norm | -0.79 | self\_enh\_framing | 0.37 | 0.11 | Inf | 0.19 | 0.59 |
| convention\_norm | -0.79 | self\_enh\_framing | 0.50 | 0.10 | Inf | 0.32 | 0.68 |
| social\_norm | -0.79 | self\_enh\_framing | 0.54 | 0.13 | Inf | 0.30 | 0.77 |
| moral\_norm | -0.79 | self\_enh\_framing | 0.57 | 0.09 | Inf | 0.39 | 0.73 |
| control\_norm | 0.79 | self\_enh\_framing | 0.42 | 0.11 | Inf | 0.22 | 0.64 |
| descriptive\_norm | 0.79 | self\_enh\_framing | 0.61 | 0.11 | Inf | 0.39 | 0.80 |
| convention\_norm | 0.79 | self\_enh\_framing | 0.32 | 0.11 | Inf | 0.16 | 0.55 |
| social\_norm | 0.79 | self\_enh\_framing | 0.33 | 0.11 | Inf | 0.16 | 0.57 |
| moral\_norm | 0.79 | self\_enh\_framing | 0.39 | 0.10 | Inf | 0.21 | 0.60 |

### Custom contrasts

cf\_cn\_low\_hed <- c(1, rep(0,29)) # control framing  
cf\_dn\_low\_hed <- c(0,1,rep(0,28))  
cf\_conv\_low\_hed <- c(0,0,1,rep(0,27))  
cf\_sn\_low\_hed <- c(0,0,0,1,rep(0,26))  
cf\_mn\_low\_hed <- c(rep(0,4),1,(rep(0,25)))  
  
cf\_cn\_hi\_hed <- c(rep(0,5),1,(rep(0,24)))   
cf\_dn\_hi\_hed <- c(rep(0,6),1,(rep(0,23)))  
cf\_conv\_hi\_hed <- c(rep(0,7),1,(rep(0,22)))  
cf\_sn\_hi\_hed <- c(rep(0,8),1,(rep(0,21)))  
cf\_mn\_hi\_hed <- c(rep(0,9),1,(rep(0,20)))  
  
  
pf\_cn\_low\_hed <- c(rep(0,10),1,(rep(0,19))) # pro-environmental framing  
pf\_dn\_low\_hed <- c(rep(0,11),1,(rep(0,18)))  
pf\_conv\_low\_hed <- c(rep(0,12),1,(rep(0,17)))  
pf\_sn\_low\_hed <- c(rep(0,13),1,(rep(0,16)))  
pf\_mn\_low\_hed <- c(rep(0,14),1,(rep(0,15)))  
  
pf\_cn\_hi\_hed <- c(rep(0,15),1,(rep(0,14)))   
pf\_dn\_hi\_hed <- c(rep(0,16),1,(rep(0,13)))  
pf\_conv\_hi\_hed <- c(rep(0,17),1,(rep(0,12)))  
pf\_sn\_hi\_hed <- c(rep(0,18),1,(rep(0,11)))  
pf\_mn\_hi\_hed <- c(rep(0,19),1,(rep(0,10)))  
  
  
sf\_cn\_low\_hed <- c(rep(0,20),1,(rep(0,9))) # self-enhancing framing  
sf\_dn\_low\_hed <- c(rep(0,21),1,(rep(0,8)))  
sf\_conv\_low\_hed <- c(rep(0,22),1,(rep(0,7)))  
sf\_sn\_low\_hed <- c(rep(0,23),1,(rep(0,6)))  
sf\_mn\_low\_hed <- c(rep(0,24),1,(rep(0,5)))  
  
sf\_cn\_hi\_hed <- c(rep(0,25),1,(rep(0,4)))   
sf\_dn\_hi\_hed <- c(rep(0,26),1,(rep(0,3)))  
sf\_conv\_hi\_hed <- c(rep(0,27),1,(rep(0,2)))  
sf\_sn\_hi\_hed <- c(rep(0,28),1,(rep(0,1)))  
sf\_mn\_hi\_hed <- c(rep(0,29),1)

Effect of norm for people low vs high on hedonic values across framing conditions

#### Control framing

controlframe\_lowvshi\_hed <- contrast(combinations,   
 method = list("CF/DN/LowHed - CF/CN/LowHed" = cf\_dn\_low\_hed - cf\_cn\_low\_hed,  
 "CF/Conv/LowHed - CF/CN/LowHed" = cf\_conv\_low\_hed - cf\_cn\_low\_hed,  
 "CF/SN/LowHed - CF/CN/LowHed" = cf\_sn\_low\_hed - cf\_cn\_low\_hed,  
 "CF/MN/LowHed - CF/CN/LowHed" = cf\_mn\_low\_hed - cf\_cn\_low\_hed,  
 "CF/DN/HiHed - CF/CN/HiHed" = cf\_dn\_hi\_hed - cf\_cn\_hi\_hed,  
 "CF/Conv/HiHed - CF/CN/HiHed" = cf\_conv\_hi\_hed - cf\_cn\_hi\_hed,  
 "CF/SN/HiHed - CF/CN/HiHed" = cf\_sn\_hi\_hed - cf\_cn\_hi\_hed,  
 "CF/MN/HiHed - CF/CN/HiHed" = cf\_mn\_hi\_hed - cf\_cn\_hi\_hed),   
 adjust = "none")  
  
controlframe\_lowvshi\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| CF/DN/LowHed / CF/CN/LowHed | 0.80 | 0.52 | Inf | 1 | -0.34 | 0.733 |
| CF/Conv/LowHed / CF/CN/LowHed | 0.81 | 0.56 | Inf | 1 | -0.31 | 0.759 |
| CF/SN/LowHed / CF/CN/LowHed | 1.17 | 0.71 | Inf | 1 | 0.26 | 0.798 |
| CF/MN/LowHed / CF/CN/LowHed | 1.21 | 0.83 | Inf | 1 | 0.28 | 0.783 |
| CF/DN/HiHed / CF/CN/HiHed | 0.54 | 0.32 | Inf | 1 | -1.05 | 0.295 |
| CF/Conv/HiHed / CF/CN/HiHed | 1.00 | 0.56 | Inf | 1 | 0.00 | 0.996 |
| CF/SN/HiHed / CF/CN/HiHed | 0.41 | 0.22 | Inf | 1 | -1.64 | 0.101 |
| CF/MN/HiHed / CF/CN/HiHed | 0.63 | 0.38 | Inf | 1 | -0.76 | 0.446 |

# confidence intervals  
controlframe\_lowvshi\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| CF/DN/LowHed / CF/CN/LowHed | 0.80 | 0.52 | Inf | 0.22 | 2.86 |
| CF/Conv/LowHed / CF/CN/LowHed | 0.81 | 0.56 | Inf | 0.21 | 3.16 |
| CF/SN/LowHed / CF/CN/LowHed | 1.17 | 0.71 | Inf | 0.35 | 3.85 |
| CF/MN/LowHed / CF/CN/LowHed | 1.21 | 0.83 | Inf | 0.31 | 4.66 |
| CF/DN/HiHed / CF/CN/HiHed | 0.54 | 0.32 | Inf | 0.17 | 1.72 |
| CF/Conv/HiHed / CF/CN/HiHed | 1.00 | 0.56 | Inf | 0.33 | 2.99 |
| CF/SN/HiHed / CF/CN/HiHed | 0.41 | 0.22 | Inf | 0.14 | 1.19 |
| CF/MN/HiHed / CF/CN/HiHed | 0.63 | 0.38 | Inf | 0.19 | 2.07 |

Planned Comparisons

Custom contrasts

controlframe\_lowvshi\_hed

## contrast odds.ratio SE df null z.ratio p.value  
## CF/DN/LowHed / CF/CN/LowHed 0.801 0.521 Inf 1 -0.341 0.7328  
## CF/Conv/LowHed / CF/CN/LowHed 0.808 0.562 Inf 1 -0.306 0.7593  
## CF/SN/LowHed / CF/CN/LowHed 1.168 0.710 Inf 1 0.256 0.7983  
## CF/MN/LowHed / CF/CN/LowHed 1.208 0.832 Inf 1 0.275 0.7833  
## CF/DN/HiHed / CF/CN/HiHed 0.537 0.319 Inf 1 -1.047 0.2949  
## CF/Conv/HiHed / CF/CN/HiHed 0.998 0.558 Inf 1 -0.004 0.9965  
## CF/SN/HiHed / CF/CN/HiHed 0.413 0.222 Inf 1 -1.642 0.1005  
## CF/MN/HiHed / CF/CN/HiHed 0.630 0.382 Inf 1 -0.762 0.4460  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowHed <- c(1,rep(0,7))  
conv\_vs\_c\_LowHed <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowHed <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowHed <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiHed <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiHed <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiHed <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiHed <- c(rep(0,7),1)

compare\_hed <- contrast(controlframe\_lowvshi\_hed, method = list("Effect of DN (Low - High hed)" = dn\_vs\_c\_LowHed - dn\_vs\_c\_HiHed,   
 "Effect of Conv (Low - High hed)" = conv\_vs\_c\_LowHed - conv\_vs\_c\_HiHed,  
 "Effect of SN (Low - High hed)" = sn\_vs\_c\_LowHed - sn\_vs\_c\_HiHed,  
 "Effect of MN (Low - High hed)" = mn\_vs\_c\_LowHed - mn\_vs\_c\_HiHed), adjust = "none")  
  
compare\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High hed) | 1.49 | 1.47 | Inf | 1 | 0.40 | 0.686 |
| Effect of Conv (Low / High hed) | 0.81 | 0.80 | Inf | 1 | -0.21 | 0.832 |
| Effect of SN (Low / High hed) | 2.83 | 2.57 | Inf | 1 | 1.15 | 0.252 |
| Effect of MN (Low / High hed) | 1.92 | 1.95 | Inf | 1 | 0.64 | 0.522 |

