Description of system performance

AC

Contents

A first attempt

The goal here is to link system performance to characteristics of files and/or speakers on files. See this file for explanation of the fields.

Read in descriptor data

We read in background data (only exists for babytrain), data describing files and speakers. Typically, this does not depend on your system results, so you do not need to change it.

```
# options(warn=2) for debugging, then options(warn=1)

#background information (only available for babytrain)
read.csv("../BabyTrain_ages.csv")->ages
ages[ages$corpus!="corpus",]->ages
ages$age=as.numeric(as.character(ages$age))

allres=dir("../computation/results/",pattern=".csv")

#descriptors per speaker
datsp=NULL
for(j in allres[grep("perSpeaker",allres)])  datsp=rbind(datsp,cbind(j,read.csv(paste0("../computation/r

#descriptors per file
datf=NULL
for(j in allres[grep("perSpeaker",allres,invert=T)])  datf=rbind(datf,cbind(j,read.csv(paste0("../comput
datf$cor=gsub("_.*","",datf$j)

#descriptors per speaker
merge(datsp,ages,by.x="file",by.y="basename",all.x=T)->datsp
merge(datf,ages,by.x="file",by.y="basename",all.x=T)->datf

#show dimensions and summary of the 2 datasets
dim(datsp)
```

```
## [1] 8238   10
```

```
summary(datsp)
```

```
##                           file                                     j
##  namibia_aiku_20161111_19980:   9   BabyTrain_train_perSpeaker.csv:4163
##  namibia_eiun_20161113_30780:   9   BabyTrain_dev_perSpeaker.csv  :2071
##  namibia_oegd_20161109_23580:   8   BabyTrain_test_perSpeaker.csv :1254
##  namibia_oekd_20160712_12780:   8   AMI_train_perSpeaker.csv      : 471
##  namibia_oekd_20160712_16380:   8   AMI_dev_perSpeaker.csv        : 104
##  namibia_oekd_20170308_19980:   8   AMI_test_perSpeaker.csv       :  95
##  (Other)                    :8188   (Other)                       :  80
##     speaker         role      tot_ovl_speech      tot_nonovl_speech
##  MOT*   : 925   FEM   :2617   Min.   :   0.0000   Min.   :-297.429
##  C1     : 909   MAL   :1370   1st Qu.:   0.0000   1st Qu.:   0.000
##  MA1    : 563   CHI   :1375   Median :   0.0308   Median :   0.000
##  FA1    : 551   KCHI  :2329   Mean   :  33.5954   Mean   :  39.993
##  C2     : 414   SPEECH: 547   3rd Qu.:   2.9493   3rd Qu.:   7.659
##  UU     : 378                 Max.   :2688.8500   Max.   :2665.000
##  (Other):4498
##    snr             corpus              child.id         age
##  []  :8174   namibia  :3977   fhugo        : 208   Min.   : 1.00
##  NA's:  64   lena_lyon: 907   nath         : 122   1st Qu.:13.00
##              tsay     : 751   marin        : 118   Median :27.00
##              paido    : 649   uebn_20170309: 115   Mean   :25.04
##              tsimane  : 447   ern          : 109   3rd Qu.:33.00
##              (Other)  : 330   (Other)      :6389   Max.   :66.00
##              NA's     :1177   NA's         :1177   NA's   :1177
```

```
dim(datf)
```

```
## [1] 2881   17
```

```
summary(datf)
```

```
##                   file                         j        key_child_age
##  ES2003a.Mix-Headset:   1   BabyTrain_train.csv:1544   Mode:logical
##  ES2003b.Mix-Headset:   1   BabyTrain_dev.csv  : 736   NA's:2881
##  ES2003c.Mix-Headset:   1   BabyTrain_test.csv : 413
##  ES2003d.Mix-Headset:   1   AMI_train.csv      : 118
##  ES2011a.Mix-Headset:   1   AMI_dev.csv        :  26
##  ES2011b.Mix-Headset:   1   AMI_test.csv       :  24
##  (Other)            :2875   (Other)            :  20
##   clip_length      nb_diff_speakers  nb_children      nb_fem_ad
##  Min.   :   60.0   Min.   :1.000    Min.   :0.000   Min.   :0.0000
##  1st Qu.:   60.0   1st Qu.:1.000    1st Qu.:1.000   1st Qu.:0.0000
##  Median :   60.0   Median :3.000    Median :1.000   Median :1.0000
##  Mean   :  467.6   Mean   :2.859    Mean   :1.286   Mean   :0.9084
##  3rd Qu.:  300.0   3rd Qu.:4.000    3rd Qu.:2.000   3rd Qu.:1.0000
##  Max.   :10723.0   Max.   :9.000    Max.   :4.000   Max.   :4.0000
##
##    nb_mal_ad       nb_uncertain    prop_ovl_speech   prop_nonovl_speech
##  Min.   :0.0000   Min.   :0.0000   Min.   :0.00000   Min.   :0.2000
##  1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:0.00000   1st Qu.:0.9200
##  Median :0.0000   Median :0.0000   Median :0.01000   Median :0.9900
##  Mean   :0.4755   Mean   :0.1899   Mean   :0.06742   Mean   :0.9326
##  3rd Qu.:1.0000   3rd Qu.:0.0000   3rd Qu.:0.08000   3rd Qu.:1.0000
```

```
##  Max.   :4.0000   Max.   :1.0000   Max.   :0.80000   Max.   :1.0000
##
##   avg_voc_dur           snr               cor                  corpus
##  Min.   :   0.42   Min.   :  0.03003   Length:2881        namibia  :1062
##  1st Qu.:  11.87   1st Qu.:  0.71457   Class :character   paido    : 649
##  Median :  24.70   Median :  0.84570   Mode  :character   lena_lyon: 323
##  Mean   : 190.21   Mean   : 13.56329                      tsay     : 237
##  3rd Qu.:  61.69   3rd Qu.:  1.96800                      tsimane  : 154
##  Max.   :7659.23   Max.   :104.58705                      (Other)  : 122
##                    NA's   :34                             NA's     : 334
##     child.id         age
##  fhugo  :  71   Min.   : 1.00
##  nath   :  48   1st Qu.:15.50
##  ern    :  36   Median :30.00
##  flore  :  36   Mean   :29.19
##  leon   :  36   3rd Qu.:39.00
##  (Other):2320   Max.   :66.00
##  NA's   : 334   NA's   :334
```

