Featback analyses: EDE-Q

Data preparation

Primaire uitkomstmaat

- Eetstoornispathologie (EDE-Q_TOT)

Secundaire uitkomstmaten

- Self-efficacy (GSES_TOT)
- Angst en depressie (PHQ_TOT)
- Sociale steun (SSL_TOT)

Conditie indicatoren

- 1 = Featback
- 2 = Featback + ondersteuning van een ervaringsdeskundige via chat of email
- 3 = Ondersteuning van een ervaringsdeskundige via chat of email
- 4 = Wachtlijst controle conditie (hen werd conditie 2 aangeboden na 12 maanden + 8 weken wachttijd)

Tijdsindicatoren

- 1 = baseline
- 2 = post-interventie (8 weken)
- 3 = 3 maanden follow-up (i.e., 3 maanden + 8 weken)
- 4 = 6 maanden FU
- 5 = 9 maanden FU
- 6 = 12 maanden FU

Mogelijke moderatoren

- Leeftijd (Age)
- Educatie (moet nog omgezet worden naar 3 levels; laag, middel, hoog) (T0_edu)
- Behandelgeschiedenis (T0_treatment)
- BMI bij Baseline (BMI)
- Eetstoornispathologie bij baseline (EDEQ_TOT)
- (Evt. duur eetstoornis, maar is zeer hoog gecorreleerd met leeftijd; T0_yrsED)
- Motivatie om te veranderen bij baseline (T0_Motiv_TOT)
- Zelfwaardering bij baseline (T0_RSES_TOT)
- Self-efficacy bij baseline (GSES_TOT)
- Angst en depressie bij baseline (PHQ_TOT)
- Type eetstoornis bij baseline (staat nog niet tussen de variabelen; nog even kijken hoe we dit moeten aanpakken . . .)

Toevoeging 06-08-2021:

- T0_EDEQ_ObjEet_Keer (= aantal (objectieve) eetbuien in de afgelopen 28 dagen)
- T0_SSL_TOT

```
## Read in data
library("foreign")
data <- read.spss("20210316_Featback_AllMerged_LongFormat_imputed.sav",
                  to.data.frame = TRUE)
```

```r
#names(data)
## Set aprropriate variable classes
data$ID <- factor(data$ID)
data$T0_edu <- ordered(data$T0_edu)
## Abbreviate condition levels
levels(data$Condition)[levels(data$Condition)=="Waiting list"] <- "WL"
levels(data$Condition)[levels(data$Condition)=="Featback"] <- "Fb"
levels(data$Condition)[levels(data$Condition)=="Featback + expert-patient support"] <- "Fb+eps"
levels(data$Condition)[levels(data$Condition)=="expert-patient support"] <- "eps"
data$Condition <- factor(data$Condition, levels = c("WL", "eps", "Fb", "Fb+eps"))
## Check if every subject has a time 1
all(table(data$ID, data$Time == 1)[,2] == 1L)
```

```
## [1] FALSE
```

```r
## Select only pre- and post assessments
#data <- data[data$Time %in% 1:2, ]
#data$Time <- factor(data$Time)
## Construct T0 variables
for (i in unique(data$ID)) {
  data$T0_EDEQ_TOT[data$ID == i] <- data$EDEQ_TOT[data$ID == i & data$Time == 1]
  data$T0_BMI[data$ID == i] <- data$BMI[data$ID == i & data$Time == 1]
  data$T0_GSES_TOT[data$ID == i] <- data$GSES_TOT[data$ID == i & data$Time == 1]
  data$T0_PHQ_TOT[data$ID == i] <- data$PHQ_TOT[data$ID == i & data$Time == 1]
  data$T0_SSL_TOT[data$ID == i] <- data$SSL_TOT[data$ID == i & data$Time == 1]
  data$T0_SSL_TOT[data$ID == i] <- data$SSL_TOT[data$ID == i & data$Time == 1]
  data$T0_eetbuien[data$ID == i] <- data$EDEQ_ObjEet_Keer[data$ID == i & data$Time == 1]
}
## Check for missings and remove
unlist(sapply(data[ , c("Age", "T0_edu", "T0_BMI", "T0_EDEQ_TOT", "T0_Motiv_TOT",
                        "T0_GSES_TOT", "T0_PHQ_TOT")], function(x) table(is.na(x))))
```