# confidence intervals  
compare\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High hed) | 1.49 | 1.47 | Inf | 0.22 | 10.32 |
| Effect of Conv (Low / High hed) | 0.81 | 0.80 | Inf | 0.12 | 5.68 |
| Effect of SN (Low / High hed) | 2.83 | 2.57 | Inf | 0.48 | 16.73 |
| Effect of MN (Low / High hed) | 1.92 | 1.95 | Inf | 0.26 | 14.05 |

#### Pro-environmental framing

proenvframe\_lowvshi\_hed <- contrast(combinations,   
 method = list("PF/DN/LowHed - PF/CN/LowHed" = pf\_dn\_low\_hed - pf\_cn\_low\_hed,  
 "PF/Conv/LowHed - PF/CN/LowHed" = pf\_conv\_low\_hed - pf\_cn\_low\_hed,  
 "PF/SN/LowHed - PF/CN/LowHed" = pf\_sn\_low\_hed - pf\_cn\_low\_hed,  
 "PF/MN/LowHed - PF/CN/LowHed" = pf\_mn\_low\_hed - pf\_cn\_low\_hed,  
 "PF/DN/HiHed - PF/CN/HiHed" = pf\_dn\_hi\_hed - pf\_cn\_hi\_hed,  
 "PF/Conv/HiHed - PF/CN/HiHed" = pf\_conv\_hi\_hed - pf\_cn\_hi\_hed,  
 "PF/SN/HiHed - PF/CN/HiHed" = pf\_sn\_hi\_hed - pf\_cn\_hi\_hed,  
 "PF/MN/HiHed - PF/CN/HiHed" = pf\_mn\_hi\_hed - pf\_cn\_hi\_hed),   
 adjust = "none")  
  
proenvframe\_lowvshi\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| PF/DN/LowHed / PF/CN/LowHed | 2.62 | 1.76 | Inf | 1 | 1.44 | 0.151 |
| PF/Conv/LowHed / PF/CN/LowHed | 1.48 | 0.97 | Inf | 1 | 0.60 | 0.551 |
| PF/SN/LowHed / PF/CN/LowHed | 1.72 | 1.12 | Inf | 1 | 0.83 | 0.404 |
| PF/MN/LowHed / PF/CN/LowHed | 1.28 | 0.81 | Inf | 1 | 0.40 | 0.692 |
| PF/DN/HiHed / PF/CN/HiHed | 1.67 | 1.13 | Inf | 1 | 0.76 | 0.449 |
| PF/Conv/HiHed / PF/CN/HiHed | 1.38 | 0.81 | Inf | 1 | 0.54 | 0.588 |
| PF/SN/HiHed / PF/CN/HiHed | 2.11 | 1.29 | Inf | 1 | 1.22 | 0.223 |
| PF/MN/HiHed / PF/CN/HiHed | 1.67 | 1.01 | Inf | 1 | 0.85 | 0.393 |

# confidence intervals  
proenvframe\_lowvshi\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| PF/DN/LowHed / PF/CN/LowHed | 2.62 | 1.76 | Inf | 0.70 | 9.74 |
| PF/Conv/LowHed / PF/CN/LowHed | 1.48 | 0.97 | Inf | 0.41 | 5.37 |
| PF/SN/LowHed / PF/CN/LowHed | 1.72 | 1.12 | Inf | 0.48 | 6.15 |
| PF/MN/LowHed / PF/CN/LowHed | 1.28 | 0.81 | Inf | 0.37 | 4.42 |
| PF/DN/HiHed / PF/CN/HiHed | 1.67 | 1.13 | Inf | 0.44 | 6.29 |
| PF/Conv/HiHed / PF/CN/HiHed | 1.38 | 0.81 | Inf | 0.43 | 4.36 |
| PF/SN/HiHed / PF/CN/HiHed | 2.11 | 1.29 | Inf | 0.63 | 7.02 |
| PF/MN/HiHed / PF/CN/HiHed | 1.67 | 1.01 | Inf | 0.51 | 5.47 |

Planned Comparisons

Custom contrasts

proenvframe\_lowvshi\_hed

## contrast odds.ratio SE df null z.ratio p.value  
## PF/DN/LowHed / PF/CN/LowHed 2.62 1.755 Inf 1 1.436 0.1511  
## PF/Conv/LowHed / PF/CN/LowHed 1.48 0.973 Inf 1 0.597 0.5506  
## PF/SN/LowHed / PF/CN/LowHed 1.72 1.119 Inf 1 0.834 0.4041  
## PF/MN/LowHed / PF/CN/LowHed 1.28 0.810 Inf 1 0.397 0.6916  
## PF/DN/HiHed / PF/CN/HiHed 1.67 1.129 Inf 1 0.757 0.4493  
## PF/Conv/HiHed / PF/CN/HiHed 1.38 0.810 Inf 1 0.542 0.5879  
## PF/SN/HiHed / PF/CN/HiHed 2.11 1.294 Inf 1 1.219 0.2228  
## PF/MN/HiHed / PF/CN/HiHed 1.67 1.011 Inf 1 0.853 0.3934  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowHed <- c(1,rep(0,7))  
conv\_vs\_c\_LowHed <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowHed <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowHed <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiHed <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiHed <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiHed <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiHed <- c(rep(0,7),1)

compare\_hed <- contrast(proenvframe\_lowvshi\_hed, method = list("Effect of DN (Low - High hed)" = dn\_vs\_c\_LowHed - dn\_vs\_c\_HiHed,   
 "Effect of Conv (Low - High hed)" = conv\_vs\_c\_LowHed - conv\_vs\_c\_HiHed,  
 "Effect of SN (Low - High hed)" = sn\_vs\_c\_LowHed - sn\_vs\_c\_HiHed,  
 "Effect of MN (Low - High hed)" = mn\_vs\_c\_LowHed - mn\_vs\_c\_HiHed), adjust = "none")  
  
compare\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High hed) | 1.57 | 1.68 | Inf | 1 | 0.42 | 0.673 |
| Effect of Conv (Low / High hed) | 1.08 | 1.09 | Inf | 1 | 0.07 | 0.942 |
| Effect of SN (Low / High hed) | 0.81 | 0.81 | Inf | 1 | -0.21 | 0.836 |
| Effect of MN (Low / High hed) | 0.77 | 0.75 | Inf | 1 | -0.27 | 0.787 |

# confidence intervals  
compare\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High hed) | 1.57 | 1.68 | Inf | 0.19 | 12.73 |
| Effect of Conv (Low / High hed) | 1.08 | 1.09 | Inf | 0.15 | 7.88 |
| Effect of SN (Low / High hed) | 0.81 | 0.81 | Inf | 0.12 | 5.68 |
| Effect of MN (Low / High hed) | 0.77 | 0.75 | Inf | 0.11 | 5.27 |

#### Self-enhancing framing

selfenhframe\_lowvshi\_hed <- contrast(combinations,   
 method = list("SF/DN/LowHed - SF/CN/LowHed" = sf\_dn\_low\_hed - sf\_cn\_low\_hed,  
 "SF/Conv/LowHed - SF/CN/LowHed" = sf\_conv\_low\_hed - sf\_cn\_low\_hed,  
 "SF/SN/LowHed - SF/CN/LowHed" = sf\_sn\_low\_hed - sf\_cn\_low\_hed,  
 "SF/MN/LowHed - SF/CN/LowHed" = sf\_mn\_low\_hed - sf\_cn\_low\_hed,  
 "SF/DN/HiHed - SF/CN/HiHed" = sf\_dn\_hi\_hed - sf\_cn\_hi\_hed,  
 "SF/Conv/HiHed - SF/CN/HiHed" = sf\_conv\_hi\_hed - sf\_cn\_hi\_hed,  
 "SF/SN/HiHed - SF/CN/HiHed" = sf\_sn\_hi\_hed - sf\_cn\_hi\_hed,  
 "SF/MN/HiHed - SF/CN/HiHed" = sf\_mn\_hi\_hed - sf\_cn\_hi\_hed),   
 adjust = "none")  
  
selfenhframe\_lowvshi\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| SF/DN/LowHed / SF/CN/LowHed | 1.24 | 0.90 | Inf | 1 | 0.29 | 0.771 |
| SF/Conv/LowHed / SF/CN/LowHed | 2.14 | 1.46 | Inf | 1 | 1.11 | 0.266 |
| SF/SN/LowHed / SF/CN/LowHed | 2.56 | 1.97 | Inf | 1 | 1.22 | 0.221 |
| SF/MN/LowHed / SF/CN/LowHed | 2.84 | 1.94 | Inf | 1 | 1.53 | 0.126 |
| SF/DN/HiHed / SF/CN/HiHed | 2.22 | 1.44 | Inf | 1 | 1.23 | 0.220 |
| SF/Conv/HiHed / SF/CN/HiHed | 0.67 | 0.45 | Inf | 1 | -0.60 | 0.551 |
| SF/SN/HiHed / SF/CN/HiHed | 0.70 | 0.48 | Inf | 1 | -0.52 | 0.605 |
| SF/MN/HiHed / SF/CN/HiHed | 0.90 | 0.57 | Inf | 1 | -0.17 | 0.867 |

# confidence intervals  
selfenhframe\_lowvshi\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SF/DN/LowHed / SF/CN/LowHed | 1.24 | 0.90 | Inf | 0.30 | 5.17 |
| SF/Conv/LowHed / SF/CN/LowHed | 2.14 | 1.46 | Inf | 0.56 | 8.18 |
| SF/SN/LowHed / SF/CN/LowHed | 2.56 | 1.97 | Inf | 0.57 | 11.59 |
| SF/MN/LowHed / SF/CN/LowHed | 2.84 | 1.94 | Inf | 0.75 | 10.81 |
| SF/DN/HiHed / SF/CN/HiHed | 2.22 | 1.44 | Inf | 0.62 | 7.95 |
| SF/Conv/HiHed / SF/CN/HiHed | 0.67 | 0.45 | Inf | 0.18 | 2.49 |
| SF/SN/HiHed / SF/CN/HiHed | 0.70 | 0.48 | Inf | 0.18 | 2.68 |
| SF/MN/HiHed / SF/CN/HiHed | 0.90 | 0.57 | Inf | 0.26 | 3.12 |