Read in system data

HUMAN LOOK HERE Typically you WILL need to change line 50 below, so that you read in your own system results. Please use pyannote.metrics to generate your results. They should be space separated **HUMAN LOOK HERE**

```
file_eval <- read_table("../system_eval/BabyTrain_ConvRNN.txt", comment = "--")
```

```
## Warning: Duplicated column names deduplicated: '%' => '%_1' [10]
```

```
## Parsed with column specification:
## cols(
##   `Detection (collar = 0 ms)` = col_character(),
##   `detection error rate` = col_double(),
##   accuracy = col_double(),
##   precision = col_double(),
##   recall = col_double(),
##   total = col_double(),
##   `false alarm` = col_double(),
##   `%` = col_double(),
##   miss = col_double(),
##   `%_1` = col_double()
## )
```

```
dim(file_eval)
```

```
## [1] 414  10
```

```
summary(file_eval)
```

```
##  Detection (collar = 0 ms) detection error rate    accuracy
##  Length:414                Min.   :   1.87      Min.   :23.23
##  Class :character          1st Qu.:  14.94      1st Qu.:73.11
##  Mode  :character          Median :  38.53      Median :84.25
##                            Mean   :  76.83      Mean   :81.38
##                            3rd Qu.:  72.99      3rd Qu.:92.48
##                            Max.   :2177.42      Max.   :99.33
```

```
##    precision          recall           total           false alarm
##  Min.   :  0.00   Min.   :  0.00   Min.   :    0.97   Min.   :    0.00
##  1st Qu.: 60.83   1st Qu.: 78.56   1st Qu.:   19.81   1st Qu.:    3.59
##  Median : 81.83   Median : 91.59   Median :   37.30   Median :    8.20
##  Mean   : 73.59   Mean   : 84.93   Mean   :  389.02   Mean   :   51.30
##  3rd Qu.: 92.45   3rd Qu.: 97.86   3rd Qu.:   66.45   3rd Qu.:   20.46
##  Max.   :100.00   Max.   :100.00   Max.   :80526.23   Max.   :10619.92
##        %                 miss              %_1
##  Min.   :   0.000   Min.   :   0.000   Min.   :  0.000
##  1st Qu.:   7.303   1st Qu.:   0.565   1st Qu.:  2.143
##  Median :  17.050   Median :   2.410   Median :  8.405
##  Mean   :  61.760   Mean   :  30.841   Mean   : 15.071
##  3rd Qu.:  55.862   3rd Qu.:   8.620   3rd Qu.: 21.435
##  Max.   :2177.420   Max.   :6384.020   Max.   :100.000
```

```
#the first col must be renamed
colnames(file_eval)[1]<-"file"


#you may also want to rename some variables into something that is more readable
colnames(file_eval)[colnames(file_eval)=="%"]<-"fa.pc"
colnames(file_eval)[colnames(file_eval)=="%_1"]<-"miss.pc"
```

Combine descriptor and system data

If all goes well, you won't need to change this section. After this code, the table file_eval has a combination of results and descriptors at the level of files.

```
merge(file_eval,datf,all.x=T)->file_eval

dim(file_eval) #**human** check that the number of rows (first number) outputted here is the same as th
```

```
## [1] 414  26
```

```
summary(file_eval)
```

```
##      file           detection error rate    accuracy       precision
##  Length:414         Min.   :   1.87      Min.   :23.23   Min.   :  0.00
##  Class :character   1st Qu.:  14.94      1st Qu.:73.11   1st Qu.: 60.83
##  Mode  :character   Median :  38.53      Median :84.25   Median : 81.83
##                     Mean   :  76.83      Mean   :81.38   Mean   : 73.59
##                     3rd Qu.:  72.99      3rd Qu.:92.48   3rd Qu.: 92.45
##                     Max.   :2177.42      Max.   :99.33   Max.   :100.00
##
##      recall           total           false alarm          fa.pc
##  Min.   :  0.00   Min.   :    0.97   Min.   :    0.00   Min.   :   0.000
##  1st Qu.: 78.56   1st Qu.:   19.81   1st Qu.:    3.59   1st Qu.:   7.303
##  Median : 91.59   Median :   37.30   Median :    8.20   Median :  17.050
##  Mean   : 84.93   Mean   :  389.02   Mean   :   51.30   Mean   :  61.760
##  3rd Qu.: 97.86   3rd Qu.:   66.45   3rd Qu.:   20.46   3rd Qu.:  55.862
##  Max.   :100.00   Max.   :80526.23   Max.   :10619.92   Max.   :2177.420
##
##       miss             miss.pc                         j
##  Min.   :   0.000   Min.   :  0.000   BabyTrain_test.csv:413
##  1st Qu.:   0.565   1st Qu.:  2.143   AMI_dev.csv       :  0
```

```
##  Median :   2.410   Median :  8.405   AMI_test.csv      :  0
##  Mean   :  30.841   Mean   : 15.071   AMI_train.csv     :  0
##  3rd Qu.:   8.620   3rd Qu.: 21.435   BabyTrain_dev.csv :  0
##  Max.   :6384.020   Max.   :100.000   (Other)           :  0
##                                       NA's              :  1
##  key_child_age   clip_length     nb_diff_speakers  nb_children
##  Mode:logical   Min.   :  60.0   Min.   :1.000    Min.   :0.000
##  NA's:414       1st Qu.:  60.0   1st Qu.:2.000    1st Qu.:1.000
##                 Median :  60.0   Median :3.000    Median :1.000
##                 Mean   : 326.4   Mean   :3.036    Mean   :1.433
##                 3rd Qu.: 201.4   3rd Qu.:4.000    3rd Qu.:2.000
##                 Max.   :3420.0   Max.   :8.000    Max.   :3.000
##                 NA's   :1        NA's   :1        NA's   :1
##    nb_fem_ad      nb_mal_ad       nb_uncertain    prop_ovl_speech
##  Min.   :0.00   Min.   :0.0000   Min.   :0.0000   Min.   :0.00000
##  1st Qu.:0.00   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:0.00000
##  Median :1.00   Median :0.0000   Median :0.0000   Median :0.02000
##  Mean   :1.01   Mean   :0.3729   Mean   :0.2203   Mean   :0.05332
##  3rd Qu.:2.00   3rd Qu.:1.0000   3rd Qu.:0.0000   3rd Qu.:0.09000
##  Max.   :3.00   Max.   :2.0000   Max.   :1.0000   Max.   :0.70000
##  NA's   :1      NA's   :1        NA's   :1        NA's   :1
##  prop_nonovl_speech  avg_voc_dur          snr              cor
##  Min.   :0.3000     Min.   :   0.97   Min.   : 0.0977   Length:414
##  1st Qu.:0.9100     1st Qu.:  11.21   1st Qu.: 0.6831   Class :character
##  Median :0.9800     Median :  20.51   Median : 0.7791   Mode  :character
##  Mean   :0.9467     Mean   : 105.37   Mean   : 9.8108
##  3rd Qu.:1.0000     3rd Qu.:  34.51   3rd Qu.: 0.9818
##  Max.   :1.0000     Max.   :1334.05   Max.   :88.2541
##  NA's   :1          NA's   :1         NA's   :1
##        corpus             child.id        age
##  namibia  :155   nohlan       : 36   Min.   : 3.00
##  paido    : 68   uebn_20170309: 26   1st Qu.:20.50
##  lena_lyon: 48   C24          : 17   Median :27.00
##  tsimane  : 42   uoga_20170311: 14   Mean   :26.93
##  tsay     : 40   uoga_20170313: 14   3rd Qu.:34.00
##  (Other)  : 26   (Other)      :272   Max.   :66.00
##  NA's     : 35   NA's         : 35   NA's   :35
```

