Compiled Code

Darwin Khay

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1. Data Wrangling

Importing the dataset

```
asmr_data <- read.csv("C:\\Users\\khayd\\Documents\\FALL 2020 Files\\STAT 1601\\Datasets\\ASMR_data.csv

library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggplot2)
library(RColorBrewer)
library(ggwordcloud)
```

```
## Warning: package 'ggwordcloud' was built under R version 4.0.3
```

Subsetting the data to include relevant variables

```
#

asmr_data1 <- asmr_data%>%
  select(BDI.group, BDI_TOTAL, BAI_TOTAL,Ill_Elab, V_howmanyvideos, V_Time_Evening, V_Time_BeforeSleep,
```

Renaming some column names

```
asmr_data2<-asmr_data1%>%
  rename(BDI_group = BDI.group,Illness_Type = Ill_Elab, Num_ASMRVideos = V_howmanyvideos, Watch_Evening

glimpse(asmr_data2)
```

```
## Rows: 475
## Columns: 31
## $ BDI_group                               <int> 1, 1, 1, 1, 1, 1, 2, 2, 1, 1, 1,...
## $ BDI_TOTAL                               <int> 12, 2, 4, 6, 12, 5, 14, 18, 3, 0...
## $ BAI_TOTAL                               <int> 10, 1, 8, 14, 22, 3, 10, 12, 1, ...
## $ Illness_Type                            <chr> "migraines", "0", "0", "0", "0",...
## $ Num_ASMRVideos                          <int> 5, 3, 4, 2, 2, 3, 2, 3, 3, 3, 6,...
## $ Watch_EveningTime                       <int> 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 1,...
## $ Watch_BeforeSleep                       <int> 0, 1, 1, 1, 1, 1, 0, 1, 1, 1, 0,...
## $ Watch_SpareTime                         <int> 0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 1,...
## $ Experienced_Tingles                     <int> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,...
## $ FlowFocusWatching                       <int> 5, 4, 5, 2, 5, 5, 5, 3, 3, 4, 3,...
## $ FlowFeeling                             <int> 5, 4, 5, 2, 4, 3, 3, 5, 3, 4, 3,...
## $ FlowNoEffort                            <int> 5, 3, 4, 1, 5, 5, 4, 5, 5, 4, 5,...
## $ FlowInControl                           <int> 5, 3, 4, 3, 5, 5, 3, 5, 5, 3, 5,...
## $ FlowNotWorried                          <int> 5, 3, 2, 1, 1, 4, 5, 5, 5, 4, 5,...
## $ Mood_Before_watch                       <int> 72, 50, 70, 30, 50, 80, 39, 29, ...
## $ Mood_During_Watch                       <int> 88, 90, 85, 50, 80, 100, 59, 91,...
## $ Mood_After_watch                        <int> 83, 80, 85, 47, 100, 100, 70, 85...
## $ MoodAfter_30mins_watch                  <int> 83, 60, 80, 45, 90, 100, 61, 68,...
## $ MoodAfter_1hour_watch                   <int> 83, 50, 60, 19, 70, 80, 50, 52, ...
## $ MoodAfter_3hours_watch                  <int> 82, 50, 50, 14, 50, 82, 39, 41, ...
## $ MoodAfter_1Day_watch                    <int> 83, 50, 50, 19, 50, 82, 49, 28, ...
## $ Mood_Daily                              <int> 74, 50, 51, 20, 50, 84, 50, 29, ...
## $ EffectSleep                             <int> 0, 2, 1, 1, 1, 0, 1, 1, 1, 0, 0,...
## $ RelieveNegativeMood                     <int> 5, 1, 5, 4, 4, 4, 5, 5, 3, 4, 3,...
## $ EnjoyASMRvideos                         <int> 5, 5, 5, 4, 5, 5, 5, 5, 4, 4, 5,...
## $ EnjoyContentofASMRvideos_notingles      <int> 5, 3, 4, 3, 5, 4, 4, 3, 4, 4, 5,...
## $ WatchToRelax                            <int> 5, 5, 5, 4, 5, 5, 5, 4, 4, 4, 5,...
## $ DealWithAnxiety                         <int> 5, 1, 4, 4, 5, 3, 5, 1, 2, 2, 1,...
## $ DealWithStress                          <int> 5, 1, 4, 4, 5, 3, 5, 4, 2, 4, 1,...
## $ HelpMeSleep                             <int> 2, 1, 5, 4, 3, 3, 4, 5, 5, 4, 4,...
## $ WatchToDealWithDepression               <int> 1, 1, 1, 1, 5, 1, 3, 1, 1, 2, 1,...
```

Changing some columns into character vectors and changing values

```
asmr_data3 <- asmr_data2%>%
  mutate(BDI_group = as.character(BDI_group))%>%
  mutate(BDI_group = ifelse(BDI_group == "1", "Little to no depression", ifelse(BDI_group == "2", "Mild
  mutate(Illness_Type = ifelse(Illness_Type == "0", NA, Illness_Type))%>%
  mutate(Watch_EveningTime = as.character(Watch_EveningTime), Watch_BeforeSleep = as.character(Watch_Be
  mutate(Watch_EveningTime = ifelse(Watch_EveningTime == "0", "No", "Yes"), Watch_BeforeSleep = ifelse(
```

```r
  mutate(Experienced_Tingles = as.character(Experienced_Tingles))%>%
  mutate(Experienced_Tingles = ifelse(Experienced_Tingles == "1", "Yes", "No"))%>%
  mutate(EffectSleep = as.character(EffectSleep))%>%
  mutate(EffectSleep = ifelse(EffectSleep == "1" | EffectSleep == "3", "Yes", "No"))

glimpse(asmr_data3)
```

```
## Rows: 475
## Columns: 31
## $ BDI_group                       <chr> "Little to no depression", "Litt...
## $ BDI_TOTAL                       <int> 12, 2, 4, 6, 12, 5, 14, 18, 3, 0...
## $ BAI_TOTAL                       <int> 10, 1, 8, 14, 22, 3, 10, 12, 1, ...
## $ Illness_Type                    <chr> "migraines", NA, NA, NA, NA, NA,...
## $ Num_ASMRVideos                  <int> 5, 3, 4, 2, 2, 3, 2, 3, 3, 3, 6,...
## $ Watch_EveningTime               <chr> "No", "No", "No", "Yes", "No", "...
## $ Watch_BeforeSleep               <chr> "No", "Yes", "Yes", "Yes", "Yes"...
## $ Watch_SpareTime                 <chr> "No", "No", "Yes", "Yes", "No", ...
## $ Experienced_Tingles             <chr> "Yes", "Yes", "Yes", "Yes", "Yes...
## $ FlowFocusWatching               <int> 5, 4, 5, 2, 5, 5, 5, 3, 3, 4, 3,...
## $ FlowFeeling                     <int> 5, 4, 5, 2, 4, 3, 3, 5, 3, 4, 3,...
## $ FlowNoEffort                    <int> 5, 3, 4, 1, 5, 5, 4, 5, 5, 4, 5,...
## $ FlowInControl                   <int> 5, 3, 4, 3, 5, 5, 3, 5, 5, 3, 5,...
## $ FlowNotWorried                  <int> 5, 3, 2, 1, 1, 4, 5, 5, 5, 4, 5,...
## $ Mood_Before_watch               <int> 72, 50, 70, 30, 50, 80, 39, 29, ...
## $ Mood_During_Watch               <int> 88, 90, 85, 50, 80, 100, 59, 91,...
## $ Mood_After_watch                <int> 83, 80, 85, 47, 100, 100, 70, 85...
## $ MoodAfter_30mins_watch          <int> 83, 60, 80, 45, 90, 100, 61, 68,...
## $ MoodAfter_1hour_watch           <int> 83, 50, 60, 19, 70, 80, 50, 52, ...
## $ MoodAfter_3hours_watch          <int> 82, 50, 50, 14, 50, 82, 39, 41, ...
## $ MoodAfter_1Day_watch            <int> 83, 50, 50, 19, 50, 82, 49, 28, ...
## $ Mood_Daily                      <int> 74, 50, 51, 20, 50, 84, 50, 29, ...
## $ EffectSleep                     <chr> "No", "No", "Yes", "Yes", "Yes",...
## $ RelieveNegativeMood             <int> 5, 1, 5, 4, 4, 4, 5, 5, 3, 4, 3,...
## $ EnjoyASMRvideos                 <int> 5, 5, 5, 4, 5, 5, 5, 5, 4, 4, 5,...
## $ EnjoyContentofASMRvideos_notingles <int> 5, 3, 4, 3, 5, 4, 4, 3, 4, 4, 5,...
## $ WatchToRelax                    <int> 5, 5, 5, 4, 5, 5, 5, 4, 4, 4, 5,...
## $ DealWithAnxiety                 <int> 5, 1, 4, 4, 5, 3, 5, 1, 2, 2, 1,...
## $ DealWithStress                  <int> 5, 1, 4, 4, 5, 3, 5, 4, 2, 4, 1,...
## $ HelpMeSleep                     <int> 2, 1, 5, 4, 3, 3, 4, 5, 5, 4, 4,...
## $ WatchToDealWithDepression       <int> 1, 1, 1, 1, 5, 1, 3, 1, 1, 2, 1,...
```

Summary measures of key numeric variables

```r
BDI_mean_table<-asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(BDI_mean_byBDIgroup = mean(BDI_TOTAL, na.rm=T), BAI_mean_byBDIgroup = mean(BAI_TOTAL, na.rm=
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
BDI_mean_table
```

```
## # A tibble: 3 x 3
##   BDI_group                  BDI_mean_byBDIgroup BAI_mean_byBDIgroup
##   <chr>                                    <dbl>               <dbl>
## 1 Little to no depression                   5.69                8.17
## 2 Mild depression                          16.4                17.6
## 3 Moderate or severe depression            28.3                24.7
```

```
BDI_standarddev_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(BDI_sd_byBDIgroup = sd(BDI_TOTAL, na.rm=T), BAI_sd_byBDIgroup = sd(BAI_TOTAL, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
BDI_standarddev_table
```

```
## # A tibble: 3 x 3
##   BDI_group                  BDI_sd_byBDIgroup BAI_sd_byBDIgroup
##   <chr>                                  <dbl>             <dbl>
## 1 Little to no depression                 3.74              7.30
## 2 Mild depression                         1.89              9.55
## 3 Moderate or severe depression           7.53             13.2
```

```
NumVids_mean_table<-asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(NumVids_mean_byBDIgroup = mean(Num_ASMRVideos, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
NumVids_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                  NumVids_mean_byBDIgroup
##   <chr>                                        <dbl>
## 1 Little to no depression                       3.07
## 2 Mild depression                               3.20
## 3 Moderate or severe depression                 3.62
```

```
NumVids_sd_table<-asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(NumVids_sd_byBDIgroup = sd(Num_ASMRVideos, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
NumVids_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    NumVids_sd_byBDIgroup
##   <chr>                                       <dbl>
## 1 Little to no depression                      1.45
## 2 Mild depression                              1.47
## 3 Moderate or severe depression                1.45
```

```
MoodBeforeWatch_mean_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodBeforeWatch_mean_byBDIgroup = mean(Mood_Before_watch, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodBeforeWatch_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    MoodBeforeWatch_mean_byBDIgroup
##   <chr>                                                  <dbl>
## 1 Little to no depression                                 57.4
## 2 Mild depression                                         44.5
## 3 Moderate or severe depression                           37.6
```

```
MoodBeforeWatch_sd_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodBeforeWatch_sd_byBDIgroup = sd(Mood_Before_watch, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodBeforeWatch_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    MoodBeforeWatch_sd_byBDIgroup
##   <chr>                                                <dbl>
## 1 Little to no depression                               13.8
## 2 Mild depression                                       14.9
## 3 Moderate or severe depression                         16.0
```

```
MoodAfterWatch_mean_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodAfterWatch_mean_byBDIgroup = mean(Mood_After_watch, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodAfterWatch_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    MoodAfterWatch_mean_byBDIgroup
##   <chr>                                                 <dbl>
## 1 Little to no depression                                77.1
## 2 Mild depression                                        72.0
## 3 Moderate or severe depression                          67.8
```

```
MoodAfterWatch_sd_table <- asmr_data3 %>%
  group_by(BDI_group) %>%
  summarize(MoodAfterWatch_sd_byBDIgroup = sd(Mood_Before_watch, na.rm=T))
```

`summarise()` ungrouping output (override with `.groups` argument)

```
MoodAfterWatch_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    MoodAfterWatch_sd_byBDIgroup
##   <chr>                                               <dbl>
## 1 Little to no depression                              13.8
## 2 Mild depression                                      14.9
## 3 Moderate or severe depression                        16.0
```

```
MoodAfter30minsWatch_mean_table <- asmr_data3 %>%
  group_by(BDI_group) %>%
  summarize(MoodAfter30minWatch_mean_byBDIgroup = mean(MoodAfter_30mins_watch, na.rm=T))
```

`summarise()` ungrouping output (override with `.groups` argument)

```
MoodAfter30minsWatch_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    MoodAfter30minWatch_mean_byBDIgroup
##   <chr>                                                      <dbl>
## 1 Little to no depression                                     69.7
## 2 Mild depression                                             62.7
## 3 Moderate or severe depression                               56.3
```

```
MoodAfter30minsWatch_sd_table <- asmr_data3 %>%
  group_by(BDI_group) %>%
  summarize(MoodAfter30minWatch_sd_byBDIgroup = sd(MoodAfter_30mins_watch, na.rm=T))
```