Planned Comparisons

Custom contrasts

selfenhframe\_lowvshi\_hed

## contrast odds.ratio SE df null z.ratio p.value  
## SF/DN/LowHed / SF/CN/LowHed 1.236 0.903 Inf 1 0.291 0.7714  
## SF/Conv/LowHed / SF/CN/LowHed 2.140 1.464 Inf 1 1.112 0.2662  
## SF/SN/LowHed / SF/CN/LowHed 2.565 1.974 Inf 1 1.224 0.2209  
## SF/MN/LowHed / SF/CN/LowHed 2.841 1.938 Inf 1 1.531 0.1259  
## SF/DN/HiHed / SF/CN/HiHed 2.221 1.445 Inf 1 1.227 0.2197  
## SF/Conv/HiHed / SF/CN/HiHed 0.672 0.448 Inf 1 -0.596 0.5514  
## SF/SN/HiHed / SF/CN/HiHed 0.702 0.480 Inf 1 -0.518 0.6045  
## SF/MN/HiHed / SF/CN/HiHed 0.899 0.571 Inf 1 -0.168 0.8669  
##   
## Results are averaged over the levels of: Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowHed <- c(1,rep(0,7))  
conv\_vs\_c\_LowHed <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowHed <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowHed <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiHed <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiHed <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiHed <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiHed <- c(rep(0,7),1)

compare\_hed <- contrast(selfenhframe\_lowvshi\_hed, method = list("Effect of DN (Low - High hed)" = dn\_vs\_c\_LowHed - dn\_vs\_c\_HiHed,   
 "Effect of Conv (Low - High hed)" = conv\_vs\_c\_LowHed - conv\_vs\_c\_HiHed,  
 "Effect of SN (Low - High hed)" = sn\_vs\_c\_LowHed - sn\_vs\_c\_HiHed,  
 "Effect of MN (Low - High hed)" = mn\_vs\_c\_LowHed - mn\_vs\_c\_HiHed), adjust = "none")  
  
compare\_hed %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High hed) | 0.56 | 0.65 | Inf | 1 | -0.51 | 0.614 |
| Effect of Conv (Low / High hed) | 3.18 | 3.45 | Inf | 1 | 1.07 | 0.286 |
| Effect of SN (Low / High hed) | 3.66 | 4.44 | Inf | 1 | 1.07 | 0.286 |
| Effect of MN (Low / High hed) | 3.16 | 3.35 | Inf | 1 | 1.09 | 0.277 |

# confidence intervals  
compare\_hed %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High hed) | 0.56 | 0.65 | Inf | 0.06 | 5.41 |
| Effect of Conv (Low / High hed) | 3.18 | 3.45 | Inf | 0.38 | 26.68 |
| Effect of SN (Low / High hed) | 3.66 | 4.44 | Inf | 0.34 | 39.58 |
| Effect of MN (Low / High hed) | 3.16 | 3.35 | Inf | 0.40 | 25.18 |

## Ingroup Identification

### Overall effect

Storing low (-1SD) and high (+1SD) ingroup values

sd\_below <- mean(average\_df$ingroup\_center) - sd(average\_df$ingroup\_center)  
  
sd\_above <- mean(average\_df$ingroup\_center) + sd(average\_df$ingroup\_center)

EMM for low and high ing

# emmeans  
atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ ingroup\_center, at = atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| ingroup\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| -1.01 | 0.46 | 0.03 | Inf | 0.41 | 0.51 |
| 1.01 | 0.46 | 0.03 | Inf | 0.41 | 0.51 |

Compare EMM for low and high ing

# custom contrast  
low\_ing <- c(1,0)  
hi\_ing <- c(0,1)  
  
# compare  
effect\_ing <- contrast(emms, method = list("High ing - Low ing" = hi\_ing - low\_ing), adjust = "none")  
effect\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| High ing / Low ing | 1.02 | 0.15 | Inf | 1 | 0.14 | 0.888 |

# confidence intervals  
effect\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| High ing / Low ing | 1.02 | 0.15 | Inf | 0.76 | 1.36 |

### Framing Condition

EMM for low vs high ing in each framing

atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ ingroup\_center\*framing\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| ingroup\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -1.01 | control\_framing | 0.41 | 0.04 | Inf | 0.33 | 0.50 |
| 1.01 | control\_framing | 0.40 | 0.04 | Inf | 0.32 | 0.48 |
| -1.01 | pro\_env\_framing | 0.53 | 0.04 | Inf | 0.44 | 0.62 |
| 1.01 | pro\_env\_framing | 0.56 | 0.04 | Inf | 0.47 | 0.64 |
| -1.01 | self\_enh\_framing | 0.44 | 0.04 | Inf | 0.35 | 0.52 |
| 1.01 | self\_enh\_framing | 0.43 | 0.04 | Inf | 0.35 | 0.52 |

Compare EMMs for low vs high ing in each framing

# custom contrasts  
control\_low\_ing <- c(1,0,0,0,0,0)  
control\_hi\_ing <- c(0,1,0,0,0,0)  
proenv\_low\_ing <- c(0,0,1,0,0,0)  
proenv\_hi\_ing <- c(0,0,0,1,0,0)  
selfenh\_low\_ing <- c(0,0,0,0,1,0)  
self\_enh\_hi\_ing <- c(0,0,0,0,0,1)  
  
# compare  
effect\_frame\_ing <- contrast(emms, method = list("Control: High ing - Low ing" = control\_hi\_ing - control\_low\_ing,  
 "Pro-env: High ing - Low ing" = proenv\_hi\_ing - proenv\_low\_ing,  
 "Self-enh: High ing - Low ing" = self\_enh\_hi\_ing - selfenh\_low\_ing), adjust = "none")  
effect\_frame\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High ing / Low ing | 0.95 | 0.23 | Inf | 1 | -0.20 | 0.838 |
| Pro-env: High ing / Low ing | 1.12 | 0.28 | Inf | 1 | 0.45 | 0.651 |
| Self-enh: High ing / Low ing | 1.00 | 0.26 | Inf | 1 | -0.01 | 0.990 |

# confidence intervals  
effect\_frame\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High ing / Low ing | 0.95 | 0.23 | Inf | 0.59 | 1.53 |
| Pro-env: High ing / Low ing | 1.12 | 0.28 | Inf | 0.68 | 1.84 |
| Self-enh: High ing / Low ing | 1.00 | 0.26 | Inf | 0.60 | 1.66 |

### Norm Condition

EMM for low vs high ing in each norm

atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
emms <- emmeans(log\_mice, ~ ingroup\_center\*norm\_condition, at=atlist, type = "response")  
emms %>% knitr::kable(digits = 2)

| ingroup\_center | norm\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| -1.01 | control\_norm | 0.40 | 0.05 | Inf | 0.30 | 0.50 |
| 1.01 | control\_norm | 0.44 | 0.06 | Inf | 0.34 | 0.55 |
| -1.01 | descriptive\_norm | 0.48 | 0.06 | Inf | 0.37 | 0.60 |
| 1.01 | descriptive\_norm | 0.49 | 0.05 | Inf | 0.39 | 0.59 |
| -1.01 | convention\_norm | 0.46 | 0.06 | Inf | 0.35 | 0.58 |
| 1.01 | convention\_norm | 0.45 | 0.06 | Inf | 0.34 | 0.57 |
| -1.01 | social\_norm | 0.45 | 0.06 | Inf | 0.34 | 0.56 |
| 1.01 | social\_norm | 0.49 | 0.06 | Inf | 0.38 | 0.60 |
| -1.01 | moral\_norm | 0.50 | 0.06 | Inf | 0.39 | 0.62 |
| 1.01 | moral\_norm | 0.45 | 0.06 | Inf | 0.35 | 0.56 |

Compare EMMs for low vs high ing in each framing

# custom contrasts  
control\_low\_ing <- c(1,rep(0,9))  
control\_hi\_ing <- c(0,1,rep(0,8))  
dn\_low\_ing <- c(0,0,1,rep(0,7))  
dn\_hi\_ing <- c(0,0,0,1,rep(0,6))  
conv\_low\_ing <- c(0,0,0,0,1,rep(0,5))  
conv\_hi\_ing <- c(rep(0,5),1,rep(0,4))  
sn\_low\_ing <- c(rep(0,6),1,0,0,0)  
sn\_hi\_ing <- c(rep(0,7),1,0,0)  
mn\_low\_ing <- c(rep(0,8),1,0)  
mn\_hi\_ing <- c(rep(0,9),1)  
  
# compare  
effect\_norm\_ing <- contrast(emms, method = list("Control: High ing - Low ing" = control\_hi\_ing - control\_low\_ing,  
 "DN: High ing - Low ing" = dn\_hi\_ing - dn\_low\_ing,  
 "Conv: High ing - Low ing" = conv\_hi\_ing - conv\_low\_ing,  
 "SN: High ing - Low ing" = sn\_hi\_ing - sn\_low\_ing,  
 "MN: High ing - Low ing" = mn\_hi\_ing - mn\_low\_ing), adjust = "none")  
effect\_norm\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Control: High ing / Low ing | 1.21 | 0.37 | Inf | 1 | 0.63 | 0.531 |
| DN: High ing / Low ing | 1.02 | 0.33 | Inf | 1 | 0.07 | 0.948 |
| Conv: High ing / Low ing | 0.94 | 0.33 | Inf | 1 | -0.17 | 0.864 |
| SN: High ing / Low ing | 1.16 | 0.37 | Inf | 1 | 0.47 | 0.641 |
| MN: High ing / Low ing | 0.82 | 0.27 | Inf | 1 | -0.60 | 0.552 |

# confidence intervals  
effect\_norm\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Control: High ing / Low ing | 1.21 | 0.37 | Inf | 0.66 | 2.21 |
| DN: High ing / Low ing | 1.02 | 0.33 | Inf | 0.54 | 1.92 |
| Conv: High ing / Low ing | 0.94 | 0.33 | Inf | 0.47 | 1.88 |
| SN: High ing / Low ing | 1.16 | 0.37 | Inf | 0.62 | 2.18 |
| MN: High ing / Low ing | 0.82 | 0.27 | Inf | 0.43 | 1.58 |

Exploratory Research Question 1: Is there a three-way interaction between in-group identification, framing condition, and norm-intervention condition?