Now you are ready to do some inspection. You can turn chunks off by adding ", eval=F" (e.g. {r spl,fig.height=10} below, it would become {r spl,fig.height=10, eval=F})

Example of analysis: Explaining misses and false alarms across files based on file characteristics (Marvin VAD on BabyTrain - 5 class, old architecture)

A scatter plot matrix shows many bivariate plots. In the one below, we focus exclusively on descriptors at the level of the file and only for BabyTrain because that's what I drew results for. We only have false alarms and misses because we are looking at a VAD system. (In particular, this is Marvin's system for week 1.)

```
library(lattice)
selected=c("fa.pc","miss.pc","prop_ovl_speech","avg_voc_dur","age","snr","nb_diff_speakers")
selnames=gsub(".","\n",gsub("_","\n",selected),fixed=T)
splom(file_eval[c(selected)],pch=".",groups=file_eval$corpus,varnames=selnames,auto.key = list(columns =
panel = function(x, y, ...) {
          panel.xyplot(x, y, ...)
```

```
          fm <- lm(y ~ x)
          panel.abline(fm,col.line = "gray")
}
)
```

Focus on the last two rows, which show the correlations between percent misses (penultimate row) or percent false alarms (last row) and the following selected characteristics (from left to right):

- proportion of speech that is overlapping
- average vocalization/utterance/sentence duration
- key child age
- SNR calculated as RMS(x_speech)/RMS(x_sil) where x_speech is an array with all the areas of speech in the gold annotation, and x_sil is un array with all the areas of silence
- number of different speakers

So focusing on the last row, false alarms look unrelated to all of these predictors, although this may be because the scale is too large.

One row up, misses does not relate to proportion overlap or number of different speakers, but is anticorrelated with the duration of speech, child age, and SNR.

Example of analysis 2: ConvRNN version

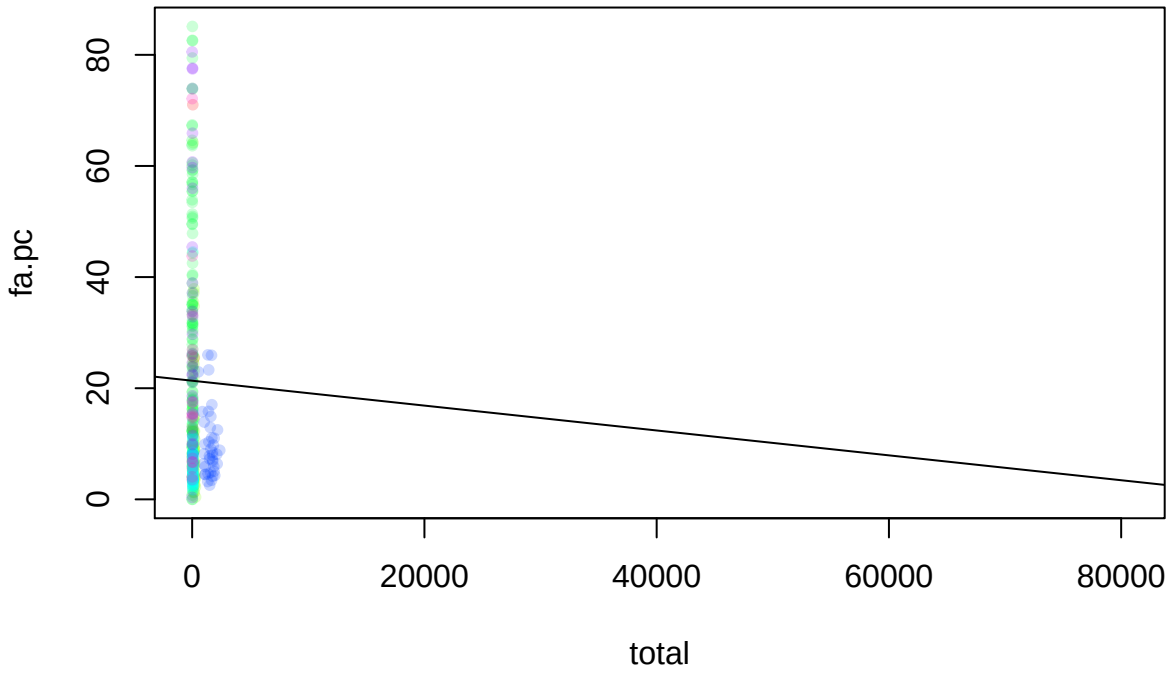
You can also focus on specific outcome and predictor variables and trim their distribution to see them more clearly.

```
cor_color=rainbow(length(levels(factor(file_eval$corpus)))) #get different colors for diff datasets
names(cor_color)<-levels(factor(file_eval$corpus))

file_eval_metrics=c("fa.pc","miss.pc")
predictors=c("total","clip_length","prop_ovl_speech","avg_voc_dur","age","snr","nb_diff_speakers")

for(thismet in file_eval_metrics){
  iqr=IQR(file_eval[,thismet])
  med=median(file_eval[,thismet])
  no_outliers=file_eval[file_eval[,thismet]<med+1.5*iqr,]
  print(paste("removing",dim(file_eval)[1]-dim(no_outliers)[1], "outliers in",thismet,"specifically the
  print(file_eval[file_eval[,thismet]>=med+1.5*iqr,"file"])
  for(thispred in predictors){
    plot(no_outliers[,thismet]~no_outliers[,thispred], pch=20,col=alpha(cor_color[no_outliers$corpus],.
    abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
    print(summary(lm(no_outliers[,thismet]~no_outliers[,thispred])))
    if(max(no_outliers[,thismet])>300){
        plot(no_outliers[,thismet]~no_outliers[,thispred], pch=20,col=alpha(cor_color[no_outliers$corpus
    abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
    }
  }
}
```