`summarise()` ungrouping output (override with `.groups` argument)

```
MoodAfter30minsWatch_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                    MoodAfter30minWatch_sd_byBDIgroup
##   <chr>                                                    <dbl>
## 1 Little to no depression                                   13.5
## 2 Mild depression                                           15.0
## 3 Moderate or severe depression                             20.1
```

```
MoodAfter1hourWatch_mean_table <- asmr_data3 %>%
  group_by(BDI_group) %>%
  summarize(MoodAfter1hourWatch_mean_byBDIgroup = mean(MoodAfter_1hour_watch, na.rm=T))
```

`summarise()` ungrouping output (override with `.groups` argument)

```
MoodAfter1hourWatch_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                      MoodAfter1hourWatch_mean_byBDIgroup
##   <chr>                                                        <dbl>
## 1 Little to no depression                                       65.3
## 2 Mild depression                                               57.8
## 3 Moderate or severe depression                                 49.7
```

```r
MoodAfter1hourWatch_sd_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodAfter1hourWatch_sd_byBDIgroup = sd(MoodAfter_1hour_watch, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodAfter1hourWatch_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                      MoodAfter1hourWatch_sd_byBDIgroup
##   <chr>                                                      <dbl>
## 1 Little to no depression                                     13.6
## 2 Mild depression                                             15.4
## 3 Moderate or severe depression                               19.6
```

```r
MoodAfter3hoursWatch_mean_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodAfter3hoursWatch_mean_byBDIgroup = mean(MoodAfter_3hours_watch, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodAfter3hoursWatch_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                      MoodAfter3hoursWatch_mean_byBDIgroup
##   <chr>                                                         <dbl>
## 1 Little to no depression                                        62.2
## 2 Mild depression                                                51.5
## 3 Moderate or severe depression                                  43.8
```

```r
MoodAfter3hoursWatch_sd_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodAfter3hoursWatch_sd_byBDIgroup = sd(MoodAfter_3hours_watch, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodAfter3hoursWatch_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                     MoodAfter3hoursWatch_sd_byBDIgroup
##   <chr>                                                     <dbl>
## 1 Little to no depression                                    13.4
## 2 Mild depression                                            15.2
## 3 Moderate or severe depression                              18.8
```

```r
MoodAfter1DayWatch_mean_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodAfter1DayWatch_mean_byBDIgroup = mean(MoodAfter_1Day_watch, na.rm=T))
```

```
## 'summarise()' ungrouping output (override with '.groups' argument)
```

```r
MoodAfter1DayWatch_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                     MoodAfter1DayWatch_mean_byBDIgroup
##   <chr>                                                     <dbl>
## 1 Little to no depression                                    59.2
## 2 Mild depression                                            45.9
## 3 Moderate or severe depression                              39.4
```

```r
MoodAfter1DayWatch_sd_table <- asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodAfter1DayWatch_sd_byBDIgroup = sd(MoodAfter_1Day_watch, na.rm=T))
```

```
## 'summarise()' ungrouping output (override with '.groups' argument)
```

```r
MoodAfter1DayWatch_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                     MoodAfter1DayWatch_sd_byBDIgroup
##   <chr>                                                   <dbl>
## 1 Little to no depression                                  13.2
## 2 Mild depression                                          14.6
## 3 Moderate or severe depression                            18.8
```

```r
MoodDaily_mean_table<-asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodDaily_mean_byBDIgroup = mean(Mood_Daily, na.rm=T))
```

```
## 'summarise()' ungrouping output (override with '.groups' argument)
```

```r
MoodDaily_mean_table
```

```
## # A tibble: 3 x 2
##   BDI_group                     MoodDaily_mean_byBDIgroup
##   <chr>                                             <dbl>
## 1 Little to no depression                            58.8
## 2 Mild depression                                    45.0
## 3 Moderate or severe depression                      31.9
```

```
MoodDaily_sd_table<-asmr_data3%>%
  group_by(BDI_group)%>%
  summarize(MoodDaily_sd_byBDIgroup = sd(Mood_Daily, na.rm=T))
```

```
## `summarise()` ungrouping output (override with `.groups` argument)
```

```
MoodDaily_sd_table
```

```
## # A tibble: 3 x 2
##   BDI_group                 MoodDaily_sd_byBDIgroup
##   <chr>                                       <dbl>
## 1 Little to no depression                      12.9
## 2 Mild depression                              15.2
## 3 Moderate or severe depression                16.1
```

Summary measures of key categorical variables

```
illness_type_table<-asmr_data3%>%
  select(Illness_Type)%>%
  table()

illness_type_table2<-illness_type_table%>%
  data.frame(illness_type_table)%>%
  select(1,Freq)%>%
  rename(Illness_Type = 1)
illness_type_table3<-illness_type_table2[order(-illness_type_table2$Freq),]
head(illness_type_table3)
```

```
##       Illness_Type Freq
## 6           Asthma    2
## 20 Crohn's Disease    2
## 52         migraine    2
## 53         Migraine    2
## 1       acid reflux    1
## 2          Anorexia    1
```

```
twoway_bdigroup_eveningtime <- asmr_data3%>%
  select(BDI_group, Watch_EveningTime)%>%
  table()
twoway_bdigroup_eveningtime
```

```
##                                Watch_EveningTime
## BDI_group                       No Yes
##   Little to no depression       216 131
##   Mild depression                41  15
##   Moderate or severe depression  34  38
```

```r
twoway_bdigroup_beforesleep <- asmr_data3%>%
  select(BDI_group, Watch_BeforeSleep)%>%
  table()
twoway_bdigroup_beforesleep
```

```
##                            Watch_BeforeSleep
## BDI_group                     No Yes
##    Little to no depression    55 292
##    Mild depression             7  49
##    Moderate or severe depression  20  52
```

```r
twoway_bdigroup_sparetime <- asmr_data3%>%
  select(BDI_group, Watch_SpareTime)%>%
  table()
twoway_bdigroup_sparetime
```

```
##                            Watch_SpareTime
## BDI_group                     No Yes
##    Little to no depression   254  93
##    Mild depression            36  20
##    Moderate or severe depression  42  30
```

```r
experiencedtingles_frequency <- asmr_data3%>%
  select(Experienced_Tingles)%>%
  table()
experiencedtingles_frequency
```

```
## .
##  No Yes
##  50 425
```

```r
twoway_bdigroup_flowfocuswatching<-asmr_data3%>%
  select(BDI_group, FlowFocusWatching)%>%
  table()
twoway_bdigroup_flowfocuswatching
```

```
##                            FlowFocusWatching
## BDI_group                     0   1   2   3   4   5
##    Little to no depression   35  18  36  30 122 106
##    Mild depression            7   2   1   5  17  24
##    Moderate or severe depression  8   4  10   5  27  18
```

```r
twoway_bdigroup_flowfeeling<-asmr_data3%>%
  select(BDI_group, FlowFeeling)%>%
  table()
twoway_bdigroup_flowfeeling
```

```
##                            FlowFeeling
## BDI_group                     0   1   2   3   4   5
##    Little to no depression   35  16  29  48 133  86
##    Mild depression            7   2   5   9  17  16
##    Moderate or severe depression  8   3   6  10  23  22
```

```
twoway_bdigroup_flownoeffort<-asmr_data3%>%
  select(BDI_group, FlowNoEffort)%>%
  table()
twoway_bdigroup_flownoeffort
```

```
##                            FlowNoEffort
## BDI_group                    0   1   2   3   4   5
##    Little to no depression  35  13  56  57 105  81
##    Mild depression           7   0  10   7  18  14
##    Moderate or severe depression  8   6   5  10  25  18
```

```
twoway_bdigroup_flowincontrol<-asmr_data3%>%
  select(BDI_group, FlowInControl)%>%
  table()
twoway_bdigroup_flowincontrol
```

```
##                            FlowInControl
## BDI_group                    0  1  2  3  4  5
##    Little to no depression  35 12 59 95 62 84
##    Mild depression           7  2 12 13  7 15
##    Moderate or severe depression  8  8  9 17 17 13
```

```
twoway_bdigroup_flownotworried<-asmr_data3%>%
  select(BDI_group, FlowNotWorried)%>%
  table()
twoway_bdigroup_flownotworried
```

```
##                            FlowNotWorried
## BDI_group                    0   1   2   3   4   5
##    Little to no depression  35  18  34  76  75 109
##    Mild depression           7   4   5  10  10  20
##    Moderate or severe depression  8   9   8  14   9  24
```

```
twoway_bdigroup_effectsleep <- asmr_data3%>%
  select(BDI_group, EffectSleep)%>%
  table()
twoway_bdigroup_effectsleep
```

```
##                            EffectSleep
## BDI_group                    No Yes
##    Little to no depression  165 182
##    Mild depression           13  43
##    Moderate or severe depression  15  57
```

```
twoway_bdigroup_relievenegativemood <- asmr_data3%>%
  select(BDI_group, RelieveNegativeMood)%>%
  table()
twoway_bdigroup_relievenegativemood
```

```
##                                  RelieveNegativeMood
## BDI_group                          1   2   3   4   5
##    Little to no depression        28  57  72 138  52
##    Mild depression                 4   5   5  29  13
##    Moderate or severe depression   1   2   8  43  18
```

```
twoway_bdigroup_enjoyasmrvids <- asmr_data3%>%
  select(BDI_group, EnjoyASMRvideos)%>%
  table()
twoway_bdigroup_enjoyasmrvids
```

```
##                                  EnjoyASMRvideos
## BDI_group                          2   3   4   5
##    Little to no depression         0   2 123 222
##    Mild depression                 0   3  20  33
##    Moderate or severe depression   1   0  23  48
```

```
twoway_bdigroup_enjoycontentasmrvids_notingles <- asmr_data3%>%
  select(BDI_group, EnjoyContentofASMRvideos_notingles)%>%
  table()
twoway_bdigroup_enjoycontentasmrvids_notingles
```

```
##                                  EnjoyContentofASMRvideos_notingles
## BDI_group                          1   2   3   4   5
##    Little to no depression        11  36  58 156  86
##    Mild depression                 1   3  12  21  19
##    Moderate or severe depression   3  10   6  31  22
```

```
twoway_bdigroup_watchtorelax <- asmr_data3%>%
  select(BDI_group, WatchToRelax)%>%
  table()
twoway_bdigroup_watchtorelax
```

```
##                                  WatchToRelax
## BDI_group                          1   2   3   4   5
##    Little to no depression         0   0   4 131 212
##    Mild depression                 0   2   2  15  37
##    Moderate or severe depression   1   0   0  26  45
```

```
twoway_bdigroup_dealwithanxiety <- asmr_data3%>%
  select(BDI_group, DealWithAnxiety)%>%
  table()
twoway_bdigroup_dealwithanxiety
```

```
##                                  DealWithAnxiety
## BDI_group                          1   2   3   4   5
##    Little to no depression        53  79  56 102  57
##    Mild depression                 5   1  15  15  20
##    Moderate or severe depression   4   5  11  26  26
```

```
twoway_bdigroup_dealwithstress <- asmr_data3%>%
  select(BDI_group, DealWithStress)%>%
  table()
twoway_bdigroup_dealwithstress
```

```
##                          DealWithStress
## BDI_group                  1   2   3   4   5
##   Little to no depression  32  43  48 149  75
##   Mild depression           1   2   7  27  19
##   Moderate or severe depression  1   2   5  35  29
```

```
twoway_bdigroup_helpmesleep <- asmr_data3%>%
  select(BDI_group, HelpMeSleep)%>%
  table()
twoway_bdigroup_helpmesleep
```

```
##                          HelpMeSleep
## BDI_group                  1   2   3   4   5
##   Little to no depression  13  23  28 132 151
##   Mild depression           2   2   4  18  30
##   Moderate or severe depression  1   7   6  23  35
```

```
twoway_bdigroup_dealwithdepression <- asmr_data3%>%
  select(BDI_group, WatchToDealWithDepression)%>%
  table()
twoway_bdigroup_dealwithdepression
```

```
##                          WatchToDealWithDepression
## BDI_group                  1   2   3   4   5
##   Little to no depression 164  69  59  46   9
##   Mild depression           8   6  16  21   5
##   Moderate or severe depression  6   4  12  30  20
```

2. Data Visualization

Stacked bar graphs

```
asmr3 <-asmr_data3%>%
  mutate(FlowNotWorried =
         ifelse(FlowNotWorried == 1, "(1)Feel extremely worried",
         ifelse(FlowNotWorried == 2, "(2)Feel moderately worried",
         ifelse(FlowNotWorried == 3, "(3)Feel slightly worried",
         ifelse(FlowNotWorried == 4, "(4)Feel almost no worry",
         ifelse(FlowNotWorried == 5,"(5)Feel no worry", NA)))))),
         FlowInControl =
         ifelse(FlowInControl == 1, "(1)No control of feelings",
         ifelse(FlowInControl == 2, "(2)Little control of feelings",
         ifelse(FlowInControl == 3, "(3)Moderate control of feelings",
```

```
            ifelse(FlowInControl == 4, "(4)Better control of feelings",
            ifelse(FlowInControl ==5,"(5)Full control of feelings", NA))))))%>%
  filter(!is.na(FlowNotWorried), !is.na(FlowInControl))

ggplot(asmr3, aes(x=BDI_group, fill=FlowNotWorried))+
  geom_bar(position = "fill")+
  theme(axis.text.x = element_text(angle = 65, vjust = 0.5),plot.title = element_text(hjust = 0.5), axis
  labs(x = "BDI Group ", title = "Worrisomeness of Participants")
```