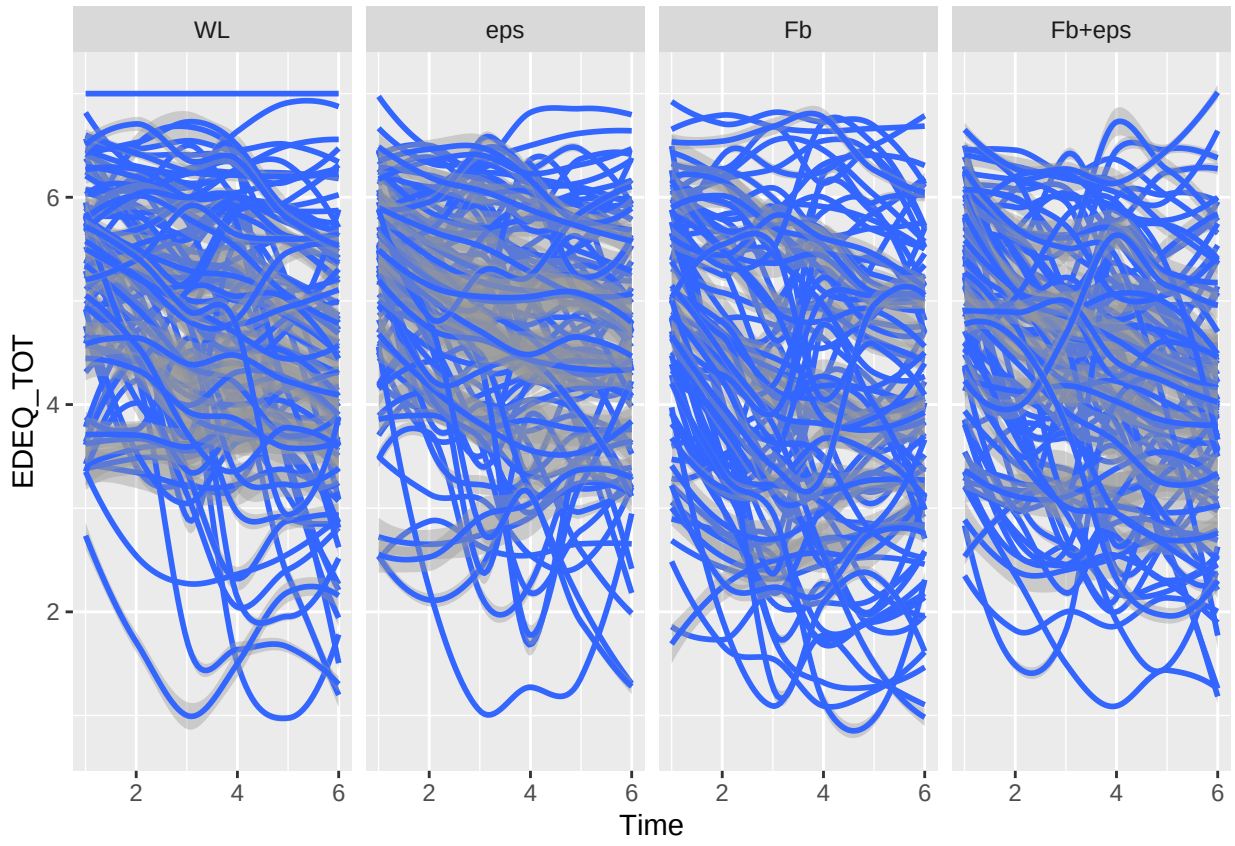
```
##          Age.FALSE       T0_edu.FALSE        T0_edu.TRUE       T0_BMI.FALSE
##             215130             215124                  6             215124
##        T0_BMI.TRUE  T0_EDEQ_TOT.FALSE   T0_EDEQ_TOT.TRUE T0_Motiv_TOT.FALSE
##                  6             215112                 18             215112
##  T0_Motiv_TOT.TRUE  T0_GSES_TOT.FALSE   T0_GSES_TOT.TRUE   T0_PHQ_TOT.FALSE
##                 18             215112                 18             215130
```

```r
data <- data[!is.na(data$T0_BMI), ]
data <- data[!is.na(data$T0_EDEQ_TOT), ]
data <- data[!is.na(data$T0_edu), ]
data <- data[!is.na(data$T0_yrsED), ]
unlist(sapply(data[ , c("Age", "T0_edu", "T0_BMI", "T0_EDEQ_TOT", "T0_Motiv_TOT",
                        "T0_GSES_TOT", "T0_PHQ_TOT")], function(x) table(is.na(x))))
```

```
##          Age.FALSE       T0_edu.FALSE       T0_BMI.FALSE  T0_EDEQ_TOT.FALSE
##             215058             215058             215058             215058
## T0_Motiv_TOT.FALSE  T0_Motiv_TOT.TRUE  T0_GSES_TOT.FALSE   T0_PHQ_TOT.FALSE
##             215043                 15             215058             215058
```

```r
## Exploratory plot
library("ggplot2")
ggplot(data = data, aes(x = Time, y = EDEQ_TOT, group = ID)) +
  facet_grid(. ~ Condition) + geom_smooth()
```

```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
## Warning: Removed 502 rows containing non-finite values (stat_smooth).
```