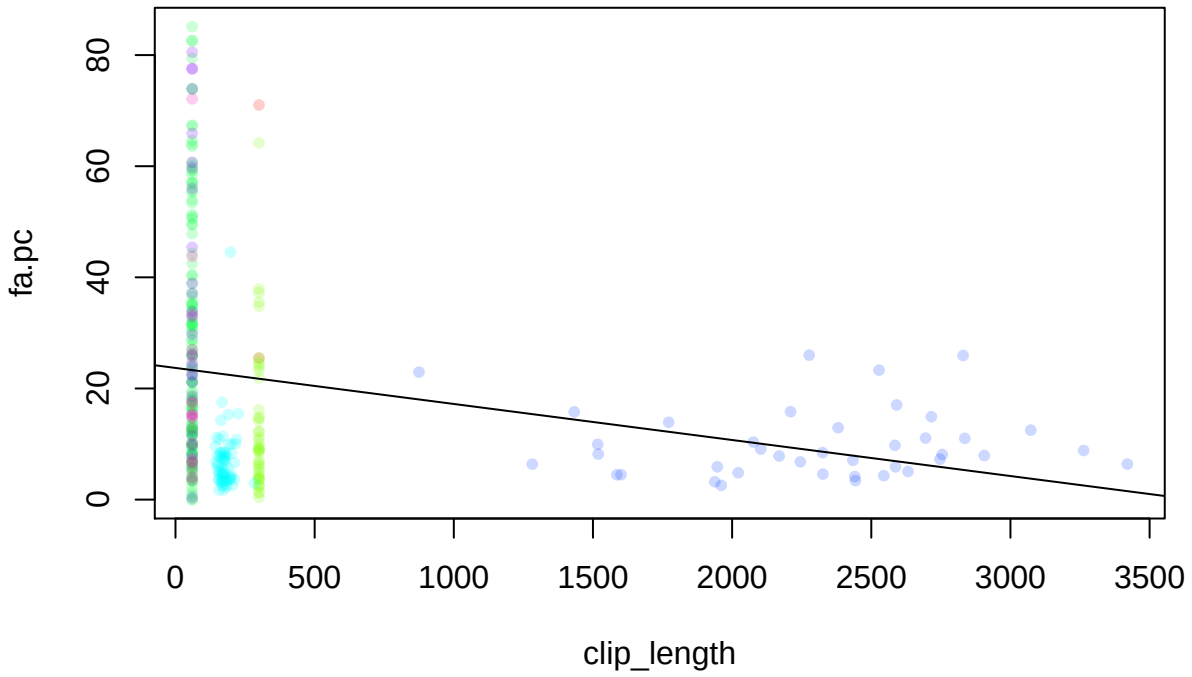
```
## [1] "removing 67 outliers in fa.pc specifically the following files:"
##  [1] "aclew_starter_ROS_9559_15_01_03600"
##  [2] "lena_lyon_day1_nohlan_12h30"
##  [3] "lena_lyon_day1_nohlan_17h00"
##  [4] "lena_lyon_day1_nohlan_17h05"
##  [5] "lena_lyon_day2_nohlan_8h00"
```

```
##  [6] "lena_lyon_day3_nohlan_20h40"
##  [7] "namibia_uebn_20160710_27180"
##  [8] "namibia_uebn_20160710_5580"
##  [9] "namibia_uebn_20160710_9180"
## [10] "namibia_uebn_20160711_12780"
## [11] "namibia_uebn_20160711_1980"
## [12] "namibia_uebn_20160711_23580"
## [13] "namibia_uebn_20160711_5580"
## [14] "namibia_uebn_20160713_30780"
## [15] "namibia_uebn_20160713_37980"
## [16] "namibia_uebn_20160713_5580"
## [17] "namibia_uebn_20161112_27180"
## [18] "namibia_uebn_20161112_30780"
## [19] "namibia_uebn_20161112_34380"
## [20] "namibia_uebn_20161113_23580"
## [21] "namibia_uebn_20161113_27180"
## [22] "namibia_uebn_20161114_12780"
## [23] "namibia_uebn_20161114_16380"
## [24] "namibia_uebn_20161114_1980"
## [25] "namibia_uebn_20161114_19980"
## [26] "namibia_uebn_20170308_1980"
## [27] "namibia_uebn_20170308_5580"
## [28] "namibia_uebn_20170309_1980"
## [29] "namibia_uebn_20170309_5580"
## [30] "namibia_uebn_20170309_88680"
## [31] "namibia_uebn_20170310_37980"
## [32] "namibia_uebn_20170310_45180"
## [33] "namibia_uoga_20170311_16380"
## [34] "namibia_uoga_20170312_27180"
## [35] "namibia_uoga_20170313_37980"
## [36] "paido_j2bt19f211"
## [37] "tsimane_C22_20170717_45240"
## [38] "tsimane_C22_20170717_5640"
## [39] "tsimane_C22_C21_M13_20170712_45240"
## [40] "tsimane_C22_C21_M13_20170712_52440"
## [41] "tsimane_C22_C21_M13_20170717_45240"
## [42] "tsimane_C22_C21_M13_20170717_5640"
## [43] "tsimane_C24_20170712_12840"
## [44] "tsimane_C24_20170712_16440"
## [45] "tsimane_C24_20170712_20040"
## [46] "tsimane_C24_20170712_41640"
## [47] "tsimane_C24_20170719_20040"
## [48] "tsimane_C24_20170719_2040"
## [49] "tsimane_C24_20170719_34440"
## [50] "tsimane_C24_20170719_9240"
## [51] "tsimane_C24_C23_M14_20170712_12840"
## [52] "tsimane_C24_C23_M14_20170712_16440"
## [53] "tsimane_C24_C23_M14_20170712_20040"
## [54] "tsimane_C24_C23_M14_20170712_41640"
## [55] "tsimane_C24_C23_M14_20170719_16440"
## [56] "tsimane_C24_C23_M14_20170719_20040"
## [57] "tsimane_C24_C23_M14_20170719_2040"
## [58] "tsimane_C24_C23_M14_20170719_34440"
## [59] "tsimane_C24_C23_M14_20170719_9240"
```