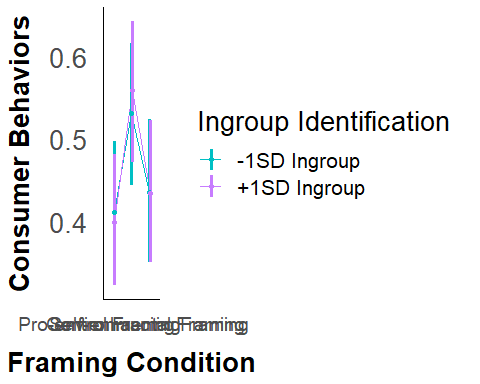
Is the difference between Control Norm and Other Norm different for people low vs high on ingroup identification? Does this vary across framing conditions?

### Visualization

text\_settings <- theme(text = element\_text(size = 20)) +  
 theme(plot.title = element\_text(size = 20, face = 'bold')) +  
 theme(axis.title.x = element\_text(face = 'bold')) +  
 theme(axis.title.y = element\_text(face = 'bold')) +  
 theme(axis.text.x = element\_text(size = 14)) +  
 theme(axis.text.y = element\_text(size = 20)) +  
 theme(axis.ticks = element\_blank())

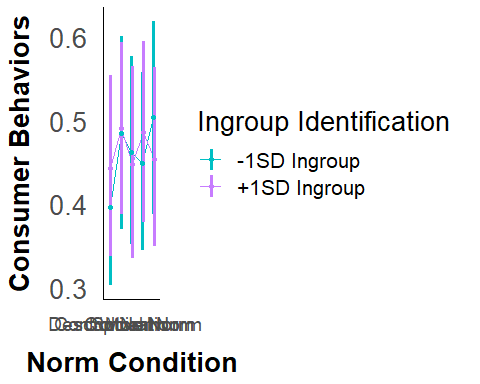
#### Ingroup x Framing

sd\_below <- mean(average\_df$ingroup\_center) - sd(average\_df$ingroup\_center)  
sd\_above <- mean(average\_df$ingroup\_center) + sd(average\_df$ingroup\_center)  
  
at\_list <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
emmip(log\_mice, ingroup\_center ~ framing\_condition, CIs = TRUE, type = "response", CIarg = list(lwd = 1.2, alpha = 1), xlab = "Framing Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_framing","pro\_env\_framing", "self\_enh\_framing"), labels = c("Control Framing", "Pro-environmental Framing", "Self-enhancing Framing")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Ingroup Identification", breaks = c(-1.01218644014995, 1.01218644014995), labels = c("-1SD Ingroup", "+1SD Ingroup"), values = c("#00BFC4","#C77CFF"))



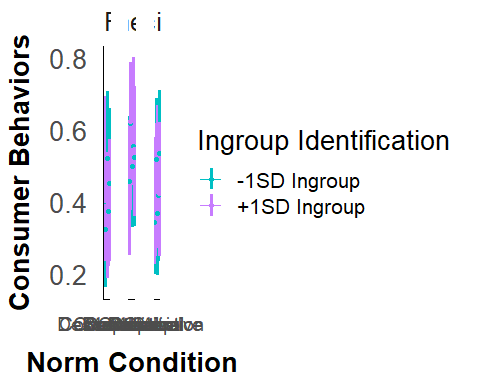
#### Ingroup x Norm

emmip(log\_mice, ingroup\_center ~ norm\_condition, CIs = TRUE, type = "response", CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control Norm", "Descriptive Norm", "Convention", "Social Norm", "Moral Norm")) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Ingroup Identification", breaks = c(-1.01218644014995, 1.01218644014995), labels = c("-1SD Ingroup", "+1SD Ingroup"), values = c("#00BFC4","#C77CFF"))



#### Ingroup, Norm, Framing

emmip(log\_mice, ingroup\_center ~ norm\_condition | framing\_condition, type = "response", CIs = TRUE, CIarg = list(lwd = 1.2, alpha = 1), xlab = "Norm Condition", ylab = "Consumer Behaviors", at = at\_list) +   
 scale\_x\_discrete(breaks=c("control\_norm","descriptive\_norm", "convention\_norm", "social\_norm", "moral\_norm"), labels = c("Control", "Descriptive", "Convention", "Social", "Moral")) +  
 facet\_wrap(~framing\_condition, labeller = labeller(framing\_condition = frame\_labs)) +  
 theme\_apa() +  
 text\_settings +  
 scale\_color\_manual(name = "Ingroup Identification", breaks = c(-1.01218644014995, 1.01218644014995), labels = c("-1SD Ingroup", "+1SD Ingroup"), values = c("#00BFC4","#C77CFF"))



### Planned Comparisons

#### Storing low (-1SD) and high (+1SD) ingroup identification

sd\_below <- mean(average\_df$ingroup\_center) - sd(average\_df$ingroup\_center)  
sd\_above <- mean(average\_df$ingroup\_center) + sd(average\_df$ingroup\_center)

#### Calculate EM Means at low and high ingroup

atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*ingroup\_center\*framing\_condition, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | ingroup\_center | framing\_condition | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -1.01 | control\_framing | 0.39 | 0.08 | Inf | 0.25 | 0.56 |
| descriptive\_norm | -1.01 | control\_framing | 0.32 | 0.10 | Inf | 0.16 | 0.54 |
| convention\_norm | -1.01 | control\_framing | 0.52 | 0.10 | Inf | 0.33 | 0.71 |
| social\_norm | -1.01 | control\_framing | 0.37 | 0.07 | Inf | 0.25 | 0.52 |
| moral\_norm | -1.01 | control\_framing | 0.45 | 0.11 | Inf | 0.26 | 0.66 |
| control\_norm | 1.01 | control\_framing | 0.52 | 0.09 | Inf | 0.34 | 0.69 |
| descriptive\_norm | 1.01 | control\_framing | 0.39 | 0.09 | Inf | 0.23 | 0.57 |
| convention\_norm | 1.01 | control\_framing | 0.34 | 0.09 | Inf | 0.19 | 0.54 |
| social\_norm | 1.01 | control\_framing | 0.36 | 0.08 | Inf | 0.22 | 0.53 |
| moral\_norm | 1.01 | control\_framing | 0.39 | 0.09 | Inf | 0.24 | 0.57 |
| control\_norm | -1.01 | pro\_env\_framing | 0.46 | 0.09 | Inf | 0.29 | 0.64 |
| descriptive\_norm | -1.01 | pro\_env\_framing | 0.62 | 0.10 | Inf | 0.42 | 0.79 |
| convention\_norm | -1.01 | pro\_env\_framing | 0.50 | 0.09 | Inf | 0.33 | 0.67 |
| social\_norm | -1.01 | pro\_env\_framing | 0.55 | 0.10 | Inf | 0.36 | 0.73 |
| moral\_norm | -1.01 | pro\_env\_framing | 0.52 | 0.10 | Inf | 0.33 | 0.71 |
| control\_norm | 1.01 | pro\_env\_framing | 0.42 | 0.10 | Inf | 0.25 | 0.62 |
| descriptive\_norm | 1.01 | pro\_env\_framing | 0.62 | 0.10 | Inf | 0.43 | 0.79 |
| convention\_norm | 1.01 | pro\_env\_framing | 0.56 | 0.09 | Inf | 0.38 | 0.72 |
| social\_norm | 1.01 | pro\_env\_framing | 0.64 | 0.09 | Inf | 0.44 | 0.80 |
| moral\_norm | 1.01 | pro\_env\_framing | 0.55 | 0.10 | Inf | 0.36 | 0.72 |
| control\_norm | -1.01 | self\_enh\_framing | 0.34 | 0.09 | Inf | 0.20 | 0.53 |
| descriptive\_norm | -1.01 | self\_enh\_framing | 0.52 | 0.09 | Inf | 0.34 | 0.69 |
| convention\_norm | -1.01 | self\_enh\_framing | 0.37 | 0.10 | Inf | 0.20 | 0.58 |
| social\_norm | -1.01 | self\_enh\_framing | 0.42 | 0.11 | Inf | 0.24 | 0.63 |
| moral\_norm | -1.01 | self\_enh\_framing | 0.54 | 0.10 | Inf | 0.35 | 0.71 |
| control\_norm | 1.01 | self\_enh\_framing | 0.39 | 0.09 | Inf | 0.23 | 0.58 |
| descriptive\_norm | 1.01 | self\_enh\_framing | 0.46 | 0.08 | Inf | 0.31 | 0.62 |
| convention\_norm | 1.01 | self\_enh\_framing | 0.45 | 0.11 | Inf | 0.25 | 0.67 |
| social\_norm | 1.01 | self\_enh\_framing | 0.45 | 0.10 | Inf | 0.27 | 0.65 |
| moral\_norm | 1.01 | self\_enh\_framing | 0.42 | 0.10 | Inf | 0.25 | 0.62 |