Splits based only on treatment-time-subgroup interactions

```
library("glmertree")
library("lmerTest")
library("strucchange")

dim(data)
```

```
## [1] 215058     70
```

```
dat1 <- data[!is.na(data$EDEQ_TOT),]
dim(dat1)
```

```
## [1] 214556     70
```

```
## Weird: still some missing values
## Seem to occur when imputation_ is 0
## table(dat1$ID, dat1$Imputation_)[ , 1] ## not all sixes
## table(dat1$ID, dat1$Imputation_)[ , 2] ## all sixes

dat1 <- dat1[dat1$Imputation_ != 0, ]
dim(dat1)
```

```
## [1] 212980     70
```

```
lt1 <- lmertree(EDEQ_TOT ~ Time*Condition | (1|ID) | Age + T0_edu + T0_BMI + T0_EDEQ_TOT +
                  T0_Motiv_TOT + T0_GSES_TOT + T0_PHQ_TOT + T0_treatment +  T0_yrsED +
                  T0_SSL_TOT + T0_eetbuien,
                data = dat1, cluster = ID, parm = 6:8, verbose = TRUE, maxdepth = 4)
```

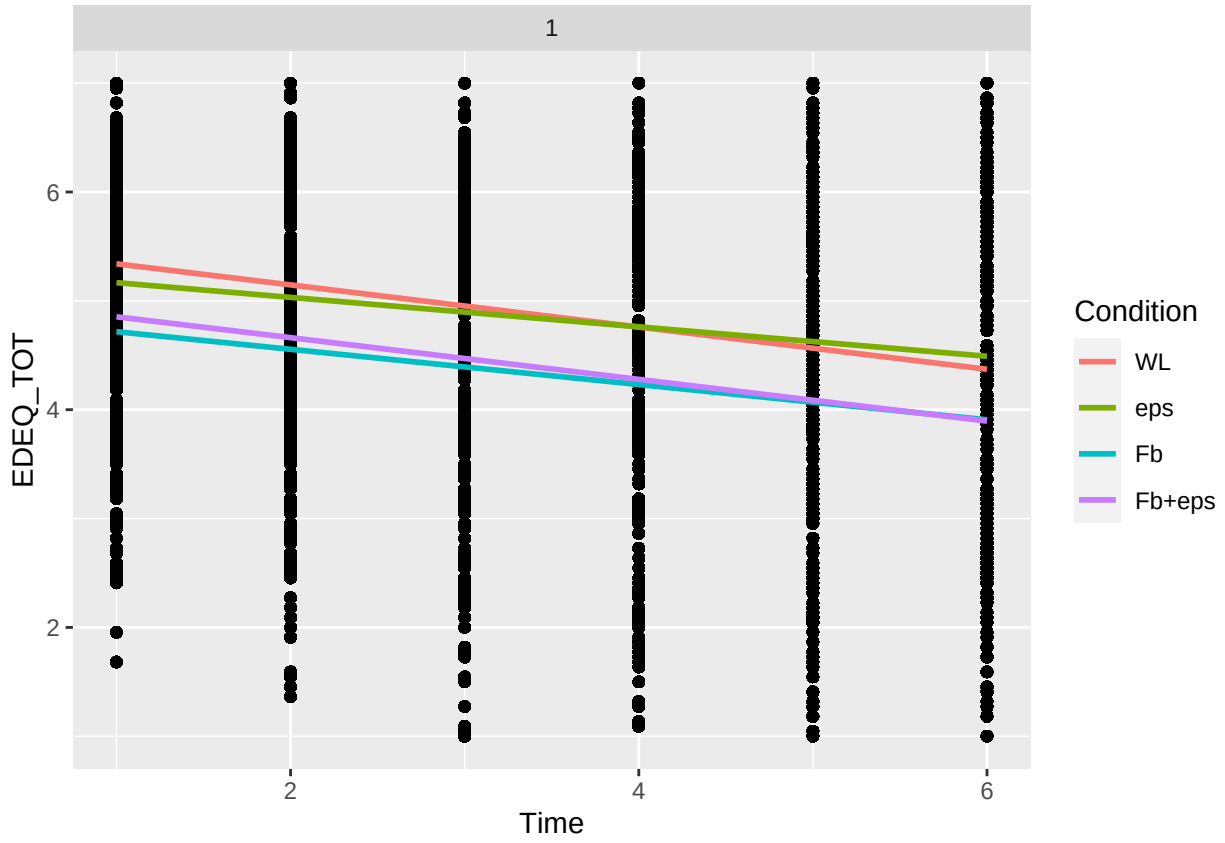
```
## 'log Lik.' -253834.6 (df=10)
## 'log Lik.' -253834.6 (df=10)
```

```
if (length(lt1$tree) > 1L) {