Worrisomeness of Participants
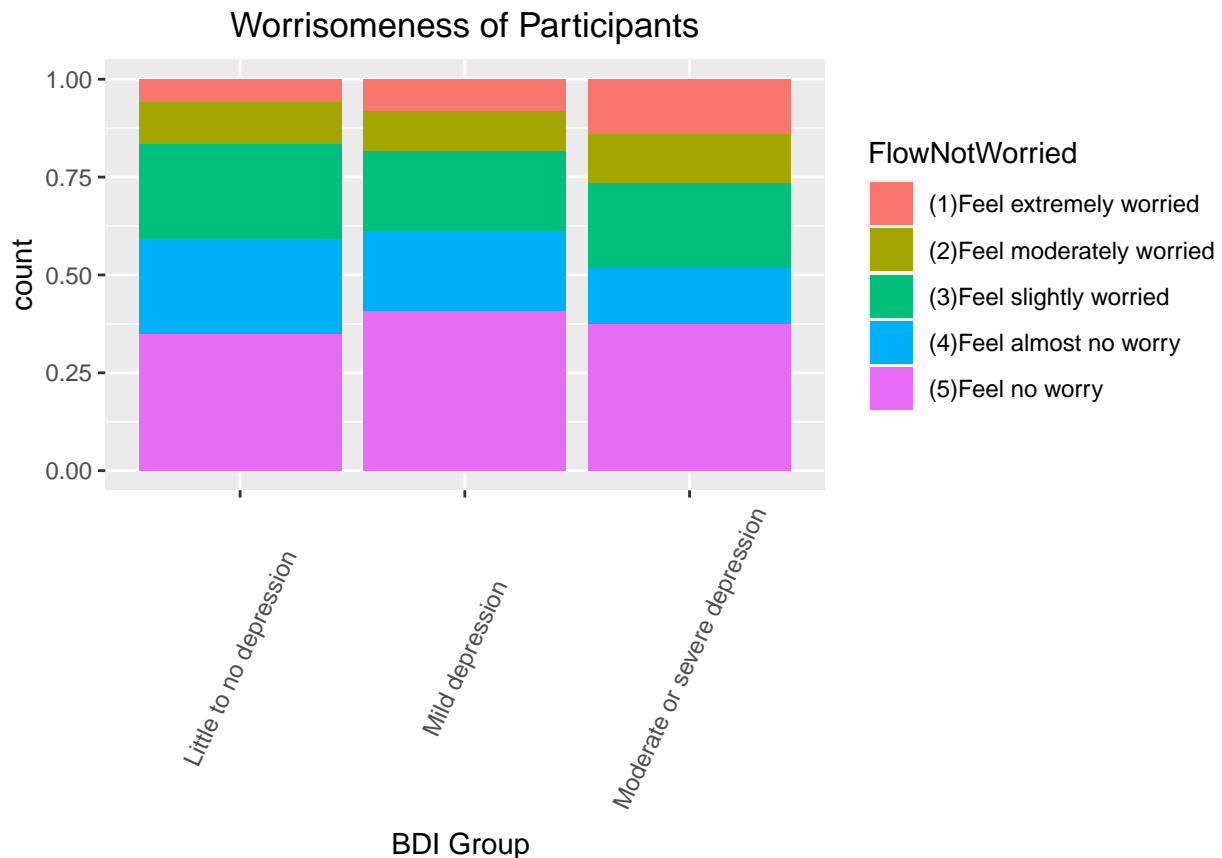
```
ggplot(asmr3, aes(x=BDI_group, fill=FlowInControl))+
  geom_bar(position = "fill")+
  theme(axis.text.x = element_text(angle = 65, vjust = 0.5),plot.title = element_text(hjust = 0.5), axis
  labs(x = "BDI Group", title = "Level of control of participants")
```

Level of control of participants
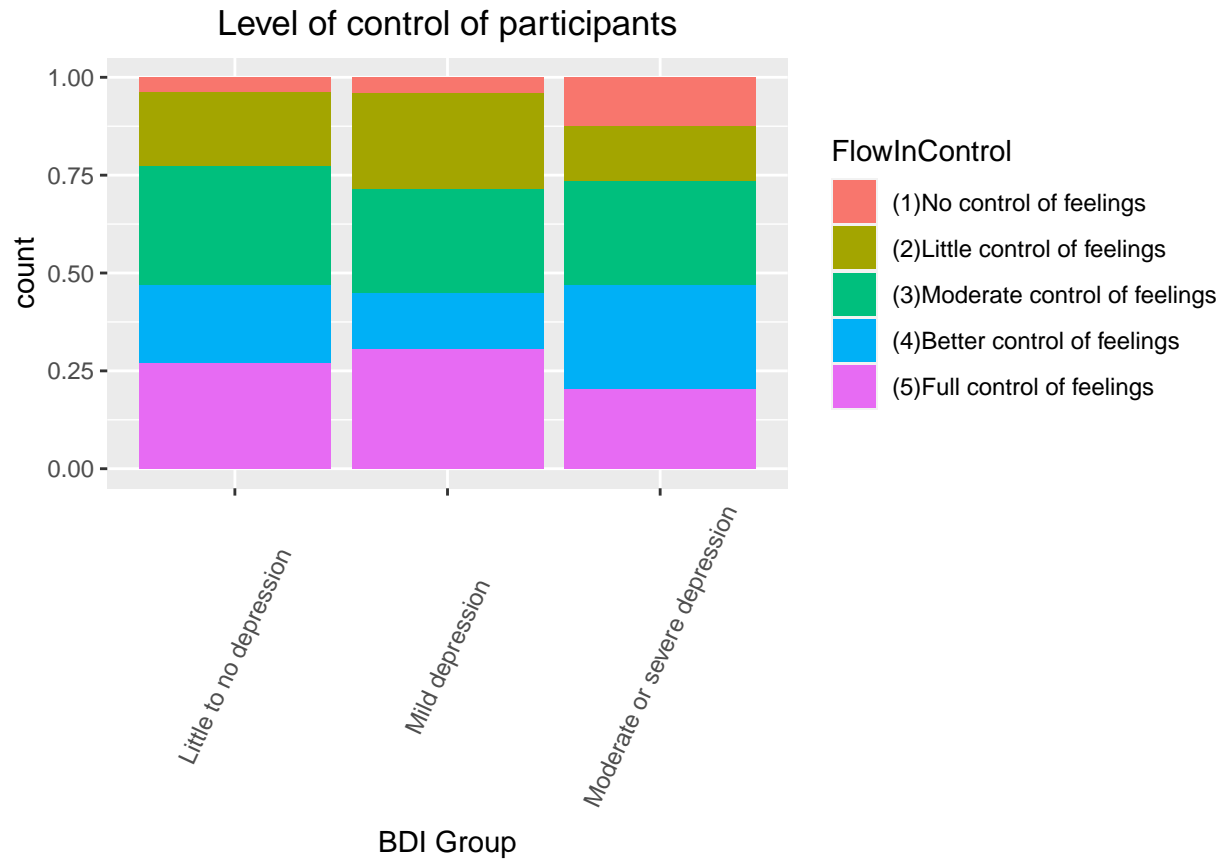
Histograms of The Mood of Participants

```
ggplot(asmr_data3, aes(x=Mood_Before_watch))+
  geom_histogram(bins = sqrt(nrow(asmr_data3)), fill="lightpink", color="white")+
  labs(y = "Mood (0-100)", title = "Histogram for Mood Before Watching ASMR videos", x = "Before Mood")
  theme(plot.title = element_text(hjust = 0.5))
```

Histogram for Mood Before Watching ASMR videos
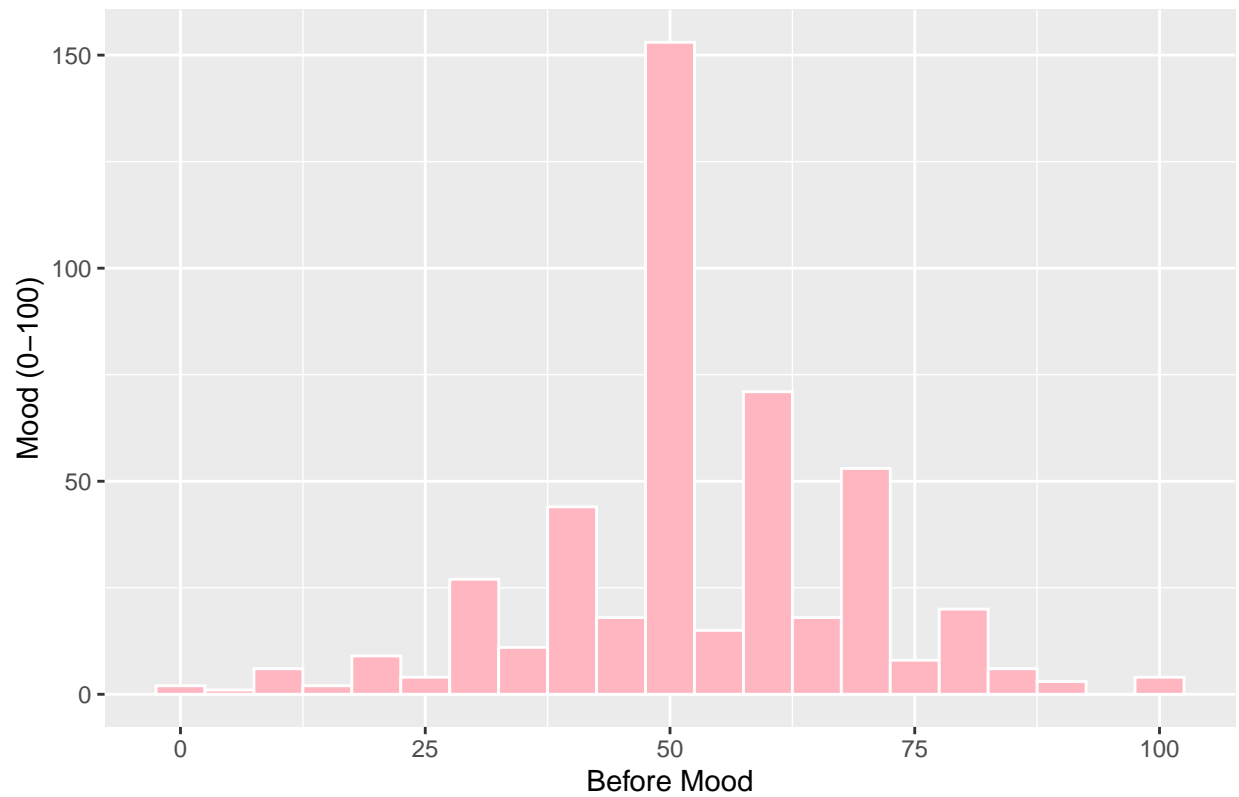

```
ggplot(asmr_data3, aes(x=Mood_During_Watch))+
  geom_histogram(bins = sqrt(nrow(asmr_data3)), fill="lightpink", color="white")+
  labs(y = "Mood (0-100)", title = "Histogram for Mood While Watching ASMR videos", x = "During Mood")+
  theme(plot.title = element_text(hjust = 0.5))
```

Histogram for Mood While Watching ASMR videos
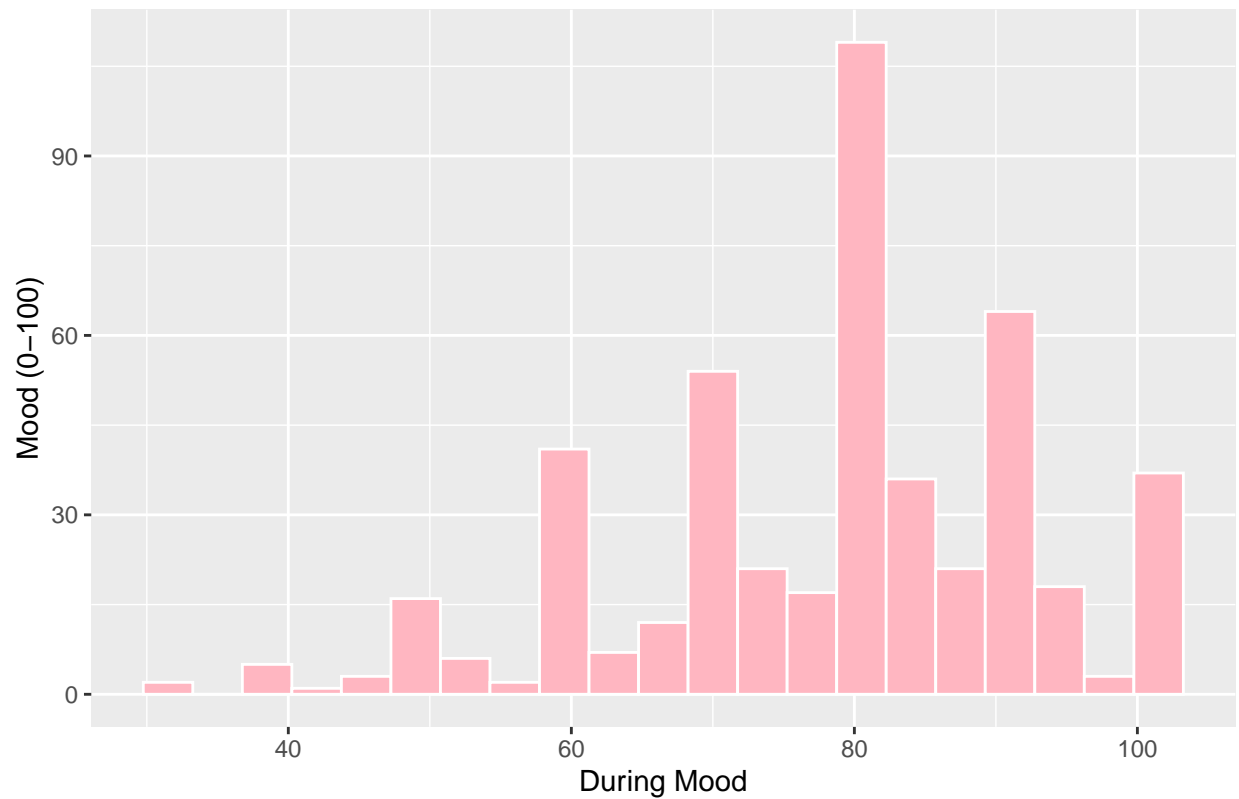

```
ggplot(asmr_data3, aes(x=Mood_After_watch))+
  geom_histogram(bins = sqrt(nrow(asmr_data3)), fill="lightpink", color="white")+
  labs(y = "Mood (0-100)", title = "Histogram for Mood After Watching ASMR videos", x = "After Mood")+
  theme(plot.title = element_text(hjust = 0.5))
```