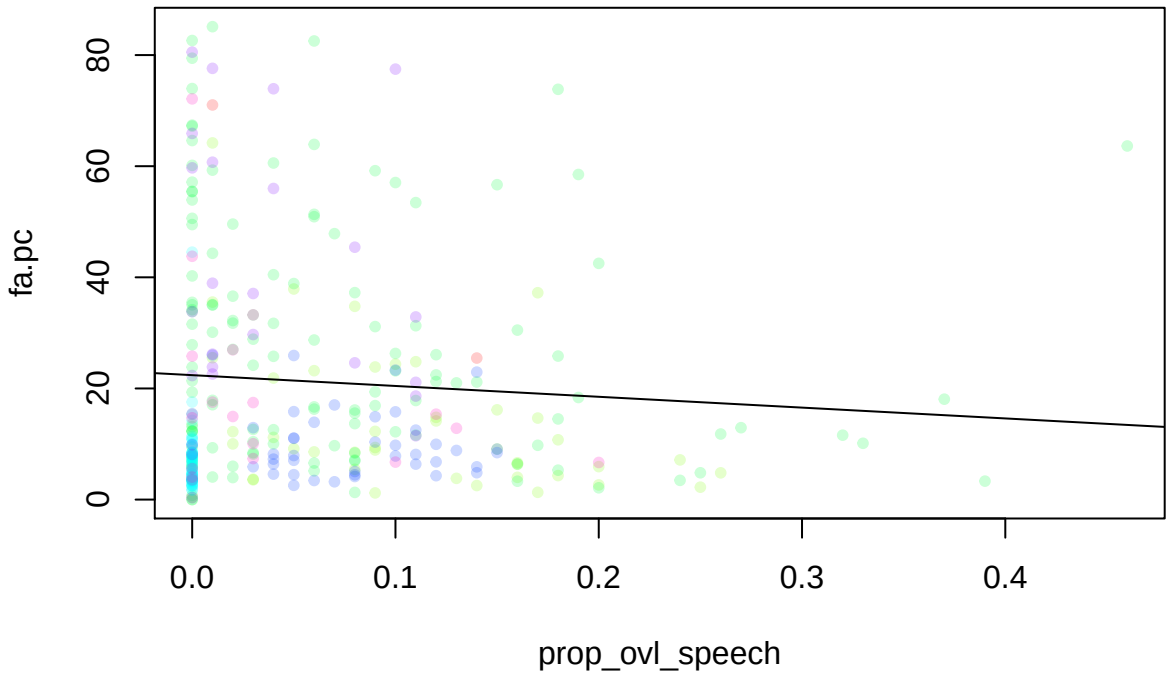
```
## [60] "tsimane_C25_20170719_20040"
## [61] "tsimane_C25_20170719_48840"
## [62] "tsimane_C25_20170719_5640"
## [63] "tsimane_C25_NA_M14_20170712_27240"
## [64] "tsimane_C25_NA_M14_20170719_20040"
## [65] "tsimane_C25_NA_M14_20170719_48840"
## [66] "tsimane_C25_NA_M14_20170719_5640"
## [67] "vanuatu_van7_20170803_1_05_16380_16440"
```