  plot(lt1, which = "tree", fitted = "marginal", gp = gpar(cex = .5))
  #fixef(lt1)
  apply(fixef(lt1), 2, sd)
  VarCorr(lt1)
  tmp <- summary(lmer(attr(lt1$lmer, "call")$formula, data = lt1$data))
  round(tmp$coefficients[tmp$coefficients[,"Pr(>|t|)"] < 0.05, -3], digits = 4)
} else {
  sctest(lt1$tree)
}
```

```
##                Age     T0_edu    T0_BMI T0_EDEQ_TOT T0_Motiv_TOT T0_GSES_TOT
## statistic 3.965283 25.2705723 5.9467037   8.0806702     3.207813    6.140452
## p.value   1.000000  0.9957402 0.9999997   0.9985964     1.000000    0.999999
##           T0_PHQ_TOT T0_treatment T0_yrsED T0_SSL_TOT T0_eetbuien
## statistic  8.3490382    6.3816690 4.913885    4.86104    3.795957
## p.value    0.9973712    0.6642251 1.000000    1.00000    1.000000
```

```
ggplot(data = lt1$data, aes(x = Time, y = EDEQ_TOT, group = ID)) +
  geom_point() + facet_grid(. ~ .tree) +
  geom_smooth(method = "lm", se = FALSE, aes(x = Time, y = EDEQ_TOT,
                                             group = Condition, color = Condition))
```