### Custom contrasts

cf\_cn\_low\_ing <- c(1, rep(0,29)) # control framing  
cf\_dn\_low\_ing <- c(0,1,rep(0,28))  
cf\_conv\_low\_ing <- c(0,0,1,rep(0,27))  
cf\_sn\_low\_ing <- c(0,0,0,1,rep(0,26))  
cf\_mn\_low\_ing <- c(rep(0,4),1,(rep(0,25)))  
  
cf\_cn\_hi\_ing <- c(rep(0,5),1,(rep(0,24)))   
cf\_dn\_hi\_ing <- c(rep(0,6),1,(rep(0,23)))  
cf\_conv\_hi\_ing <- c(rep(0,7),1,(rep(0,22)))  
cf\_sn\_hi\_ing <- c(rep(0,8),1,(rep(0,21)))  
cf\_mn\_hi\_ing <- c(rep(0,9),1,(rep(0,20)))  
  
  
pf\_cn\_low\_ing <- c(rep(0,10),1,(rep(0,19))) # pro-environmental framing  
pf\_dn\_low\_ing <- c(rep(0,11),1,(rep(0,18)))  
pf\_conv\_low\_ing <- c(rep(0,12),1,(rep(0,17)))  
pf\_sn\_low\_ing <- c(rep(0,13),1,(rep(0,16)))  
pf\_mn\_low\_ing <- c(rep(0,14),1,(rep(0,15)))  
  
pf\_cn\_hi\_ing <- c(rep(0,15),1,(rep(0,14)))   
pf\_dn\_hi\_ing <- c(rep(0,16),1,(rep(0,13)))  
pf\_conv\_hi\_ing <- c(rep(0,17),1,(rep(0,12)))  
pf\_sn\_hi\_ing <- c(rep(0,18),1,(rep(0,11)))  
pf\_mn\_hi\_ing <- c(rep(0,19),1,(rep(0,10)))  
  
  
sf\_cn\_low\_ing <- c(rep(0,20),1,(rep(0,9))) # self-enhancing framing  
sf\_dn\_low\_ing <- c(rep(0,21),1,(rep(0,8)))  
sf\_conv\_low\_ing <- c(rep(0,22),1,(rep(0,7)))  
sf\_sn\_low\_ing <- c(rep(0,23),1,(rep(0,6)))  
sf\_mn\_low\_ing <- c(rep(0,24),1,(rep(0,5)))  
  
sf\_cn\_hi\_ing <- c(rep(0,25),1,(rep(0,4)))   
sf\_dn\_hi\_ing <- c(rep(0,26),1,(rep(0,3)))  
sf\_conv\_hi\_ing <- c(rep(0,27),1,(rep(0,2)))  
sf\_sn\_hi\_ing <- c(rep(0,28),1,(rep(0,1)))  
sf\_mn\_hi\_ing <- c(rep(0,29),1)

Effect of norm for people low vs high on ingroup identification across framing conditions

#### Control framing

controlframe\_lowvshi\_ing <- contrast(combinations,   
 method = list("CF/DN/LowIng - CF/CN/LowIng" = cf\_dn\_low\_ing - cf\_cn\_low\_ing,  
 "CF/Conv/LowIng - CF/CN/LowIng" = cf\_conv\_low\_ing - cf\_cn\_low\_ing,  
 "CF/SN/LowIng - CF/CN/LowIng" = cf\_sn\_low\_ing - cf\_cn\_low\_ing,  
 "CF/MN/LowIng - CF/CN/LowIng" = cf\_mn\_low\_ing - cf\_cn\_low\_ing,  
 "CF/DN/HiIng - CF/CN/HiIng" = cf\_dn\_hi\_ing - cf\_cn\_hi\_ing,  
 "CF/Conv/HiIng - CF/CN/HiIng" = cf\_conv\_hi\_ing - cf\_cn\_hi\_ing,  
 "CF/SN/HiIng - CF/CN/HiIng" = cf\_sn\_hi\_ing - cf\_cn\_hi\_ing,  
 "CF/MN/HiIng - CF/CN/HiIng" = cf\_mn\_hi\_ing - cf\_cn\_hi\_ing),   
 adjust = "sidak")  
  
controlframe\_lowvshi\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| CF/DN/LowIng / CF/CN/LowIng | 0.74 | 0.42 | Inf | 1 | -0.52 | 0.999 |
| CF/Conv/LowIng / CF/CN/LowIng | 1.70 | 0.90 | Inf | 1 | 1.00 | 0.954 |
| CF/SN/LowIng / CF/CN/LowIng | 0.93 | 0.43 | Inf | 1 | -0.16 | 1.000 |
| CF/MN/LowIng / CF/CN/LowIng | 1.29 | 0.72 | Inf | 1 | 0.45 | 1.000 |
| CF/DN/HiIng / CF/CN/HiIng | 0.58 | 0.31 | Inf | 1 | -1.03 | 0.943 |
| CF/Conv/HiIng / CF/CN/HiIng | 0.47 | 0.26 | Inf | 1 | -1.34 | 0.796 |
| CF/SN/HiIng / CF/CN/HiIng | 0.52 | 0.27 | Inf | 1 | -1.28 | 0.833 |
| CF/MN/HiIng / CF/CN/HiIng | 0.59 | 0.31 | Inf | 1 | -1.00 | 0.953 |

# confidence intervals  
controlframe\_lowvshi\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| CF/DN/LowIng / CF/CN/LowIng | 0.74 | 0.42 | Inf | 0.16 | 3.51 |
| CF/Conv/LowIng / CF/CN/LowIng | 1.70 | 0.90 | Inf | 0.40 | 7.25 |
| CF/SN/LowIng / CF/CN/LowIng | 0.93 | 0.43 | Inf | 0.26 | 3.28 |
| CF/MN/LowIng / CF/CN/LowIng | 1.29 | 0.72 | Inf | 0.28 | 5.90 |
| CF/DN/HiIng / CF/CN/HiIng | 0.58 | 0.31 | Inf | 0.14 | 2.43 |
| CF/Conv/HiIng / CF/CN/HiIng | 0.47 | 0.26 | Inf | 0.10 | 2.16 |
| CF/SN/HiIng / CF/CN/HiIng | 0.52 | 0.27 | Inf | 0.13 | 2.10 |
| CF/MN/HiIng / CF/CN/HiIng | 0.59 | 0.31 | Inf | 0.14 | 2.47 |

Planned Comparisons

Custom contrasts

controlframe\_lowvshi\_ing

## contrast odds.ratio SE df null z.ratio p.value  
## CF/DN/LowIng / CF/CN/LowIng 0.741 0.423 Inf 1 -0.524 0.9993  
## CF/Conv/LowIng / CF/CN/LowIng 1.699 0.904 Inf 1 0.996 0.9539  
## CF/SN/LowIng / CF/CN/LowIng 0.929 0.430 Inf 1 -0.159 1.0000  
## CF/MN/LowIng / CF/CN/LowIng 1.287 0.718 Inf 1 0.452 0.9998  
## CF/DN/HiIng / CF/CN/HiIng 0.581 0.305 Inf 1 -1.034 0.9430  
## CF/Conv/HiIng / CF/CN/HiIng 0.474 0.264 Inf 1 -1.341 0.7957  
## CF/SN/HiIng / CF/CN/HiIng 0.519 0.266 Inf 1 -1.281 0.8327  
## CF/MN/HiIng / CF/CN/HiIng 0.592 0.310 Inf 1 -1.001 0.9526  
##   
## Results are averaged over the levels of: Gender   
## P value adjustment: sidak method for 8 tests   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowIng <- c(1,rep(0,7))  
conv\_vs\_c\_LowIng <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowIng <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowIng <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiIng <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiIng <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiIng <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiIng <- c(rep(0,7),1)

compare\_ing <- contrast(controlframe\_lowvshi\_ing, method = list("Effect of DN (Low - High ing)" = dn\_vs\_c\_LowIng - dn\_vs\_c\_HiIng,   
 "Effect of Conv (Low - High ing)" = conv\_vs\_c\_LowIng - conv\_vs\_c\_HiIng,  
 "Effect of SN (Low - High ing)" = sn\_vs\_c\_LowIng - sn\_vs\_c\_HiIng,  
 "Effect of MN (Low - High ing)" = mn\_vs\_c\_LowIng - mn\_vs\_c\_HiIng), adjust = "sidak")  
  
compare\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 1.28 | 1.01 | Inf | 1 | 0.31 | 0.997 |
| Effect of Conv (Low / High ing) | 3.58 | 2.72 | Inf | 1 | 1.68 | 0.324 |
| Effect of SN (Low / High ing) | 1.79 | 1.21 | Inf | 1 | 0.86 | 0.861 |
| Effect of MN (Low / High ing) | 2.18 | 1.57 | Inf | 1 | 1.07 | 0.735 |

# confidence intervals  
compare\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 1.28 | 1.01 | Inf | 0.18 | 9.22 |
| Effect of Conv (Low / High ing) | 3.58 | 2.72 | Inf | 0.54 | 23.79 |
| Effect of SN (Low / High ing) | 1.79 | 1.21 | Inf | 0.33 | 9.62 |
| Effect of MN (Low / High ing) | 2.18 | 1.57 | Inf | 0.36 | 13.19 |