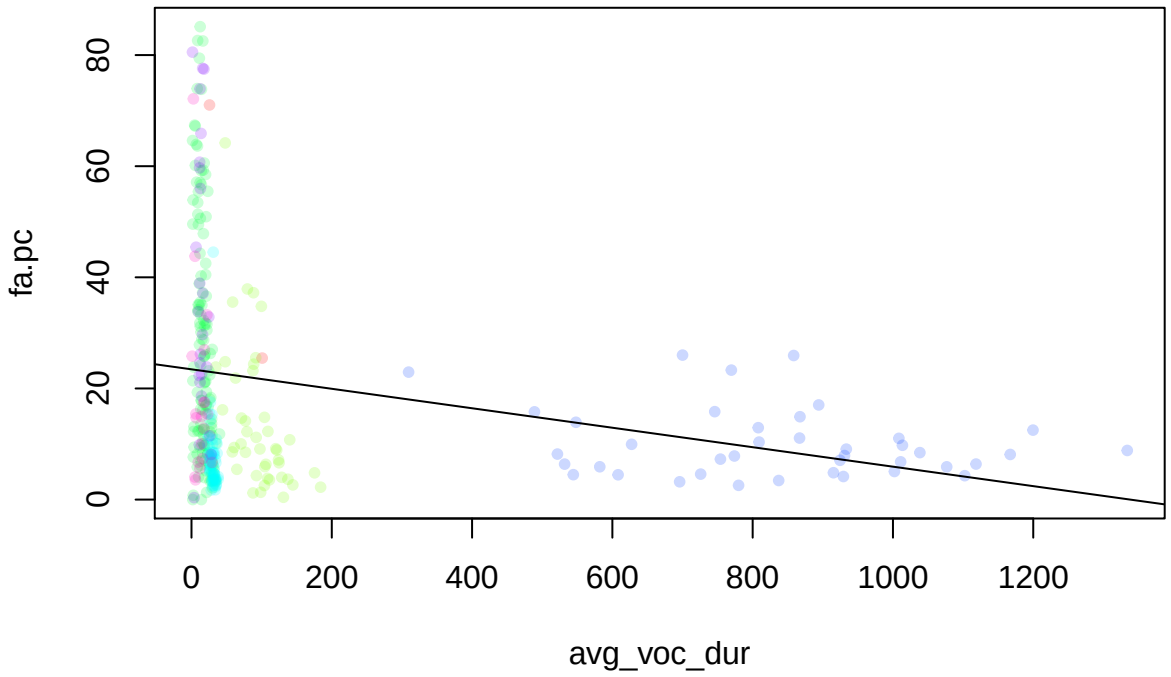

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -21.351 -14.756  -8.977  10.087  63.763
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              21.3516097  1.1068293  19.291   <2e-16 ***
## no_outliers[, thispred] -0.0002239  0.0002540  -0.881    0.379
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20.5 on 345 degrees of freedom
## Multiple R-squared:  0.002247,   Adjusted R-squared:  -0.000645
## F-statistic: 0.777 on 1 and 345 DF,  p-value: 0.3787
```



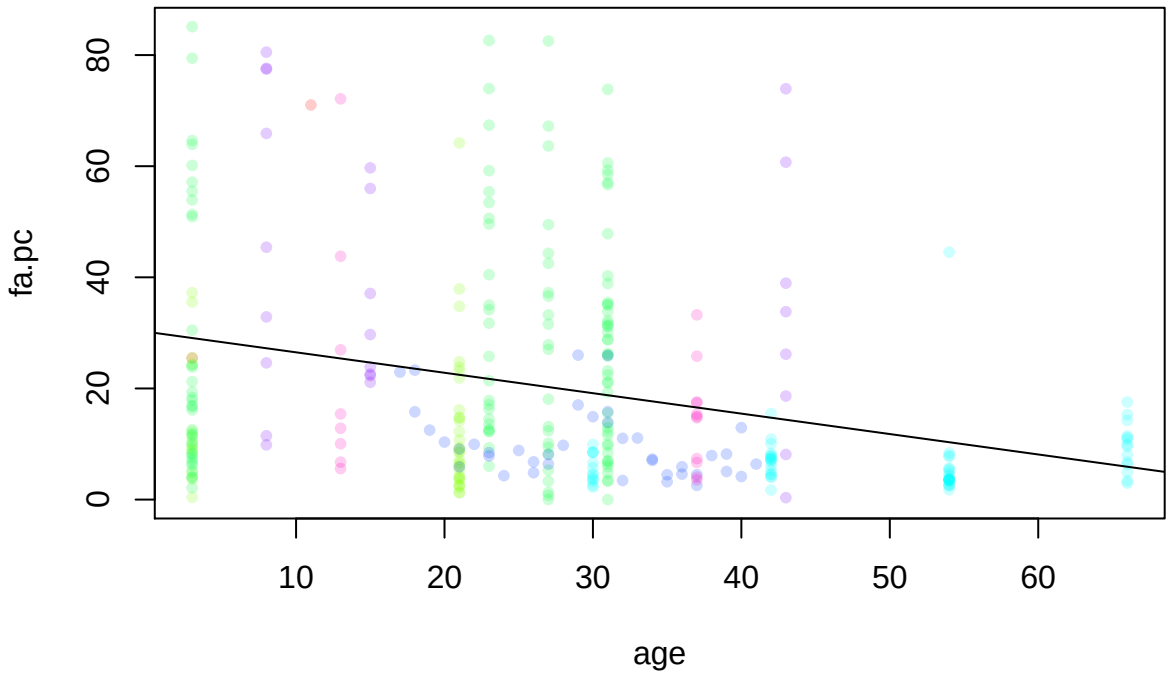

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -23.307 -15.375  -6.512   9.400  61.803
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               23.696439   1.211247  19.564  < 2e-16 ***
## no_outliers[, thispred] -0.006485   0.001490  -4.353 1.77e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20.01 on 344 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.05221,    Adjusted R-squared:  0.04946
## F-statistic: 18.95 on 1 and 344 DF,  p-value: 1.772e-05
```