Histogram for Mood After Watching ASMR videos
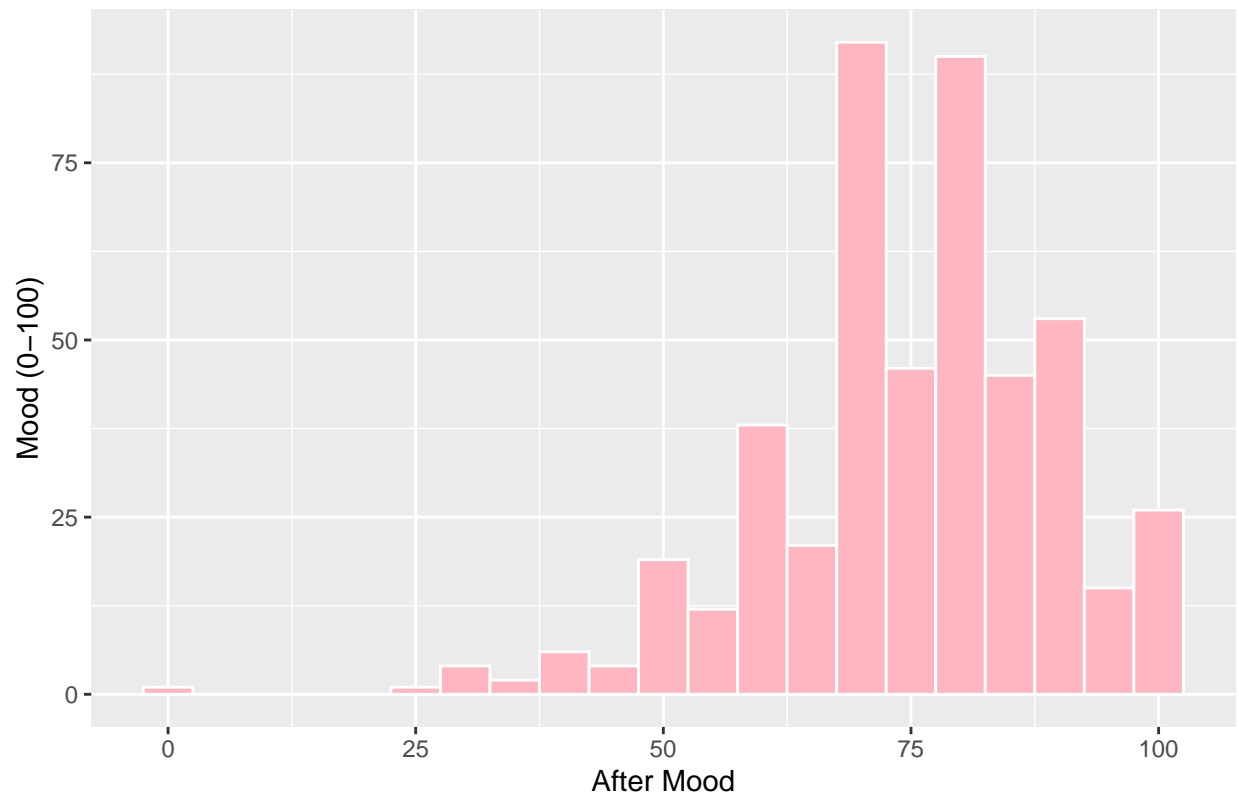

```
ggplot(asmr_data3, aes(x=Mood_Daily))+
  geom_histogram(bins = sqrt(nrow(asmr_data3)), fill="lightpink", color="white")+
  labs(y = "Mood (0-100)", title = "Histogram for General Mood", x = "General Mood")+
  theme(plot.title = element_text(hjust = 0.5))
```

Histogram for General Mood
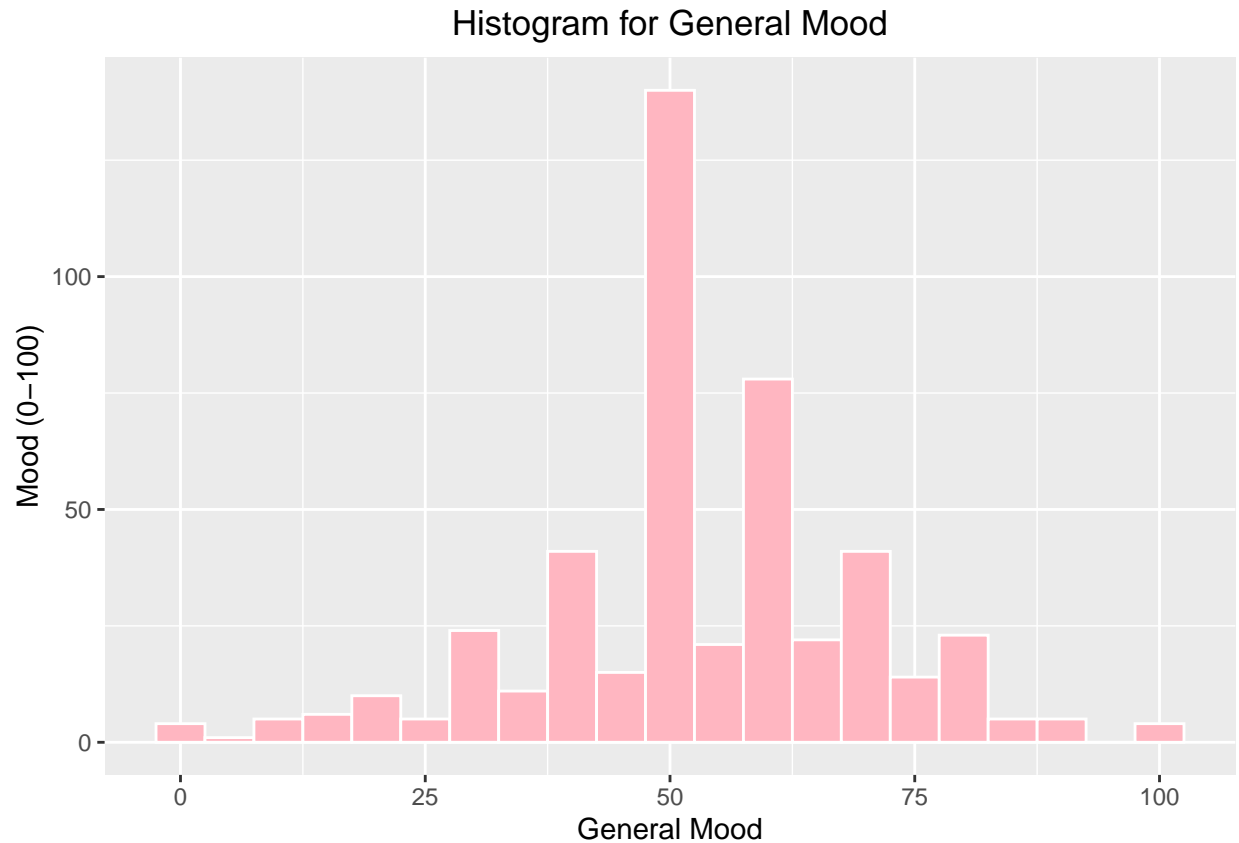
Side-by-side boxplots of Mood of Participants grouped by BDI_group

```
ggplot(asmr_data3, aes(x = BDI_group,y=Mood_Before_watch))+
  geom_boxplot(fill="aquamarine")+
  labs(y = "Mood (0-100)", title = "Boxplots for Mood Before Watching ASMR videos", x = "BDI group")+
  theme(plot.title = element_text(hjust = 0.5))
```
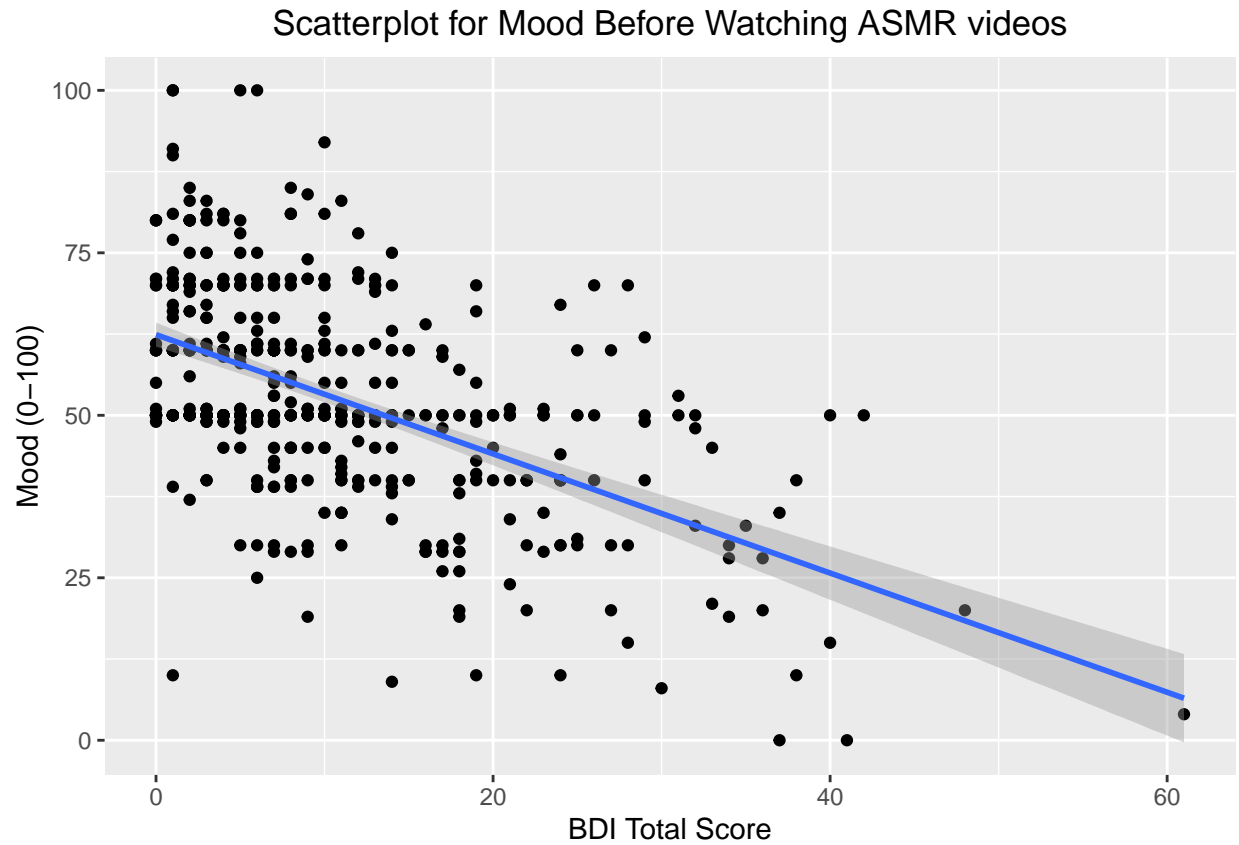
Boxplots for Mood Before Watching ASMR videos
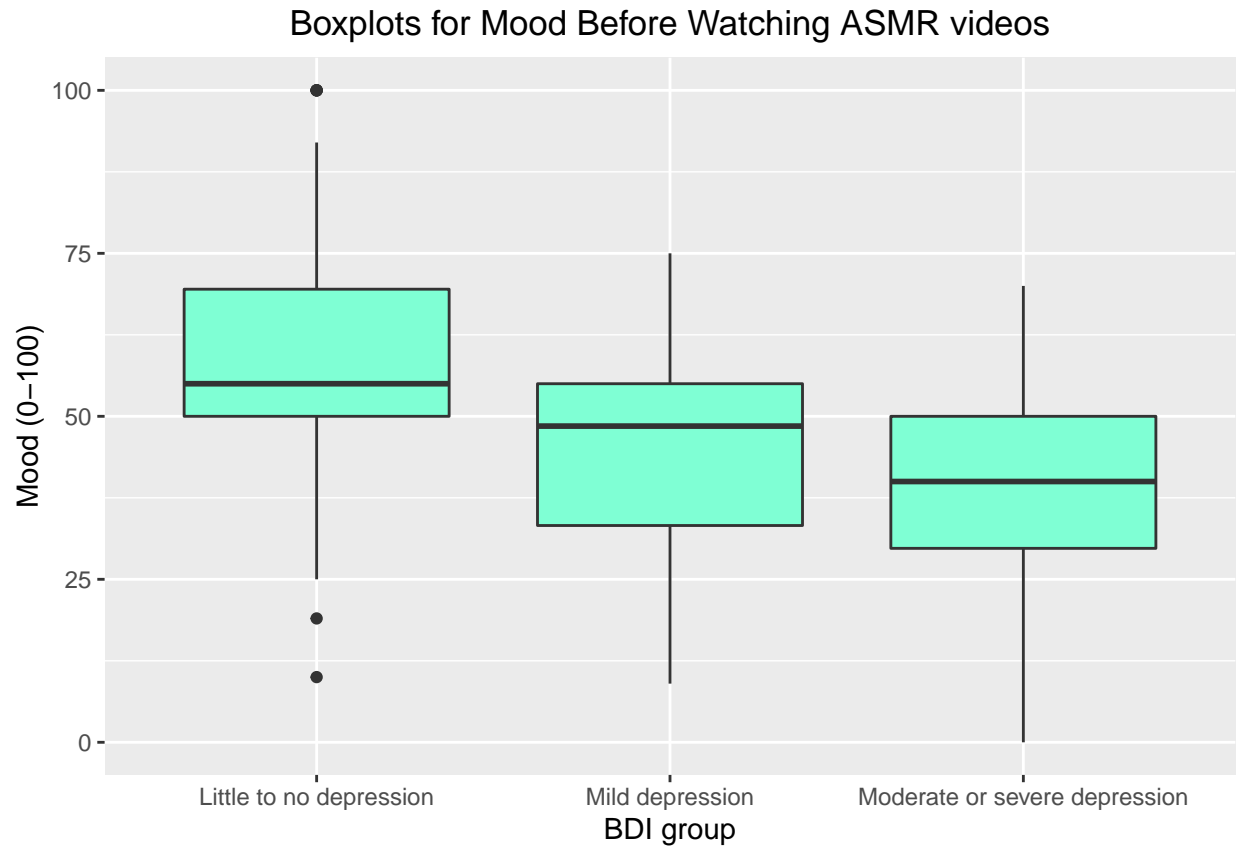

```
ggplot(asmr_data3, aes(x = BDI_group,y=Mood_During_Watch))+
  geom_boxplot(fill="aquamarine")+
  labs(y = "Mood (0-100)", title = "Boxplots for Mood While Watching ASMR videos", x = "BDI group")+
  theme(plot.title = element_text(hjust = 0.5))
```