#### Pro-environmental framing

proenvframe\_lowvshi\_ing <- contrast(combinations,   
 method = list("PF/DN/LowIng - PF/CN/LowIng" = pf\_dn\_low\_ing - pf\_cn\_low\_ing,  
 "PF/Conv/LowIng - PF/CN/LowIng" = pf\_conv\_low\_ing - pf\_cn\_low\_ing,  
 "PF/SN/LowIng - PF/CN/LowIng" = pf\_sn\_low\_ing - pf\_cn\_low\_ing,  
 "PF/MN/LowIng - PF/CN/LowIng" = pf\_mn\_low\_ing - pf\_cn\_low\_ing,  
 "PF/DN/HiIng - PF/CN/HiIng" = pf\_dn\_hi\_ing - pf\_cn\_hi\_ing,  
 "PF/Conv/HiIng - PF/CN/HiIng" = pf\_conv\_hi\_ing - pf\_cn\_hi\_ing,  
 "PF/SN/HiIng - PF/CN/HiIng" = pf\_sn\_hi\_ing - pf\_cn\_hi\_ing,  
 "PF/MN/HiIng - PF/CN/HiIng" = pf\_mn\_hi\_ing - pf\_cn\_hi\_ing),   
 adjust = "sidak")  
  
proenvframe\_lowvshi\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| PF/DN/LowIng / PF/CN/LowIng | 1.93 | 1.08 | Inf | 1 | 1.17 | 0.889 |
| PF/Conv/LowIng / PF/CN/LowIng | 1.18 | 0.61 | Inf | 1 | 0.32 | 1.000 |
| PF/SN/LowIng / PF/CN/LowIng | 1.48 | 0.81 | Inf | 1 | 0.71 | 0.994 |
| PF/MN/LowIng / PF/CN/LowIng | 1.30 | 0.72 | Inf | 1 | 0.48 | 1.000 |
| PF/DN/HiIng / PF/CN/HiIng | 2.26 | 1.29 | Inf | 1 | 1.43 | 0.736 |
| PF/Conv/HiIng / PF/CN/HiIng | 1.72 | 0.94 | Inf | 1 | 0.99 | 0.954 |
| PF/SN/HiIng / PF/CN/HiIng | 2.46 | 1.41 | Inf | 1 | 1.57 | 0.629 |
| PF/MN/HiIng / PF/CN/HiIng | 1.65 | 0.92 | Inf | 1 | 0.90 | 0.974 |

# confidence intervals  
proenvframe\_lowvshi\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| PF/DN/LowIng / PF/CN/LowIng | 1.93 | 1.08 | Inf | 0.42 | 8.91 |
| PF/Conv/LowIng / PF/CN/LowIng | 1.18 | 0.61 | Inf | 0.29 | 4.86 |
| PF/SN/LowIng / PF/CN/LowIng | 1.48 | 0.81 | Inf | 0.33 | 6.55 |
| PF/MN/LowIng / PF/CN/LowIng | 1.30 | 0.72 | Inf | 0.29 | 5.84 |
| PF/DN/HiIng / PF/CN/HiIng | 2.26 | 1.29 | Inf | 0.48 | 10.76 |
| PF/Conv/HiIng / PF/CN/HiIng | 1.72 | 0.94 | Inf | 0.39 | 7.65 |
| PF/SN/HiIng / PF/CN/HiIng | 2.46 | 1.41 | Inf | 0.52 | 11.74 |
| PF/MN/HiIng / PF/CN/HiIng | 1.65 | 0.92 | Inf | 0.36 | 7.54 |

Planned Comparisons

Custom contrasts

proenvframe\_lowvshi\_ing

## contrast odds.ratio SE df null z.ratio p.value  
## PF/DN/LowIng / PF/CN/LowIng 1.93 1.083 Inf 1 1.173 0.8895  
## PF/Conv/LowIng / PF/CN/LowIng 1.18 0.613 Inf 1 0.323 1.0000  
## PF/SN/LowIng / PF/CN/LowIng 1.48 0.807 Inf 1 0.714 0.9942  
## PF/MN/LowIng / PF/CN/LowIng 1.30 0.716 Inf 1 0.476 0.9997  
## PF/DN/HiIng / PF/CN/HiIng 2.26 1.294 Inf 1 1.428 0.7358  
## PF/Conv/HiIng / PF/CN/HiIng 1.72 0.942 Inf 1 0.994 0.9544  
## PF/SN/HiIng / PF/CN/HiIng 2.46 1.410 Inf 1 1.570 0.6285  
## PF/MN/HiIng / PF/CN/HiIng 1.65 0.921 Inf 1 0.904 0.9739  
##   
## Results are averaged over the levels of: Gender   
## P value adjustment: sidak method for 8 tests   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowIng <- c(1,rep(0,7))  
conv\_vs\_c\_LowIng <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowIng <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowIng <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiIng <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiIng <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiIng <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiIng <- c(rep(0,7),1)

compare\_ing <- contrast(proenvframe\_lowvshi\_ing, method = list("Effect of DN (Low - High ing)" = dn\_vs\_c\_LowIng - dn\_vs\_c\_HiIng,   
 "Effect of Conv (Low - High ing)" = conv\_vs\_c\_LowIng - conv\_vs\_c\_HiIng,  
 "Effect of SN (Low - High ing)" = sn\_vs\_c\_LowIng - sn\_vs\_c\_HiIng,  
 "Effect of MN (Low - High ing)" = mn\_vs\_c\_LowIng - mn\_vs\_c\_HiIng), adjust = "sidak")  
  
compare\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 0.85 | 0.67 | Inf | 1 | -0.20 | 0.999 |
| Effect of Conv (Low / High ing) | 0.69 | 0.54 | Inf | 1 | -0.48 | 0.981 |
| Effect of SN (Low / High ing) | 0.60 | 0.48 | Inf | 1 | -0.64 | 0.948 |
| Effect of MN (Low / High ing) | 0.79 | 0.64 | Inf | 1 | -0.29 | 0.997 |

# confidence intervals  
compare\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 0.85 | 0.67 | Inf | 0.12 | 5.96 |
| Effect of Conv (Low / High ing) | 0.69 | 0.54 | Inf | 0.10 | 4.81 |
| Effect of SN (Low / High ing) | 0.60 | 0.48 | Inf | 0.08 | 4.39 |
| Effect of MN (Low / High ing) | 0.79 | 0.64 | Inf | 0.10 | 6.03 |

#### Self-enhancing framing

selfenhframe\_lowvshi\_ing <- contrast(combinations,   
 method = list("SF/DN/LowIng - SF/CN/LowIng" = sf\_dn\_low\_ing - sf\_cn\_low\_ing,  
 "SF/Conv/LowIng - SF/CN/LowIng" = sf\_conv\_low\_ing - sf\_cn\_low\_ing,  
 "SF/SN/LowIng - SF/CN/LowIng" = sf\_sn\_low\_ing - sf\_cn\_low\_ing,  
 "SF/MN/LowIng - SF/CN/LowIng" = sf\_mn\_low\_ing - sf\_cn\_low\_ing,  
 "SF/DN/HiIng - SF/CN/HiIng" = sf\_dn\_hi\_ing - sf\_cn\_hi\_ing,  
 "SF/Conv/HiIng - SF/CN/HiIng" = sf\_conv\_hi\_ing - sf\_cn\_hi\_ing,  
 "SF/SN/HiIng - SF/CN/HiIng" = sf\_sn\_hi\_ing - sf\_cn\_hi\_ing,  
 "SF/MN/HiIng - SF/CN/HiIng" = sf\_mn\_hi\_ing - sf\_cn\_hi\_ing),   
 adjust = "sidak")  
  
selfenhframe\_lowvshi\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| SF/DN/LowIng / SF/CN/LowIng | 2.05 | 1.09 | Inf | 1 | 1.36 | 0.786 |
| SF/Conv/LowIng / SF/CN/LowIng | 1.12 | 0.66 | Inf | 1 | 0.19 | 1.000 |
| SF/SN/LowIng / SF/CN/LowIng | 1.38 | 0.80 | Inf | 1 | 0.56 | 0.999 |
| SF/MN/LowIng / SF/CN/LowIng | 2.20 | 1.19 | Inf | 1 | 1.45 | 0.717 |
| SF/DN/HiIng / SF/CN/HiIng | 1.34 | 0.68 | Inf | 1 | 0.57 | 0.999 |
| SF/Conv/HiIng / SF/CN/HiIng | 1.29 | 0.78 | Inf | 1 | 0.42 | 1.000 |
| SF/SN/HiIng / SF/CN/HiIng | 1.31 | 0.74 | Inf | 1 | 0.47 | 1.000 |
| SF/MN/HiIng / SF/CN/HiIng | 1.16 | 0.66 | Inf | 1 | 0.27 | 1.000 |

# confidence intervals  
selfenhframe\_lowvshi\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| SF/DN/LowIng / SF/CN/LowIng | 2.05 | 1.09 | Inf | 0.48 | 8.71 |
| SF/Conv/LowIng / SF/CN/LowIng | 1.12 | 0.66 | Inf | 0.23 | 5.54 |
| SF/SN/LowIng / SF/CN/LowIng | 1.38 | 0.80 | Inf | 0.29 | 6.67 |
| SF/MN/LowIng / SF/CN/LowIng | 2.20 | 1.19 | Inf | 0.50 | 9.61 |
| SF/DN/HiIng / SF/CN/HiIng | 1.34 | 0.68 | Inf | 0.33 | 5.40 |
| SF/Conv/HiIng / SF/CN/HiIng | 1.29 | 0.78 | Inf | 0.25 | 6.70 |
| SF/SN/HiIng / SF/CN/HiIng | 1.31 | 0.74 | Inf | 0.28 | 6.15 |
| SF/MN/HiIng / SF/CN/HiIng | 1.16 | 0.66 | Inf | 0.25 | 5.44 |