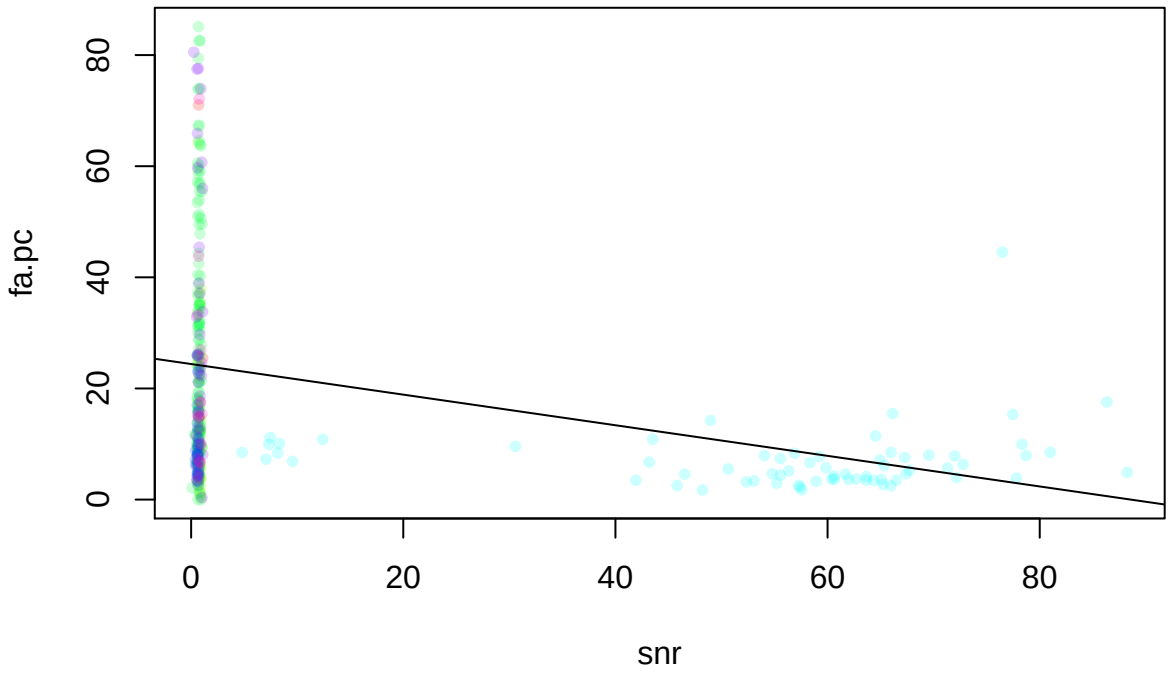

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -22.39 -14.72  -8.51  10.19  62.91
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                22.392      1.398  16.022   <2e-16 ***
## no_outliers[, thispred]  -19.476     14.937  -1.304    0.193
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20.5 on 344 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.004918,   Adjusted R-squared:  0.002025
## F-statistic:   1.7 on 1 and 344 DF,  p-value: 0.1931
```



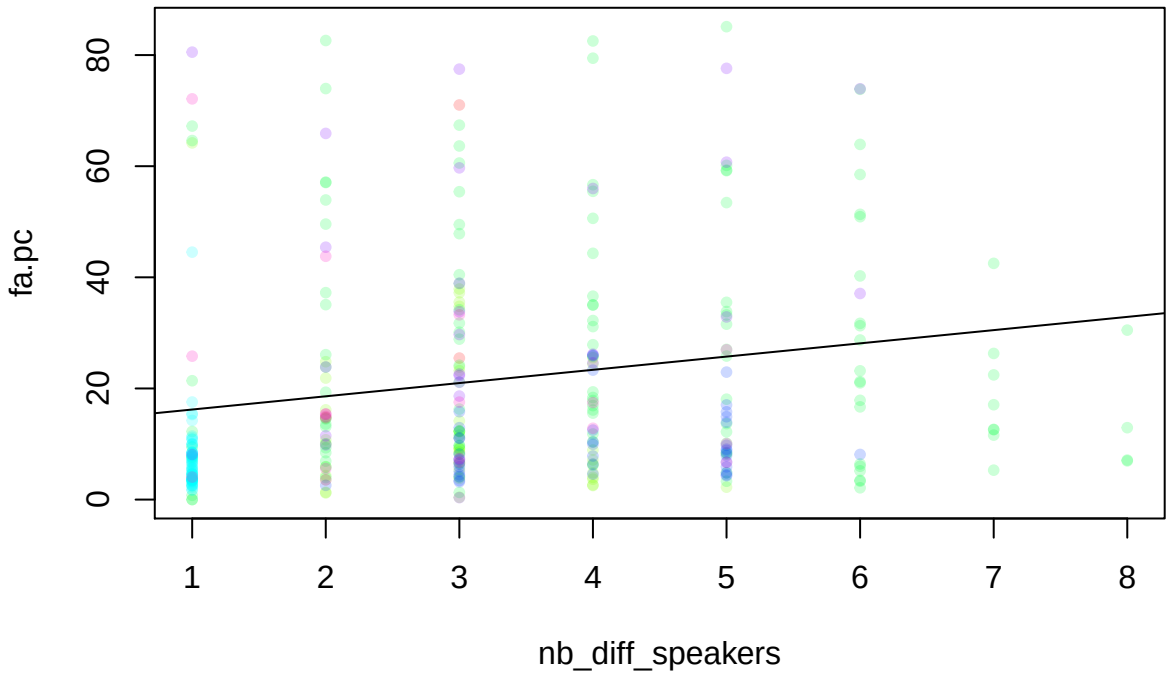

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -23.408 -15.533  -6.667   9.710  61.886
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              23.44130    1.18385   19.80  < 2e-16 ***
## no_outliers[, thispred] -0.01752    0.00400   -4.38 1.58e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20 on 344 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.05282,    Adjusted R-squared:  0.05007
## F-statistic: 19.18 on 1 and 344 DF,  p-value: 1.578e-05
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -28.664 -12.567  -6.692   7.620  62.290
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              30.17703    2.07637  14.534  < 2e-16 ***
## no_outliers[, thispred] -0.36768    0.06561  -5.604 4.48e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 18.97 on 323 degrees of freedom
##   (22 observations deleted due to missingness)
## Multiple R-squared:  0.08862,    Adjusted R-squared:  0.0858
## F-statistic: 31.41 on 1 and 323 DF,  p-value: 4.483e-08
```