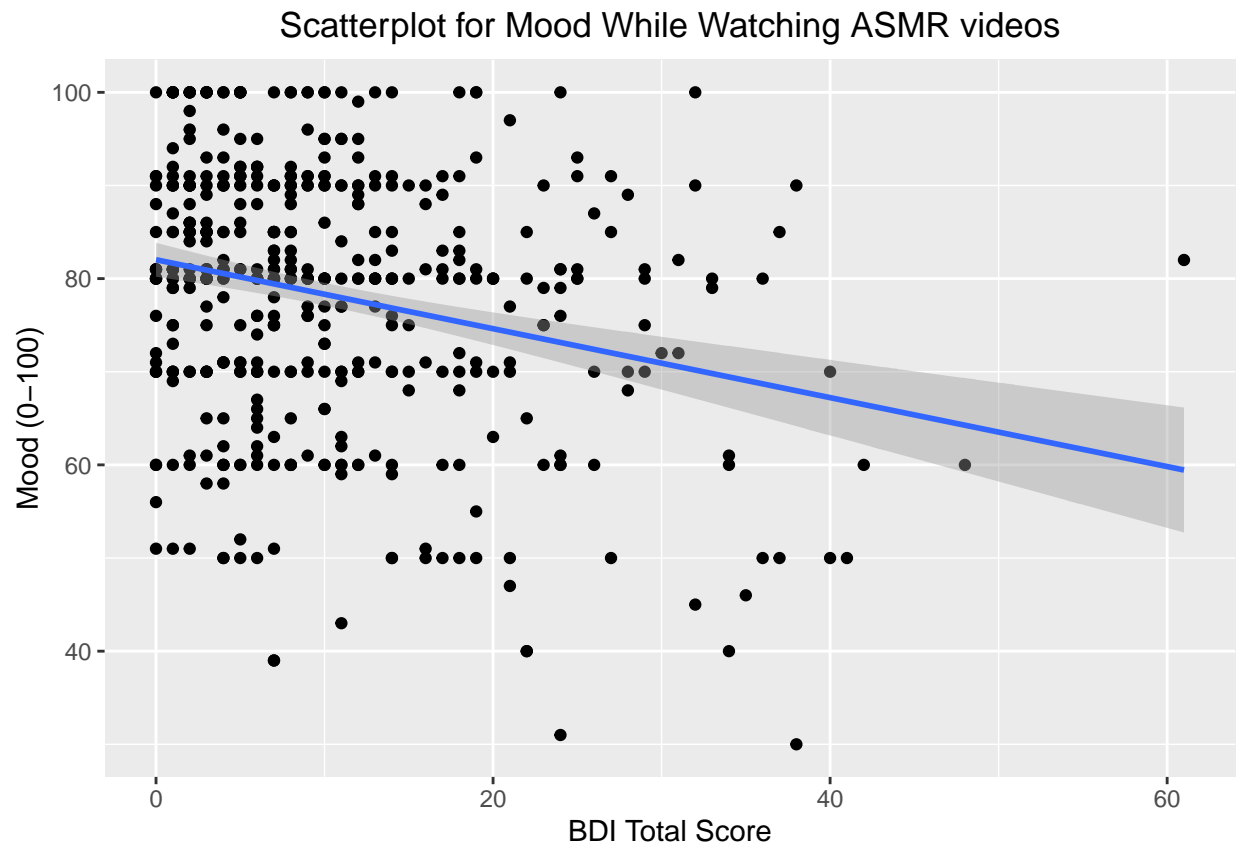## Boxplots for Mood While Watching ASMR videos
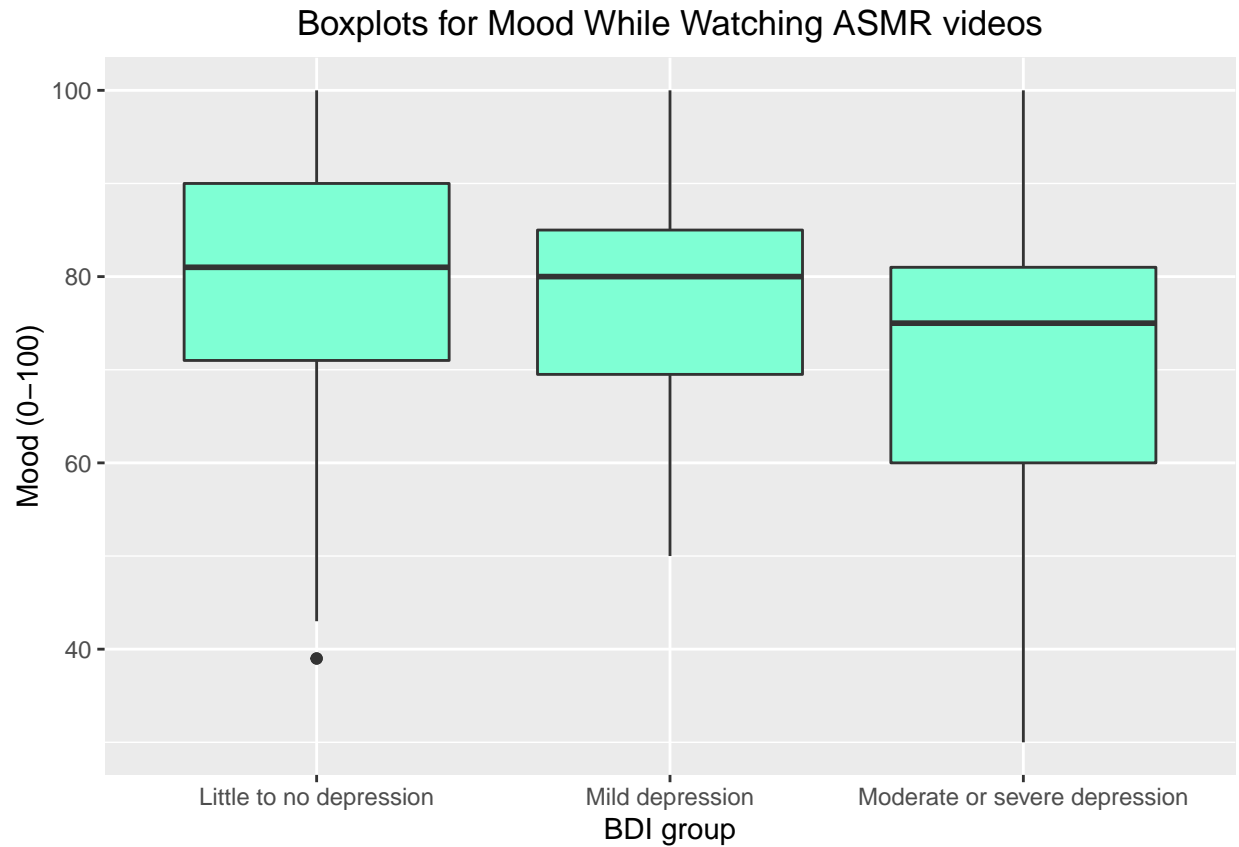

```r
ggplot(asmr_data3, aes(x = BDI_group,y=Mood_After_watch))+
  geom_boxplot(fill="aquamarine")+
  labs(y = "Mood (0-100)", title = "Boxplots for Mood After Watching ASMR videos", x = "BDI group")+
  theme(plot.title = element_text(hjust = 0.5))
```

Boxplots for Mood After Watching ASMR videos
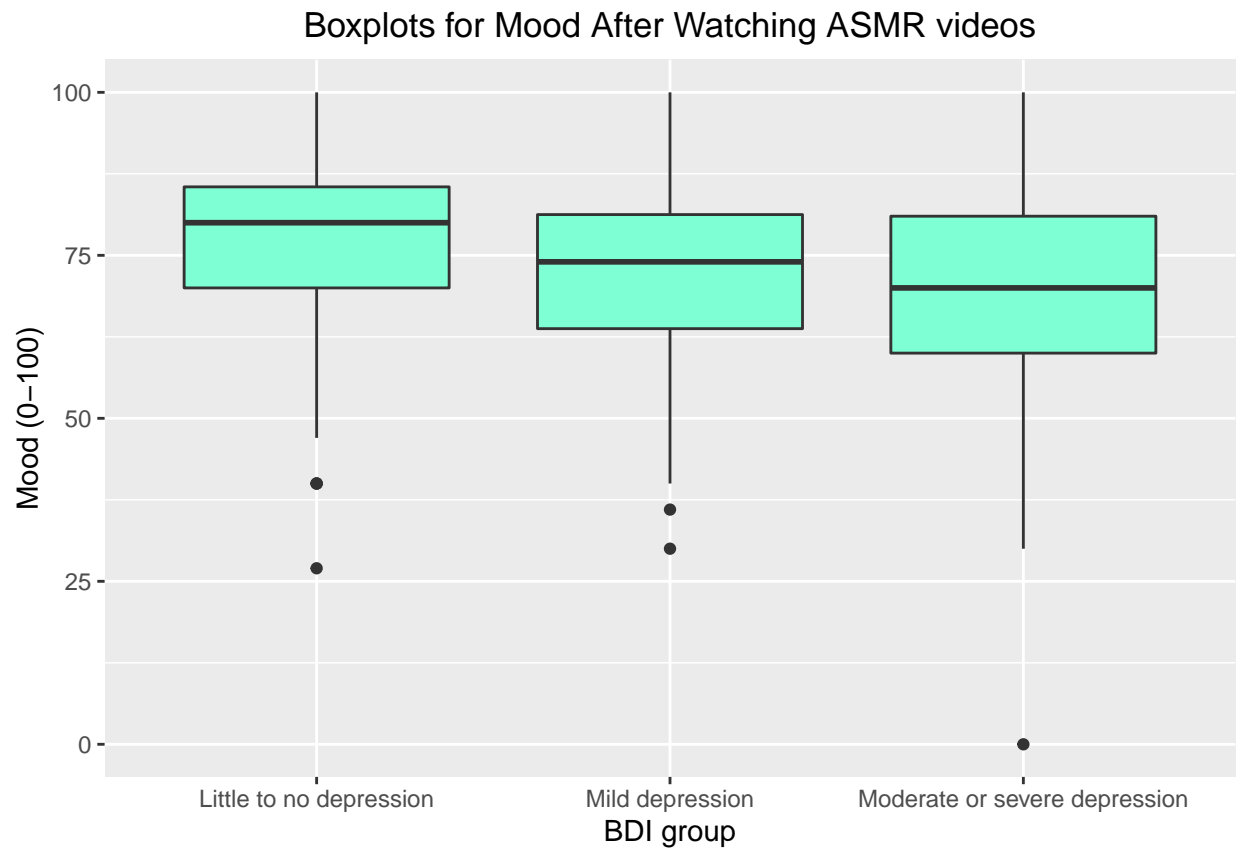

```r
ggplot(asmr_data3, aes(x = BDI_group,y=Mood_Daily))+
  geom_boxplot(fill="aquamarine")+
  labs(y = "Mood (0-100)", title = "Boxplots for General Mood", x = "BDI group")+
  theme(plot.title = element_text(hjust = 0.5))
```