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

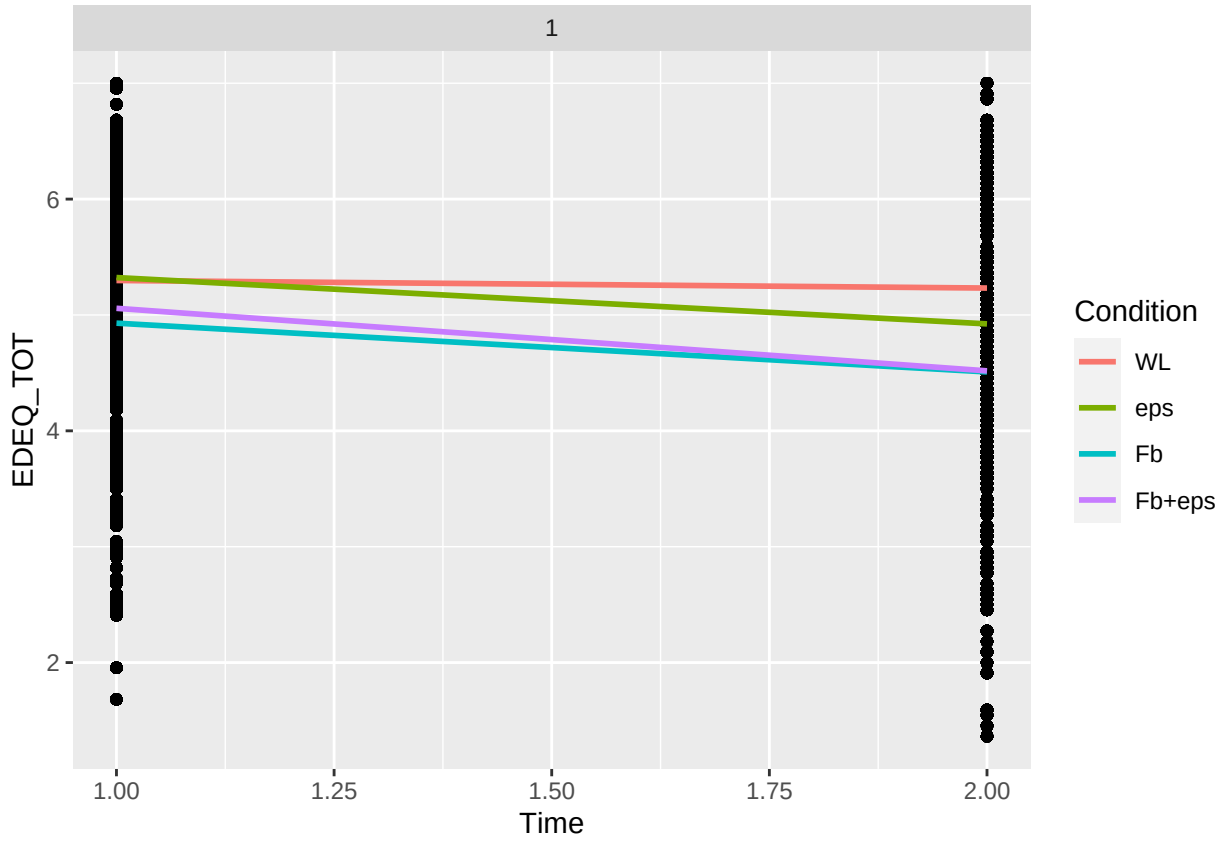



```
dat2 <- dat1[dat1$Time %in% 1:2, ]
lt3 <- lmertree(EDEQ_TOT ~ Time*Condition | (1|ID) | Age + T0_edu + T0_BMI + T0_EDEQ_TOT +
                  T0_Motiv_TOT + T0_GSES_TOT + T0_PHQ_TOT + T0_treatment + T0_yrsED +
                  T0_SSL_TOT + T0_eetbuien,
                data = dat2, cluster = ID, parm = 6:8, maxdepth = 4)
if (length(lt3$tree) > 1L) {
  plot(lt3, which = "tree", fitted = "marginal", gp = gpar(cex = .7))
  #fixef(lt3)
  apply(fixef(lt3), 2, sd)
  VarCorr(lt3)
  tmp <- summary(lmer(attr(lt3$lmer, "call")$formula, data = lt3$data))
  round(tmp$coefficients[tmp$coefficients[,"Pr(>|t|)"] < 0.05, -3], digits = 4)
} else {
  sctest(lt3$tree)
}
```

```
##                Age     T0_edu    T0_BMI T0_EDEQ_TOT T0_Motiv_TOT T0_GSES_TOT
## statistic 5.039584 29.2002054 6.3846421  11.4911142     4.911799  10.6463231
## p.value   1.000000  0.9279521 0.9999963   0.8379207     1.000000   0.9187278
##           T0_PHQ_TOT T0_treatment T0_yrsED T0_SSL_TOT T0_eetbuien
## statistic   4.548649   10.0497143  3.25239  8.0375668   8.3176232
## p.value     1.000000    0.1824673  1.00000  0.9987383   0.9975487
```

```
ggplot(data = lt3$data, aes(x = Time, y = EDEQ_TOT, group = ID)) + geom_point() +
  facet_grid(. ~ .tree) +
  geom_smooth(method = "lm", se = FALSE,
              aes(x = Time, y = EDEQ_TOT, group = Condition, color = Condition))
```