Planned Comparisons

Custom contrasts

selfenhframe\_lowvshi\_ing

## contrast odds.ratio SE df null z.ratio p.value  
## SF/DN/LowIng / SF/CN/LowIng 2.05 1.088 Inf 1 1.355 0.7860  
## SF/Conv/LowIng / SF/CN/LowIng 1.12 0.655 Inf 1 0.187 1.0000  
## SF/SN/LowIng / SF/CN/LowIng 1.38 0.797 Inf 1 0.556 0.9990  
## SF/MN/LowIng / SF/CN/LowIng 2.20 1.189 Inf 1 1.454 0.7166  
## SF/DN/HiIng / SF/CN/HiIng 1.34 0.685 Inf 1 0.570 0.9988  
## SF/Conv/HiIng / SF/CN/HiIng 1.29 0.779 Inf 1 0.419 0.9999  
## SF/SN/HiIng / SF/CN/HiIng 1.31 0.742 Inf 1 0.468 0.9997  
## SF/MN/HiIng / SF/CN/HiIng 1.16 0.658 Inf 1 0.266 1.0000  
##   
## Results are averaged over the levels of: Gender   
## P value adjustment: sidak method for 8 tests   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowIng <- c(1,rep(0,7))  
conv\_vs\_c\_LowIng <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowIng <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowIng <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiIng <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiIng <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiIng <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiIng <- c(rep(0,7),1)

compare\_ing <- contrast(selfenhframe\_lowvshi\_ing, method = list("Effect of DN (Low - High ing)" = dn\_vs\_c\_LowIng - dn\_vs\_c\_HiIng,   
 "Effect of Conv (Low - High ing)" = conv\_vs\_c\_LowIng - conv\_vs\_c\_HiIng,  
 "Effect of SN (Low - High ing)" = sn\_vs\_c\_LowIng - sn\_vs\_c\_HiIng,  
 "Effect of MN (Low - High ing)" = mn\_vs\_c\_LowIng - mn\_vs\_c\_HiIng), adjust = "sidak")  
  
compare\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 1.53 | 1.10 | Inf | 1 | 0.59 | 0.960 |
| Effect of Conv (Low / High ing) | 0.87 | 0.76 | Inf | 1 | -0.16 | 1.000 |
| Effect of SN (Low / High ing) | 1.06 | 0.87 | Inf | 1 | 0.07 | 1.000 |
| Effect of MN (Low / High ing) | 1.89 | 1.48 | Inf | 1 | 0.82 | 0.883 |

# confidence intervals  
compare\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 1.53 | 1.10 | Inf | 0.25 | 9.22 |
| Effect of Conv (Low / High ing) | 0.87 | 0.76 | Inf | 0.10 | 7.70 |
| Effect of SN (Low / High ing) | 1.06 | 0.87 | Inf | 0.14 | 8.13 |
| Effect of MN (Low / High ing) | 1.89 | 1.48 | Inf | 0.27 | 13.21 |

H5: In-group identification will moderate the effect of norm-intervention condition on people’s clothing consumption intentions and behaviors such that the effect of each norm-intervention condition will be stronger when people are high, versus low, on in-group identification.

### Storing low (-1SD) and high (+1SD) ingroup identification

sd\_below <- mean(average\_df$ingroup\_center) - sd(average\_df$ingroup\_center)  
sd\_above <- mean(average\_df$ingroup\_center) + sd(average\_df$ingroup\_center)

### Calculate EM Means at low and high ing

atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*ingroup\_center, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | ingroup\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -1.01 | 0.40 | 0.05 | Inf | 0.30 | 0.50 |
| descriptive\_norm | -1.01 | 0.48 | 0.06 | Inf | 0.37 | 0.60 |
| convention\_norm | -1.01 | 0.46 | 0.06 | Inf | 0.35 | 0.58 |
| social\_norm | -1.01 | 0.45 | 0.06 | Inf | 0.34 | 0.56 |
| moral\_norm | -1.01 | 0.50 | 0.06 | Inf | 0.39 | 0.62 |
| control\_norm | 1.01 | 0.44 | 0.06 | Inf | 0.34 | 0.55 |
| descriptive\_norm | 1.01 | 0.49 | 0.05 | Inf | 0.39 | 0.59 |
| convention\_norm | 1.01 | 0.45 | 0.06 | Inf | 0.34 | 0.57 |
| social\_norm | 1.01 | 0.49 | 0.06 | Inf | 0.38 | 0.60 |
| moral\_norm | 1.01 | 0.45 | 0.06 | Inf | 0.35 | 0.56 |

### Custom contrasts

cn\_low\_ing <- c(1,rep(0,9))  
dn\_low\_ing <- c(0,1,rep(0,8))  
conv\_low\_ing <- c(0,0,1,rep(0,7))  
sn\_low\_ing <- c(rep(0,3),1,rep(0,6))  
mn\_low\_ing <- c(rep(0,4),1,rep(0,5))  
  
cn\_hi\_ing <- c(rep(0,5),1,rep(0,4))  
dn\_hi\_ing <- c(rep(0,6),1,rep(0,3))  
conv\_hi\_ing <- c(rep(0,7),1,rep(0,2))  
sn\_hi\_ing <- c(rep(0,8),1,rep(0,1))  
mn\_hi\_ing <- c(rep(0,9),1)

norm\_effect\_ing <- contrast(combinations,   
 method = list("DN Low Ing - Control Low Ing" = dn\_low\_ing - cn\_low\_ing,  
 "Conv Low Ing - Control Low Ing" = conv\_low\_ing - cn\_low\_ing,  
 "SN Low Ing - Control Low Ing" = sn\_low\_ing - cn\_low\_ing,  
 "MN Low Ing - Control Low Ing" = mn\_low\_ing - cn\_low\_ing,  
 "DN Hi Ing - Control Hi Ing" = dn\_hi\_ing - cn\_hi\_ing,  
 "Conv Hi Ing - Control Hi Ing" = conv\_hi\_ing - cn\_hi\_ing,  
 "SN Hi Ing - Control Hi Ing" = sn\_hi\_ing - cn\_hi\_ing,  
 "MN Hi Ing - Control Hi Ing" = mn\_hi\_ing - cn\_hi\_ing),   
 adjust = "none")  
  
norm\_effect\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| DN Low Ing / Control Low Ing | 1.43 | 0.46 | Inf | 1 | 1.12 | 0.262 |
| Conv Low Ing / Control Low Ing | 1.31 | 0.41 | Inf | 1 | 0.85 | 0.393 |
| SN Low Ing / Control Low Ing | 1.24 | 0.38 | Inf | 1 | 0.70 | 0.486 |
| MN Low Ing / Control Low Ing | 1.54 | 0.49 | Inf | 1 | 1.36 | 0.173 |
| DN Hi Ing / Control Hi Ing | 1.21 | 0.37 | Inf | 1 | 0.61 | 0.544 |
| Conv Hi Ing / Control Hi Ing | 1.02 | 0.33 | Inf | 1 | 0.05 | 0.959 |
| SN Hi Ing / Control Hi Ing | 1.19 | 0.38 | Inf | 1 | 0.53 | 0.593 |
| MN Hi Ing / Control Hi Ing | 1.04 | 0.33 | Inf | 1 | 0.14 | 0.893 |

# confidence intervals  
norm\_effect\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| DN Low Ing / Control Low Ing | 1.43 | 0.46 | Inf | 0.76 | 2.68 |
| Conv Low Ing / Control Low Ing | 1.31 | 0.41 | Inf | 0.71 | 2.43 |
| SN Low Ing / Control Low Ing | 1.24 | 0.38 | Inf | 0.68 | 2.25 |
| MN Low Ing / Control Low Ing | 1.54 | 0.49 | Inf | 0.83 | 2.88 |
| DN Hi Ing / Control Hi Ing | 1.21 | 0.37 | Inf | 0.66 | 2.22 |
| Conv Hi Ing / Control Hi Ing | 1.02 | 0.33 | Inf | 0.54 | 1.93 |
| SN Hi Ing / Control Hi Ing | 1.19 | 0.38 | Inf | 0.63 | 2.21 |
| MN Hi Ing / Control Hi Ing | 1.04 | 0.33 | Inf | 0.56 | 1.95 |

Planned Comparisons

Custom contrasts

norm\_effect\_ing

## contrast odds.ratio SE df null z.ratio p.value  
## DN Low Ing / Control Low Ing 1.43 0.458 Inf 1 1.122 0.2618  
## Conv Low Ing / Control Low Ing 1.31 0.413 Inf 1 0.854 0.3933  
## SN Low Ing / Control Low Ing 1.24 0.378 Inf 1 0.696 0.4864  
## MN Low Ing / Control Low Ing 1.54 0.492 Inf 1 1.361 0.1735  
## DN Hi Ing / Control Hi Ing 1.21 0.375 Inf 1 0.606 0.5444  
## Conv Hi Ing / Control Hi Ing 1.02 0.332 Inf 1 0.052 0.9585  
## SN Hi Ing / Control Hi Ing 1.19 0.378 Inf 1 0.534 0.5931  
## MN Hi Ing / Control Hi Ing 1.04 0.332 Inf 1 0.135 0.8925  
##   
## Results are averaged over the levels of: framing\_condition, Gender   
## Tests are performed on the log odds ratio scale

dn\_vs\_c\_LowIng <- c(1,rep(0,7))  
conv\_vs\_c\_LowIng <- c(0,1,rep(0,6))  
sn\_vs\_c\_LowIng <- c(0,0,1,rep(0,5))  
mn\_vs\_c\_LowIng <- c(0,0,0,1,rep(0,4))  
  
dn\_vs\_c\_HiIng <- c(rep(0,4),1,rep(0,3))  
conv\_vs\_c\_HiIng <- c(rep(0,5),1,rep(0,2))  
sn\_vs\_c\_HiIng <- c(rep(0,6),1,rep(0,1))  
mn\_vs\_c\_HiIng <- c(rep(0,7),1)

norm\_compare\_ing <- contrast(norm\_effect\_ing, method = list("Effect of DN (Low - High ing)" = dn\_vs\_c\_LowIng - dn\_vs\_c\_HiIng,   
 "Effect of Conv (Low - High ing)" = conv\_vs\_c\_LowIng - conv\_vs\_c\_HiIng,  
 "Effect of SN (Low - High ing)" = sn\_vs\_c\_LowIng - sn\_vs\_c\_HiIng,  
 "Effect of MN (Low - High ing)" = mn\_vs\_c\_LowIng - mn\_vs\_c\_HiIng), adjust = "none")  
  
norm\_compare\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 1.19 | 0.52 | Inf | 1 | 0.39 | 0.699 |
| Effect of Conv (Low / High ing) | 1.29 | 0.60 | Inf | 1 | 0.54 | 0.587 |
| Effect of SN (Low / High ing) | 1.04 | 0.46 | Inf | 1 | 0.10 | 0.923 |
| Effect of MN (Low / High ing) | 1.48 | 0.67 | Inf | 1 | 0.87 | 0.387 |