Boxplots for General Mood
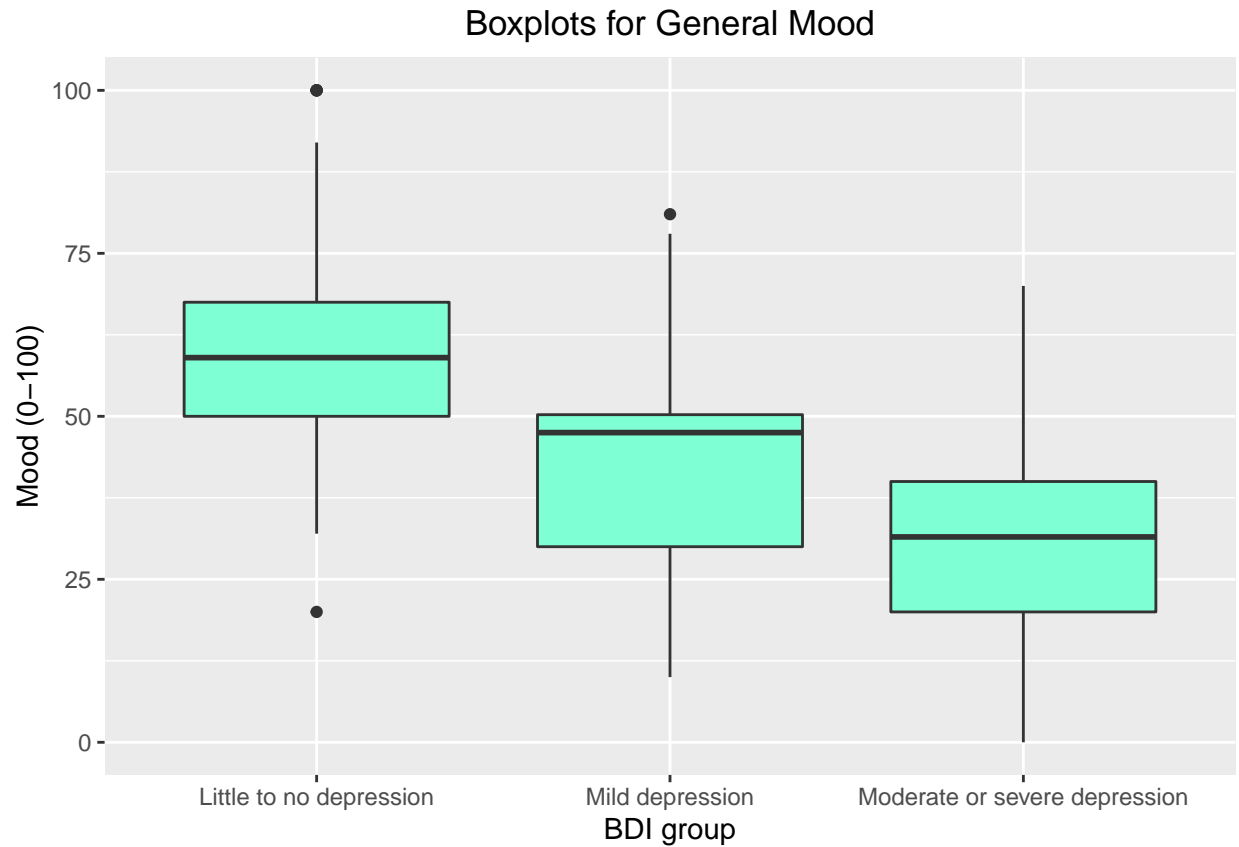
Scatterplots of BDI_TOTAL score and Mood of Participants

```
ggplot(asmr_data3, aes(x = BDI_TOTAL, y = Mood_Before_watch))+
  geom_point()+
  geom_smooth(method = "lm")+
  labs(y = "Mood (0-100)", title = "Scatterplot for Mood Before Watching ASMR videos", x = "BDI Total S
  theme(plot.title = element_text(hjust = 0.5))
```
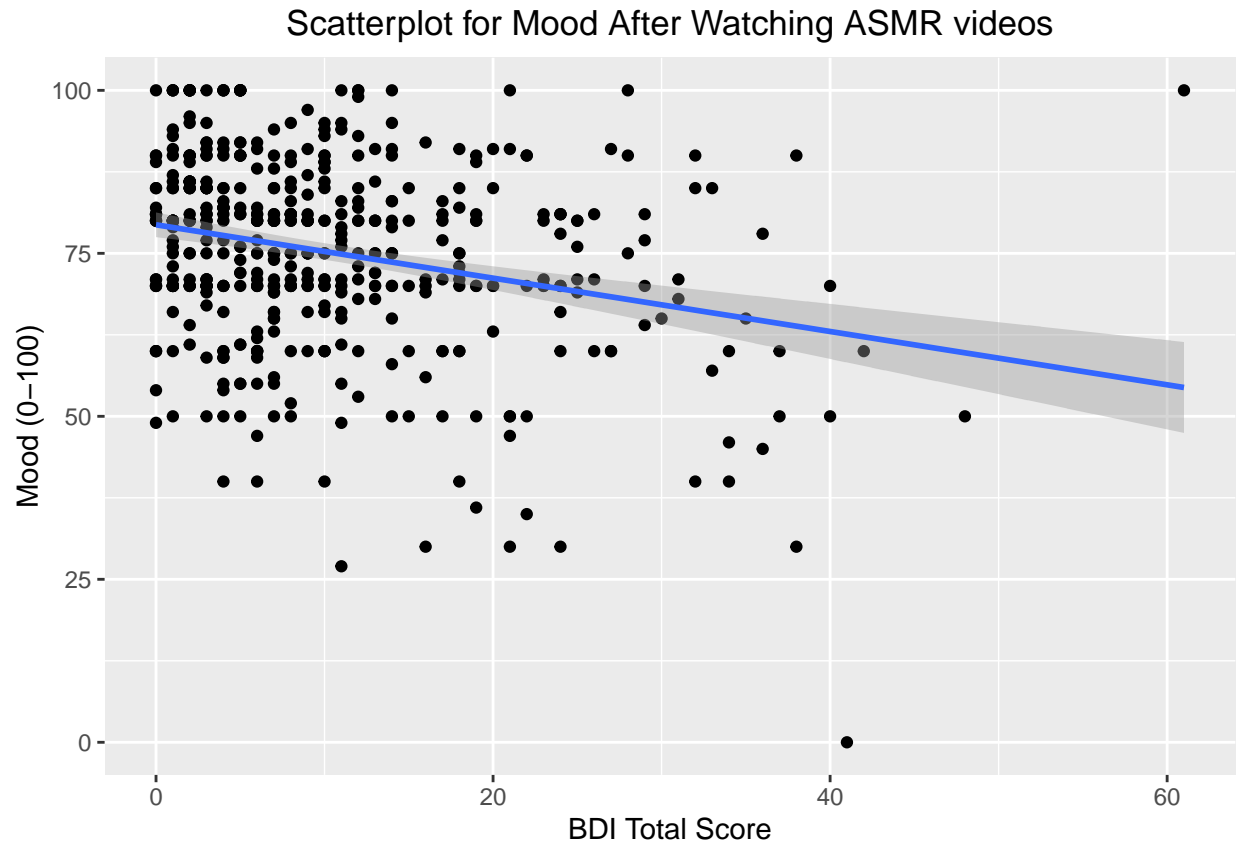
```
## 'geom_smooth()' using formula 'y ~ x'
```

Scatterplot for Mood Before Watching ASMR videos


```
ggplot(asmr_data3, aes(x = BDI_TOTAL, y = Mood_During_Watch))+
  geom_point()+
  geom_smooth(method = "lm")+
  labs(y = "Mood (0-100)", title = "Scatterplot for Mood While Watching ASMR videos", x = "BDI Total Sc
  theme(plot.title = element_text(hjust = 0.5))
```

```
## `geom_smooth()` using formula 'y ~ x'
```

Scatterplot for Mood While Watching ASMR videos


```
ggplot(asmr_data3, aes(x = BDI_TOTAL, y = Mood_After_watch))+
  geom_point()+
  geom_smooth(method = "lm")+
  labs(y = "Mood (0-100)", title = "Scatterplot for Mood After Watching ASMR videos", x = "BDI Total Sco
  theme(plot.title = element_text(hjust = 0.5))
```

'geom_smooth()' using formula 'y ~ x'

Scatterplot for Mood After Watching ASMR videos


```
ggplot(asmr_data3, aes(x = BDI_TOTAL, y = Mood_Daily))+
  geom_point()+
  geom_smooth(method = "lm")+
  labs(y = "Mood (0-100)", title = "Scatterplot for General Mood of Participants", x = "BDI Total Score
  theme(plot.title = element_text(hjust = 0.5))
```

```
## `geom_smooth()` using formula 'y ~ x'
```

Scatterplot for General Mood of Participants
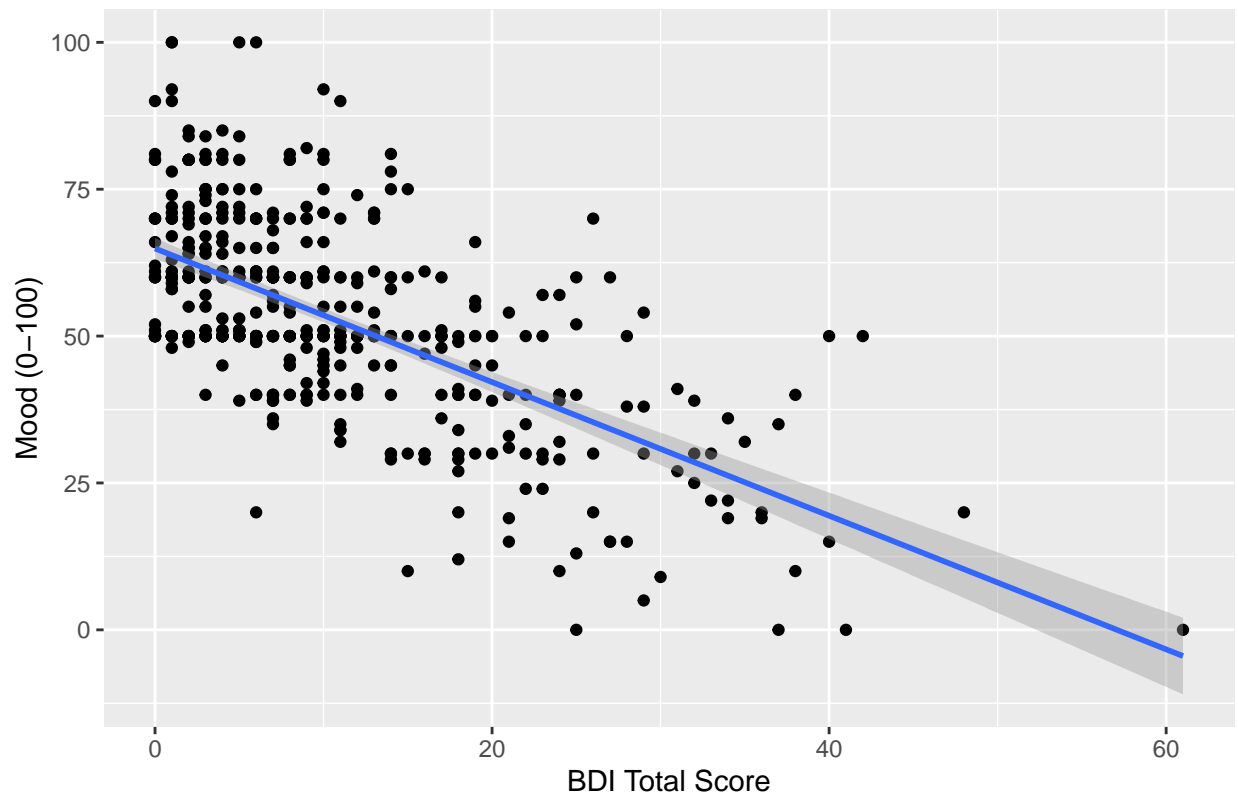
Side-by-side boxplots of three key categorical variables

```r
asmr3 <-asmr_data3%>%
  mutate(RelieveNegativeMood =
      ifelse(RelieveNegativeMood==1, "(1)Does not watch to relieve negative mood",
      ifelse(RelieveNegativeMood==2, "(2)Watch to relieve negative mood minimally",
      ifelse(RelieveNegativeMood==3, "(3)Watch to somewhat relieve negative mood",
      ifelse(RelieveNegativeMood==4, "(4)Watch to mostly relieve negative mood",
      ifelse(RelieveNegativeMood==5, "(5)Watch to fully relieve negative mood", NA))))),
      DealWithAnxiety =
      ifelse(DealWithAnxiety==1, "(1)Does not watch ASMR videos to deal with anxiety",
      ifelse(DealWithAnxiety==2, "(2)Watch to minimally deal with anxiety",
      ifelse(DealWithAnxiety==3, "(3)Somewhat watches to deal with anxiety",
      ifelse(DealWithAnxiety==4, "(4)Mostly watches to deal with anxiety",
      ifelse(DealWithAnxiety==5, "(5)Fully watches to deal with anxiety", NA))))),
      DealWithStress =
      ifelse(DealWithStress==1, "(1)Does not watch ASMR videos to deal with stress",
      ifelse(DealWithStress==2, "(2)Watch to minimally deal with stress",
      ifelse(DealWithStress==3, "(3)Somewhat watches to deal with stress",
      ifelse(DealWithStress==4, "(4)Mostly watches to deal with stress",
      ifelse(DealWithStress==5, "(5)Fully watches to deal with stress", NA))))),
      WatchToDealWithDepression=
      ifelse(WatchToDealWithDepression==1, "(1)Does not watch ASMR videos to deal with depression",
```

```
        ifelse(WatchToDealWithDepression==2, "(2)Watch to minimally deal with depression",
        ifelse(WatchToDealWithDepression==3, "(3)Somewhat watches to deal with depression",
        ifelse(WatchToDealWithDepression==4, "(4)Mostly watches to deal with depression",
        ifelse(WatchToDealWithDepression==5, "(5)Fully watches to deal with depression", NA))))),
        HelpMeSleep =
        ifelse(HelpMeSleep==1, "(1)Does not watch ASMR videos to help with sleep",
        ifelse(HelpMeSleep==2, "(2)Watch to minimally help with sleep",
        ifelse(HelpMeSleep==3, "(3)Somewhat watches to help with sleep",
        ifelse(HelpMeSleep==4, "(4)Mostly watches to help with sleep",
        ifelse(HelpMeSleep==5, "(5)Fully watches to help with sleep", NA))))))%>%
  filter(!is.na(RelieveNegativeMood), !is.na(EnjoyASMRvideos), !is.na(WatchToRelax), !is.na(DealWithAnx
         !is.na(DealWithStress), !is.na(WatchToDealWithDepression), !is.na(HelpMeSleep))


ggplot(asmr3, aes(x = BDI_group, y=BDI_TOTAL, fill = RelieveNegativeMood))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 20, vjust = 1),plot.title = element_text(hjust = 0.5), axis.
  labs(x = "BDI Group", title = "Relief of Negative Mood of Participants", y = "BDI Total Score")
```
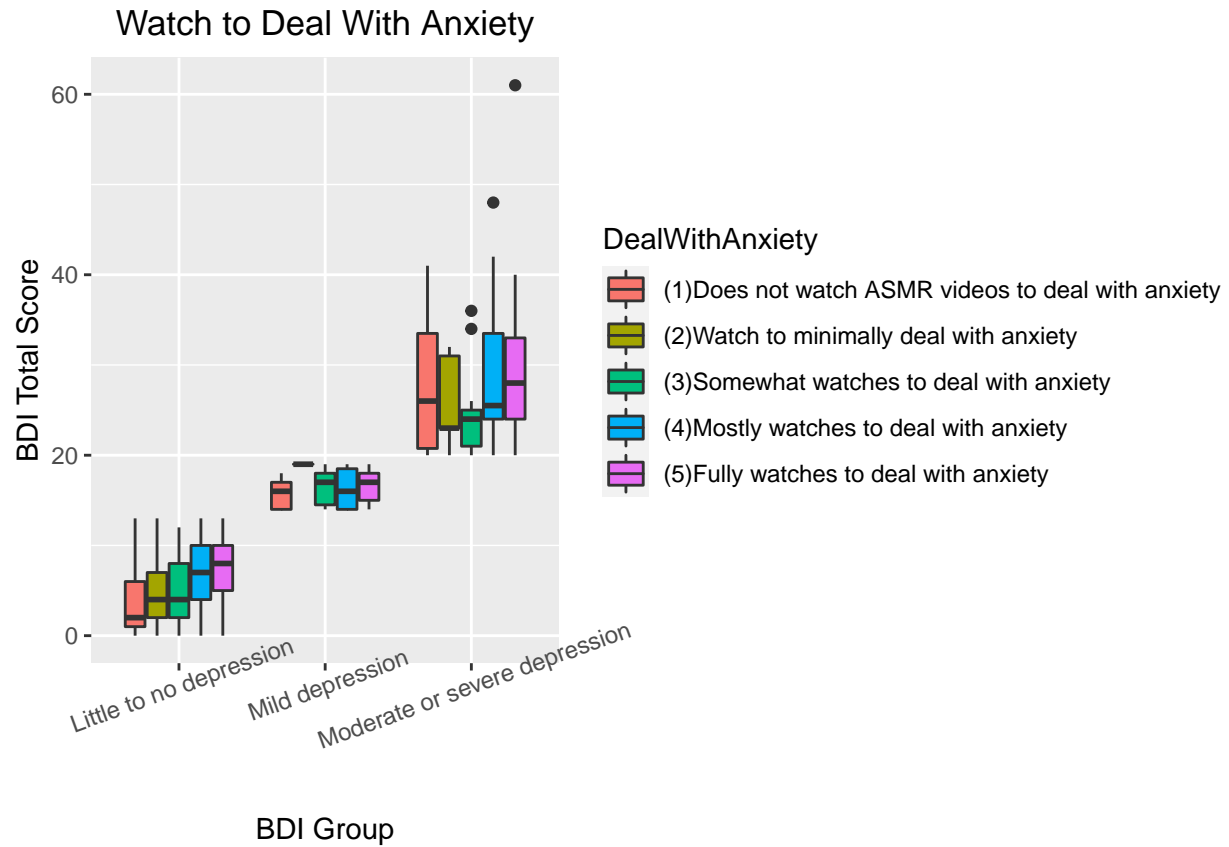