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



Waitlist versus all treatment groups

```
dat1$Condition2 <- factor(dat1$Condition == "WL")
lt2 <- lmertree(EDEQ_TOT ~ Time*Condition2 | (1|ID) | Age + T0_edu + T0_BMI + T0_EDEQ_TOT +
                  T0_Motiv_TOT + T0_GSES_TOT + T0_PHQ_TOT + T0_treatment +  T0_yrsED +
                  T0_SSL_TOT + T0_eetbuien,
                data = dat1, cluster = ID, parm = 4, verbose = TRUE, maxdepth = 4)
```

```
## 'log Lik.' -254024.5 (df=6)
## 'log Lik.' -254024.5 (df=6)
```

```
if (length(lt2$tree) > 1L) {
  plot(lt2, which = "tree", fitted = "marginal", gp = gpar(cex = .5))
  #fixef(lt2)
  apply(fixef(lt2), 2, sd)
  VarCorr(lt2)
  tmp <- summary(lmer(attr(lt2$lmer, "call")$formula, data = lt1$data))
  round(tmp$coefficients[tmp$coefficients[,"Pr(>|t|)"] < 0.05, -3], digits = 4)
} else {
  sctest(lt2$tree)
}
```

```
##                 Age    T0_edu    T0_BMI T0_EDEQ_TOT T0_Motiv_TOT T0_GSES_TOT
## statistic 0.7086866 7.6013359 3.4233284   0.9614982    5.6635895   3.5538474
```

```
## p.value   1.0000000 0.9991355 0.9998028   1.0000000    0.9371117   0.9996471
##           T0_PHQ_TOT T0_treatment  T0_yrsED T0_SSL_TOT T0_eetbuien
## statistic  2.6298582    1.9956499 3.2565728  4.3302408   4.0033597
## p.value    0.9999987    0.8486984 0.9999133  0.9950683   0.9981177
```

```
dat2 <- dat1[dat1$Time %in% 1:2, ]
lt4 <- lmertree(EDEQ_TOT ~ Time*Condition2 | (1|ID) | Age + T0_edu + T0_BMI + T0_EDEQ_TOT +
                  T0_Motiv_TOT + T0_GSES_TOT + T0_PHQ_TOT + T0_treatment + T0_yrsED +
                  T0_SSL_TOT + T0_eetbuien,
                data = dat2, cluster = ID, parm = 4, maxdepth = 4)
if (length(lt4$tree) > 1L) {
  plot(lt4, which = "tree", fitted = "marginal", gp = gpar(cex = .7))
  #fixef(lt4)
  apply(fixef(lt4), 2, sd)
  VarCorr(lt4)
  tmp <- summary(lmer(attr(lt4$lmer, "call")$formula, data = lt3$data))
  round(tmp$coefficients[tmp$coefficients[,"Pr(>|t|)"] < 0.05, -3], digits = 4)
} else {
  sctest(lt4$tree)
}
```

```
##                Age   T0_edu   T0_BMI T0_EDEQ_TOT T0_Motiv_TOT T0_GSES_TOT
## statistic 1.926276 4.078696 2.294051   6.1782893     1.342648    1.590656
## p.value   1.000000 1.000000 1.000000   0.8852369     1.000000    1.000000
##           T0_PHQ_TOT T0_treatment T0_yrsED T0_SSL_TOT T0_eetbuien
## statistic   1.531043    1.4984746 1.691114   1.145187     1.71237
## p.value     1.000000    0.9358071 1.000000   1.000000     1.00000
```