# confidence intervals  
norm\_compare\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Effect of DN (Low / High ing) | 1.19 | 0.52 | Inf | 0.50 | 2.82 |
| Effect of Conv (Low / High ing) | 1.29 | 0.60 | Inf | 0.52 | 3.20 |
| Effect of SN (Low / High ing) | 1.04 | 0.46 | Inf | 0.44 | 2.48 |
| Effect of MN (Low / High ing) | 1.48 | 0.67 | Inf | 0.61 | 3.58 |

# updated ingroup interaction examinations

## Ingroup by Norm interaction

### Storing low (-1SD) and high (+1SD) ingroup identification

sd\_below <- mean(average\_df$ingroup\_center) - sd(average\_df$ingroup\_center)  
sd\_above <- mean(average\_df$ingroup\_center) + sd(average\_df$ingroup\_center)

### Calculate EM Means

atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ norm\_condition\*ingroup\_center, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| norm\_condition | ingroup\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| control\_norm | -1.01 | 0.40 | 0.05 | Inf | 0.30 | 0.50 |
| descriptive\_norm | -1.01 | 0.48 | 0.06 | Inf | 0.37 | 0.60 |
| convention\_norm | -1.01 | 0.46 | 0.06 | Inf | 0.35 | 0.58 |
| social\_norm | -1.01 | 0.45 | 0.06 | Inf | 0.34 | 0.56 |
| moral\_norm | -1.01 | 0.50 | 0.06 | Inf | 0.39 | 0.62 |
| control\_norm | 1.01 | 0.44 | 0.06 | Inf | 0.34 | 0.55 |
| descriptive\_norm | 1.01 | 0.49 | 0.05 | Inf | 0.39 | 0.59 |
| convention\_norm | 1.01 | 0.45 | 0.06 | Inf | 0.34 | 0.57 |
| social\_norm | 1.01 | 0.49 | 0.06 | Inf | 0.38 | 0.60 |
| moral\_norm | 1.01 | 0.45 | 0.06 | Inf | 0.35 | 0.56 |

### Custom contrasts

control\_low\_ing <- c(1, rep(0,9))  
dn\_low\_ing <- c(0,1,rep(0,8))  
conv\_low\_ing <- c(0,0,1,rep(0,7))  
sn\_low\_ing <- c(0,0,0,1,rep(0,6))  
mn\_low\_ing <- c(rep(0,4),1,(rep(0,5)))  
  
control\_hi\_ing <- c(rep(0,5),1,rep(0,4))  
dn\_hi\_ing <- c(rep(0,6),1,0,0,0)  
conv\_hi\_ing <- c(rep(0,7),1,0,0)  
sn\_hi\_ing <- c(rep(0,8),1,0)  
mn\_hi\_ing <- c(rep(0,9),1)

two\_way\_ing <- contrast(combinations,   
 method = list("Low Ing: DN - C" = dn\_low\_ing - control\_low\_ing,  
 "Low Ing: Conv - C" = conv\_low\_ing - control\_low\_ing,  
 "Low Ing: SN - C" = sn\_low\_ing - control\_low\_ing,  
 "Low Ing: MN - C" = mn\_low\_ing - control\_low\_ing,  
 "Hi Ing: DN - C" = dn\_hi\_ing - control\_hi\_ing,  
 "Hi Ing: Conv - C" = conv\_hi\_ing - control\_hi\_ing,  
 "Hi Ing: SN - C" = sn\_hi\_ing - control\_hi\_ing,  
 "Hi Ing: MN - C" = mn\_hi\_ing - control\_hi\_ing),   
 adjust = "none")  
  
two\_way\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Low Ing: DN / C | 1.43 | 0.46 | Inf | 1 | 1.12 | 0.262 |
| Low Ing: Conv / C | 1.31 | 0.41 | Inf | 1 | 0.85 | 0.393 |
| Low Ing: SN / C | 1.24 | 0.38 | Inf | 1 | 0.70 | 0.486 |
| Low Ing: MN / C | 1.54 | 0.49 | Inf | 1 | 1.36 | 0.173 |
| Hi Ing: DN / C | 1.21 | 0.37 | Inf | 1 | 0.61 | 0.544 |
| Hi Ing: Conv / C | 1.02 | 0.33 | Inf | 1 | 0.05 | 0.959 |
| Hi Ing: SN / C | 1.19 | 0.38 | Inf | 1 | 0.53 | 0.593 |
| Hi Ing: MN / C | 1.04 | 0.33 | Inf | 1 | 0.14 | 0.893 |

# confidence intervals  
two\_way\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Low Ing: DN / C | 1.43 | 0.46 | Inf | 0.76 | 2.68 |
| Low Ing: Conv / C | 1.31 | 0.41 | Inf | 0.71 | 2.43 |
| Low Ing: SN / C | 1.24 | 0.38 | Inf | 0.68 | 2.25 |
| Low Ing: MN / C | 1.54 | 0.49 | Inf | 0.83 | 2.88 |
| Hi Ing: DN / C | 1.21 | 0.37 | Inf | 0.66 | 2.22 |
| Hi Ing: Conv / C | 1.02 | 0.33 | Inf | 0.54 | 1.93 |
| Hi Ing: SN / C | 1.19 | 0.38 | Inf | 0.63 | 2.21 |
| Hi Ing: MN / C | 1.04 | 0.33 | Inf | 0.56 | 1.95 |

## Ingroup by framing interaction

### Calculate EM Means

atlist <- list(ingroup\_center = c(sd\_below, sd\_above))  
  
combinations <- emmeans(log\_mice, ~ framing\_condition\*ingroup\_center, at=atlist, type = "response")  
  
combinations %>% knitr::kable(digits = 2)

| framing\_condition | ingroup\_center | prob | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- | --- |
| control\_framing | -1.01 | 0.41 | 0.04 | Inf | 0.33 | 0.50 |
| pro\_env\_framing | -1.01 | 0.53 | 0.04 | Inf | 0.44 | 0.62 |
| self\_enh\_framing | -1.01 | 0.44 | 0.04 | Inf | 0.35 | 0.52 |
| control\_framing | 1.01 | 0.40 | 0.04 | Inf | 0.32 | 0.48 |
| pro\_env\_framing | 1.01 | 0.56 | 0.04 | Inf | 0.47 | 0.64 |
| self\_enh\_framing | 1.01 | 0.43 | 0.04 | Inf | 0.35 | 0.52 |

Custom contrasts

control\_low\_ing <- c(1, rep(0,5))  
pe\_low\_ing <- c(0,1,rep(0,4))  
se\_low\_ing <- c(0,0,1,rep(0,3))  
  
control\_hi\_ing <- c(0,0,0,1,0,0)  
pe\_hi\_ing <- c(0,0,0,0,1,0)  
se\_hi\_ing <- c(rep(0,5),1)

two\_way\_ing <- contrast(combinations,   
 method = list("Low Ing: PE - C" = pe\_low\_ing - control\_low\_ing,  
 "Low Ing: SE - C" = se\_low\_ing - control\_low\_ing,  
 "Low Ing: PE - SE" = pe\_low\_ing - se\_low\_ing,  
 "Hi Ing: PE - C" = pe\_hi\_ing - control\_hi\_ing,  
 "Hi Ing: SE - C" = se\_hi\_ing - control\_hi\_ing,  
 "Hi Ing: PE - SE" = pe\_hi\_ing - se\_hi\_ing),   
 adjust = "none")  
  
two\_way\_ing %>% knitr::kable(digits = c(NA,2,2,2,2,2,3))

| contrast | odds.ratio | SE | df | null | z.ratio | p.value |
| --- | --- | --- | --- | --- | --- | --- |
| Low Ing: PE / C | 1.62 | 0.40 | Inf | 1 | 1.95 | 0.051 |
| Low Ing: SE / C | 1.11 | 0.28 | Inf | 1 | 0.40 | 0.689 |
| Low Ing: PE / SE | 1.47 | 0.37 | Inf | 1 | 1.52 | 0.128 |
| Hi Ing: PE / C | 1.91 | 0.47 | Inf | 1 | 2.66 | 0.008 |
| Hi Ing: SE / C | 1.16 | 0.28 | Inf | 1 | 0.60 | 0.551 |
| Hi Ing: PE / SE | 1.65 | 0.42 | Inf | 1 | 1.99 | 0.046 |

# confidence intervals  
two\_way\_ing %>% confint() %>%  
 knitr::kable(digits = 2)

| contrast | odds.ratio | SE | df | asymp.LCL | asymp.UCL |
| --- | --- | --- | --- | --- | --- |
| Low Ing: PE / C | 1.62 | 0.40 | Inf | 1.00 | 2.64 |
| Low Ing: SE / C | 1.11 | 0.28 | Inf | 0.68 | 1.81 |
| Low Ing: PE / SE | 1.47 | 0.37 | Inf | 0.90 | 2.41 |
| Hi Ing: PE / C | 1.91 | 0.47 | Inf | 1.19 | 3.08 |
| Hi Ing: SE / C | 1.16 | 0.28 | Inf | 0.72 | 1.87 |
| Hi Ing: PE / SE | 1.65 | 0.42 | Inf | 1.01 | 2.70 |