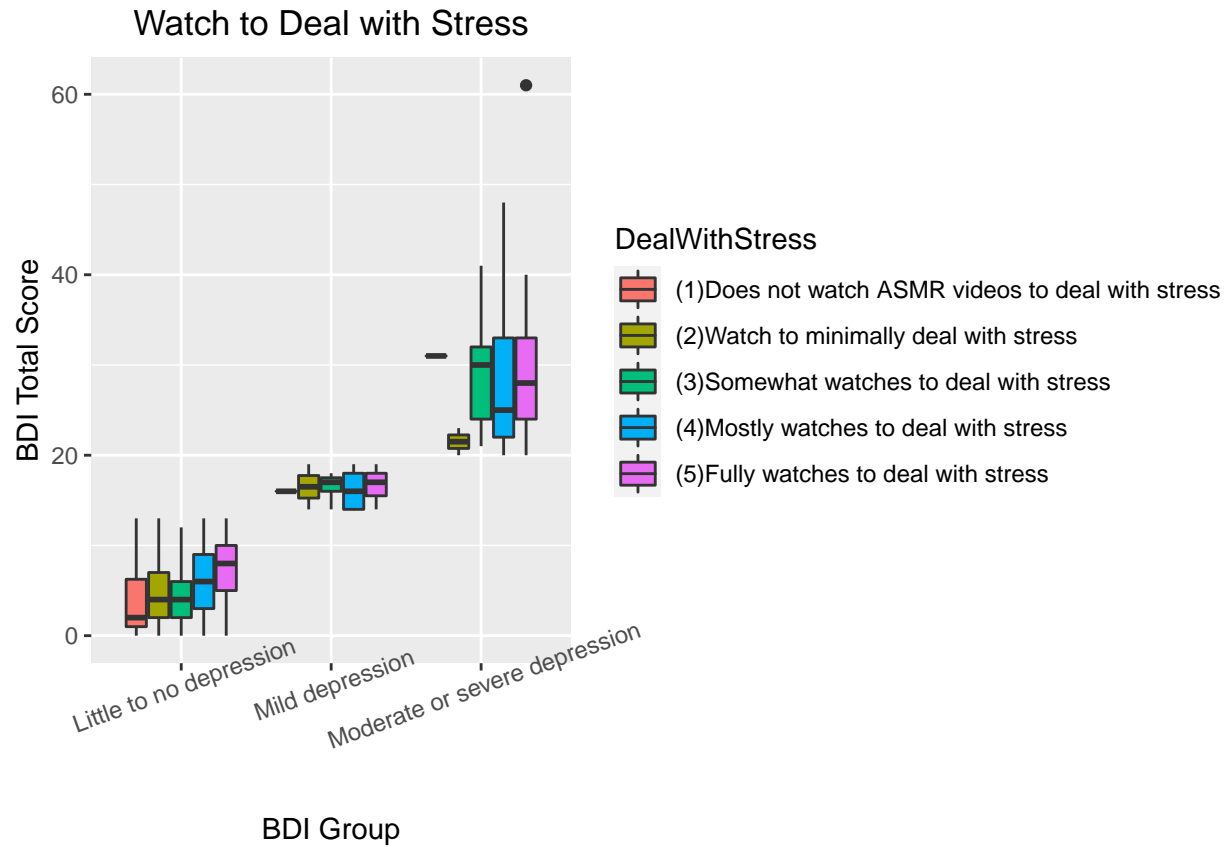Relief of Negative Mood of Participants
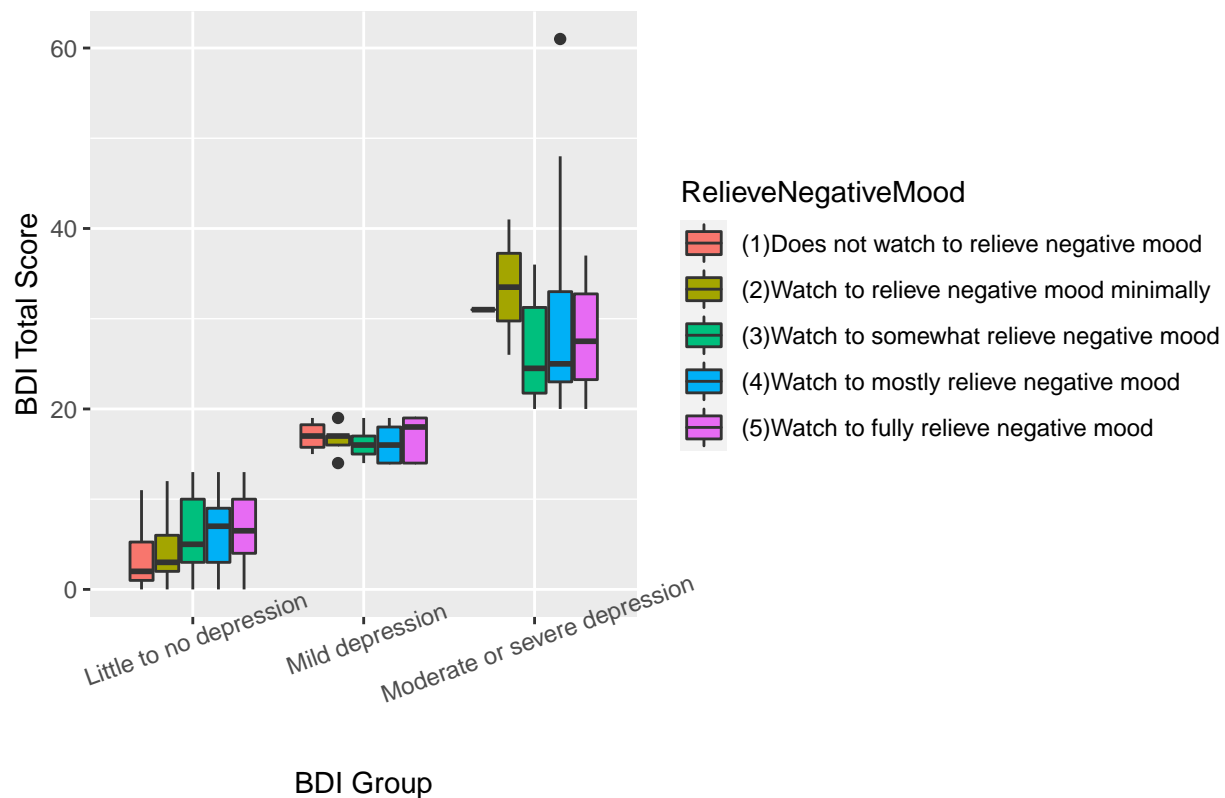
```
ggplot(asmr3, aes(x = BDI_group, y=BDI_TOTAL, fill = DealWithAnxiety))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 20, vjust = 1),plot.title = element_text(hjust = 0.5), axis.
  labs(x = "BDI Group", title = "Watch to Deal With Anxiety", y = "BDI Total Score")
```
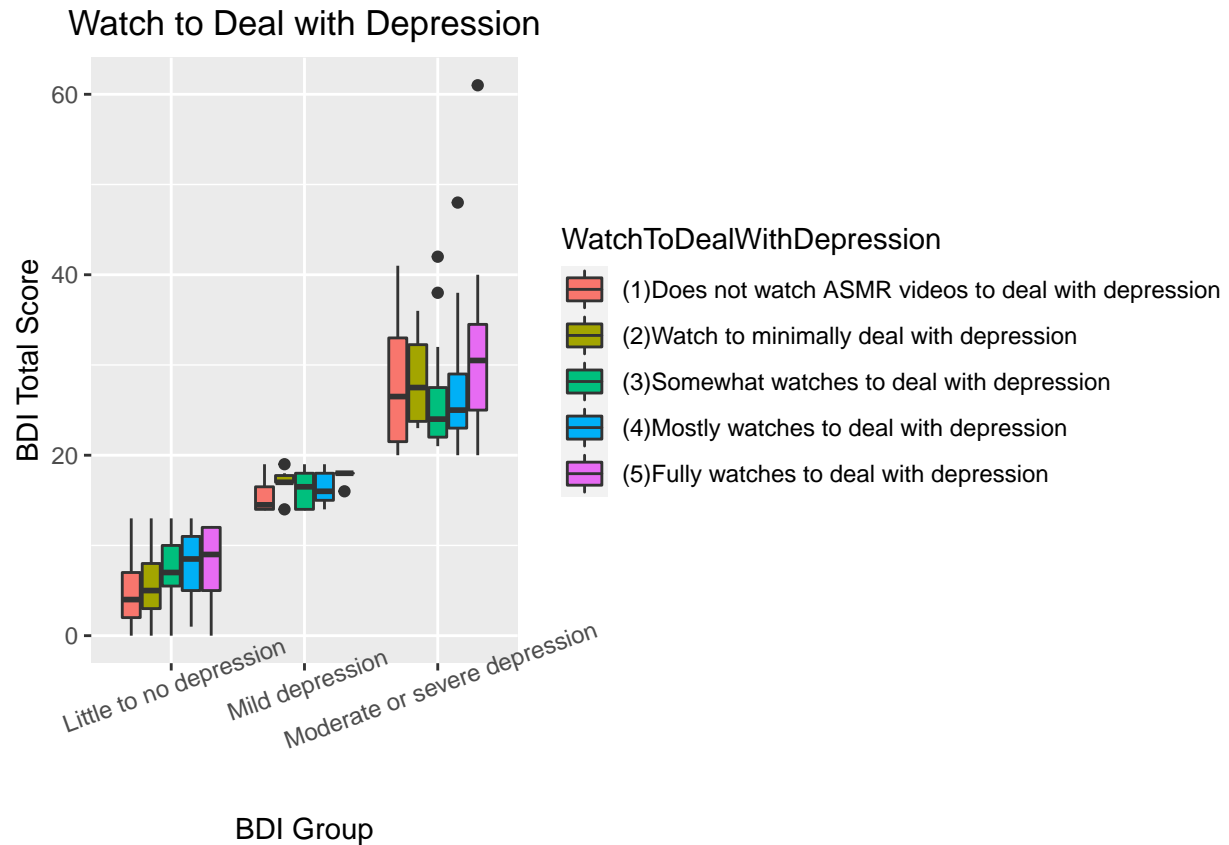
Watch to Deal With Anxiety


```
ggplot(asmr3, aes(x = BDI_group, y=BDI_TOTAL, fill = DealWithStress))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 20, vjust = 1),plot.title = element_text(hjust = 0.5), axis.
  labs(x = "BDI Group", title = "Watch to Deal with Stress", y = "BDI Total Score")
```

Watch to Deal with Stress


```
ggplot(asmr3, aes(x = BDI_group, y=BDI_TOTAL, fill = WatchToDealWithDepression))+
  geom_boxplot()+
  theme(axis.text.x = element_text(angle = 20, vjust = 1),plot.title = element_text(hjust = 0.5), axis.
  labs(x = "BDI Group", title = "Watch to Deal with Depression", y = "BDI Total Score")
```

Watch to Deal with Depression

WatchToDealWithDepression

- (1)Does not watch ASMR videos to deal with depression
- (2)Watch to minimally deal with depression
- (3)Somewhat watches to deal with depression
- (4)Mostly watches to deal with depression
- (5)Fully watches to deal with depression

Facet-wrapped Bar graph

```
ggplot(asmr3, aes(x = HelpMeSleep, fill = EffectSleep))+
  geom_bar(position="fill")+
  facet_wrap(~BDI_group)+
  theme(axis.text.x = element_text(angle = 90, vjust = 0.5),plot.title = element_text(hjust = 0.5), axis
  labs(x = "Watch ASMR videos to help sleep", title = "Sleep Effect on BDI groups")
```

Sleep Effect on BDI groups

Watch ASMR videos to help sleep
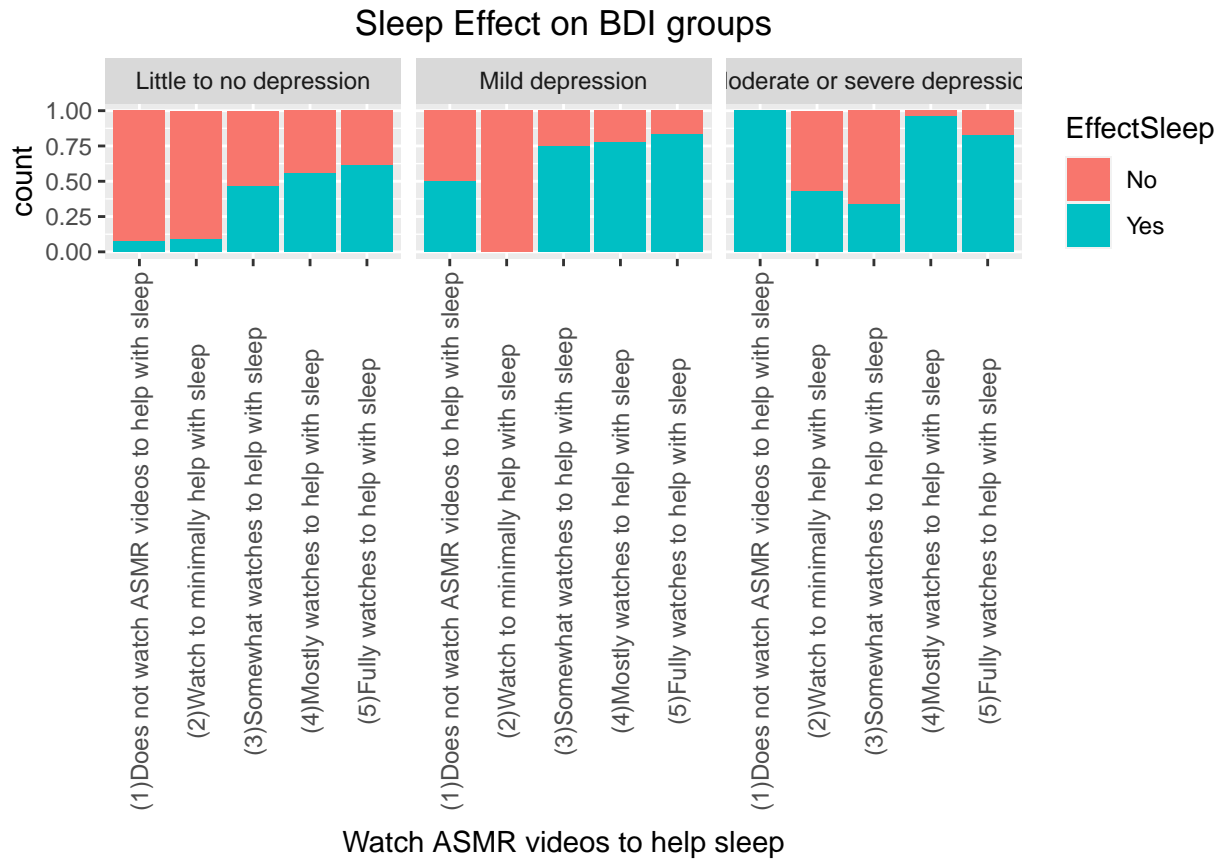
3. Regression

Multiple Linear Regression Model to predict Mood_After_watch

```r
# Building a model to predict the mood after watching
mood.data <- asmr_data3%>%
  select(BDI_TOTAL, Mood_Before_watch, Mood_During_Watch, Mood_After_watch, Mood_Daily)
bdimood.model <- lm(Mood_After_watch~., mood.data)
summary(bdimood.model)
```

```
##
## Call:
## lm(formula = Mood_After_watch ~ ., data = mood.data)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -47.479  -5.156  -0.332   4.918  40.283
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  10.55151    2.99850   3.519 0.000475 ***
## BDI_TOTAL     0.12024    0.06019   1.998 0.046309 *
```

```
## Mood_Before_watch  0.04903     0.05027    0.975 0.329879
## Mood_During_Watch  0.62592     0.03574   17.513  < 2e-16 ***
## Mood_Daily         0.22220     0.05198    4.275 2.32e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.536 on 470 degrees of freedom
## Multiple R-squared:  0.5761, Adjusted R-squared:  0.5725
## F-statistic: 159.7 on 4 and 470 DF,  p-value: < 2.2e-16
```

Using AIC to make a better multiple linear regression model

```r
# Using correlation matrix to see which predictor variables are better
mood.data%>%
  cor()
```

```
##                    BDI_TOTAL Mood_Before_watch Mood_During_Watch
## BDI_TOTAL          1.0000000        -0.5321278        -0.2485346
## Mood_Before_watch -0.5321278         1.0000000         0.4657276
## Mood_During_Watch -0.2485346         0.4657276         1.0000000
## Mood_After_watch  -0.2633081         0.5085063         0.7223322
## Mood_Daily        -0.6303396         0.8366343         0.4506685
##                    Mood_After_watch Mood_Daily
## BDI_TOTAL               -0.2633081 -0.6303396
## Mood_Before_watch        0.5085063  0.8366343
## Mood_During_Watch        0.7223322  0.4506685
## Mood_After_watch         1.0000000  0.5251423
## Mood_Daily               0.5251423  1.0000000
```

```r
# Using AIC pick out the best predictors
library(MASS)
```

```
##
## Attaching package: 'MASS'
```

```
## The following object is masked from 'package:dplyr':
##
##     select
```

```r
bdimood.model2 <- stepAIC(bdimood.model, direction = "both", trace = F)
detach("package:MASS")
summary(bdimood.model2)
```

```
##
## Call:
## lm(formula = Mood_After_watch ~ BDI_TOTAL + Mood_During_Watch +
##     Mood_Daily, data = mood.data)
##
## Residuals:
```

```
##      Min      1Q  Median      3Q     Max
## -47.815  -5.158  -0.276   5.120  40.884
##
## Coefficients:
##                    Estimate Std. Error t value Pr(>|t|)
## (Intercept)        10.72823    2.99287   3.585 0.000373 ***
## BDI_TOTAL           0.11902    0.06017   1.978 0.048510 *
## Mood_During_Watch   0.63227    0.03514  17.992  < 2e-16 ***
## Mood_Daily          0.25858    0.03619   7.146 3.42e-12 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.536 on 471 degrees of freedom
## Multiple R-squared:  0.5753, Adjusted R-squared:  0.5726
## F-statistic: 212.7 on 3 and 471 DF,  p-value: < 2.2e-16
```

Predicting using the AIC Multilinear regression model

```r
# Creating values to predict in a data frame

newvalues <- data.frame(BDI_TOTAL = c(10,44,23), Mood_During_Watch = c(70,31,63), Mood_Daily = c(65,26,5

predict(bdimood.model2, newvalues, interval = "predict")
```

```
##        fit      lwr      upr
## 1 72.98531 54.19123 91.77938
## 2 42.28854 23.07345 61.50363
## 3 67.77937 48.91351 86.64523
```

Logistic Regression Model to predict EffectSleep

```r
# First subsetting the data to only include the columns of the predictor variables and another one colu
effectsleep.data <- asmr_data3%>%
  mutate(EffectSleep2 = ifelse(EffectSleep == "Yes", 1, 0))%>%
  select(BDI_TOTAL, BAI_TOTAL, Mood_Daily, Mood_Before_watch, Mood_After_watch, Num_ASMRVideos, EffectSl

# Building logistic regression model

logit <- glm(EffectSleep2~. , effectsleep.data, family = "binomial")


# Rebuilding logistic regression model to only include the most important variables by using AIC
library(MASS)
```

```
##
## Attaching package: 'MASS'
```

```
## The following object is masked from 'package:dplyr':
##
##     select

new.logit <- stepAIC(logit, direction = "both", trace = F)
summary(new.logit)
```

```
##
## Call:
## glm(formula = EffectSleep2 ~ BDI_TOTAL + BAI_TOTAL + Mood_Before_watch +
##     Mood_After_watch, family = "binomial", data = effectsleep.data)
##
## Deviance Residuals:
##     Min      1Q   Median      3Q      Max
## -2.4238  -1.0555   0.5727   0.9974   1.5360
##
## Coefficients:
##                    Estimate Std. Error z value Pr(>|z|)
## (Intercept)       -1.005931   0.661072  -1.522  0.12809
## BDI_TOTAL          0.054584   0.017554   3.109  0.00187 **
## BAI_TOTAL          0.036982   0.014616   2.530  0.01140 *
## Mood_Before_watch -0.022254   0.008724  -2.551  0.01074 *
## Mood_After_watch   0.022400   0.008581   2.611  0.00904 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 641.72  on 474  degrees of freedom
## Residual deviance: 569.01  on 470  degrees of freedom
## AIC: 579.01
##
## Number of Fisher Scoring iterations: 4
```

```
detach("package:MASS")
```

```
exp(coef(new.logit))
```

```
##       (Intercept)          BDI_TOTAL          BAI_TOTAL Mood_Before_watch
##         0.3657038          1.0561014          1.0376740         0.9779921
##  Mood_After_watch
##         1.0226532
```

```
# Using new values to predict the outcome of EffectSleep

newvalues2 <- data.frame(BDI_TOTAL = c(15,25,47), BAI_TOTAL = c(6,22,33), Mood_Before_watch = c(85,55,2
predict(new.logit, newvalues2, type = "response")
```

```
##         1         2         3
## 0.5397148 0.7993030 0.9508372
```

4. Sample Inference

Confidence Interval for Proportions (One Sample Inference)

```r
# First counting the data for how many participants said "Yes" to the EffectSleep variable
asmr_data3%>%
  filter(EffectSleep == "Yes")%>%
  summarize(EffectSleep_yes = n())
```

```
##   EffectSleep_yes
## 1             282
```

```r
prop.test(282, 475, conf.level = 0.95)
```

```
##
##  1-sample proportions test with continuity correction
##
## data:  282 out of 475, null probability 0.5
## X-squared = 16.303, df = 1, p-value = 5.397e-05
## alternative hypothesis: true p is not equal to 0.5
## 95 percent confidence interval:
##  0.5478735 0.6379561
## sample estimates:
##         p
## 0.5936842
```

Confidence Interval for Means(TWo Sample Inference of Paired Populations)

```r
t.test(asmr_data3$Mood_Daily, asmr_data3$Mood_After_watch, paired = T, conf.level = 0.95)
```

```
##
##  Paired t-test
##
## data:  asmr_data3$Mood_Daily and asmr_data3$Mood_After_watch
## t = -30.961, df = 474, p-value < 2.2e-16
## alternative hypothesis: true difference in means is not equal to 0
## 95 percent confidence interval:
##  -23.41418 -20.61951
## sample estimates:
## mean of the differences
##                -22.01684
```