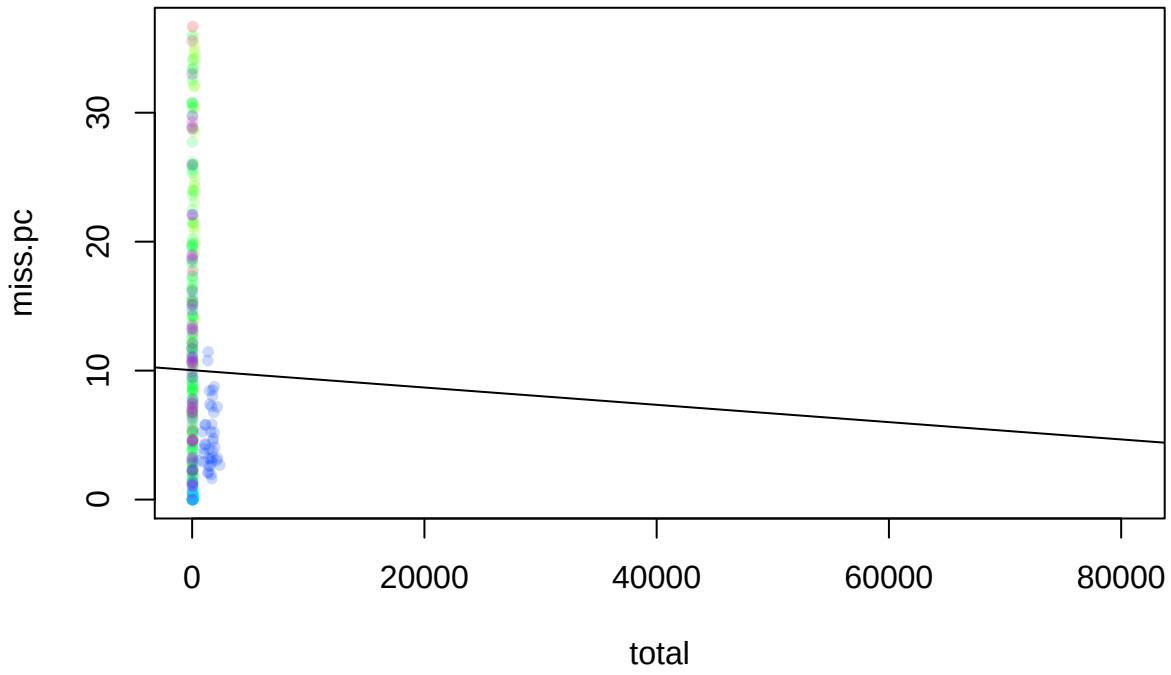



```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -24.216 -14.731  -4.755   7.922  60.906
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               24.39687    1.16508  20.940  < 2e-16 ***
## no_outliers[, thispred] -0.27545    0.04476  -6.154  2.1e-09 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 19.5 on 344 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.09918,    Adjusted R-squared:  0.09656
## F-statistic: 37.87 on 1 and 344 DF,  p-value: 2.099e-09
```

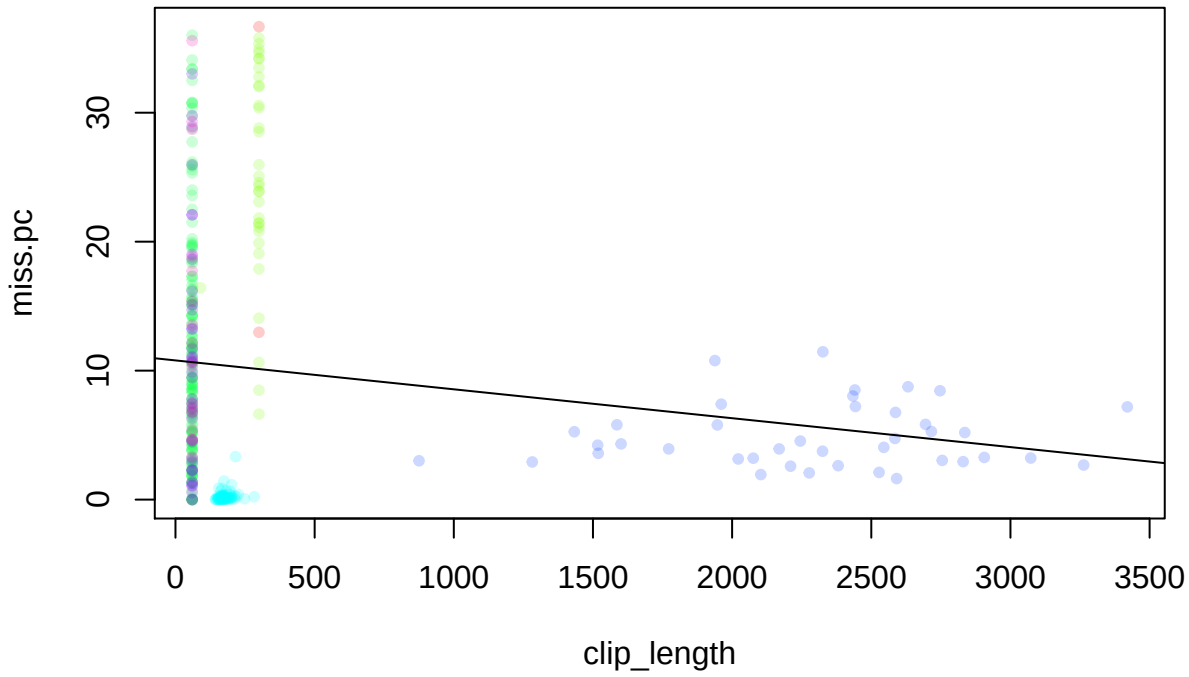



```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -25.996 -13.005  -7.820   7.768  64.326
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               13.8215     2.2177   6.232 1.35e-09 ***
## no_outliers[, thispred]    2.3824     0.6191   3.848 0.000142 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 20.12 on 344 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.04127,    Adjusted R-squared:  0.03849
## F-statistic: 14.81 on 1 and 344 DF,  p-value: 0.0001418
##
## [1] "removing 46 outliers in miss.pc specifically the following files:"
##  [1] "aclew_starter_WAR_9755_03_01_30816"
##  [2] "lena_lyon_day1_nohlan_10h35"
##  [3] "lena_lyon_day1_nohlan_10h40"
##  [4] "lena_lyon_day1_nohlan_11h35"
##  [5] "lena_lyon_day1_sacha_10h05"
##  [6] "lena_lyon_day1_sacha_10h50"
##  [7] "lena_lyon_day1_sacha_14h55"
##  [8] "lena_lyon_day2_nohlan_10h10"
##  [9] "lena_lyon_day2_nohlan_10h15"
## [10] "lena_lyon_day2_nohlan_8h05"
## [11] "lena_lyon_day2_nohlan_9h10"
```

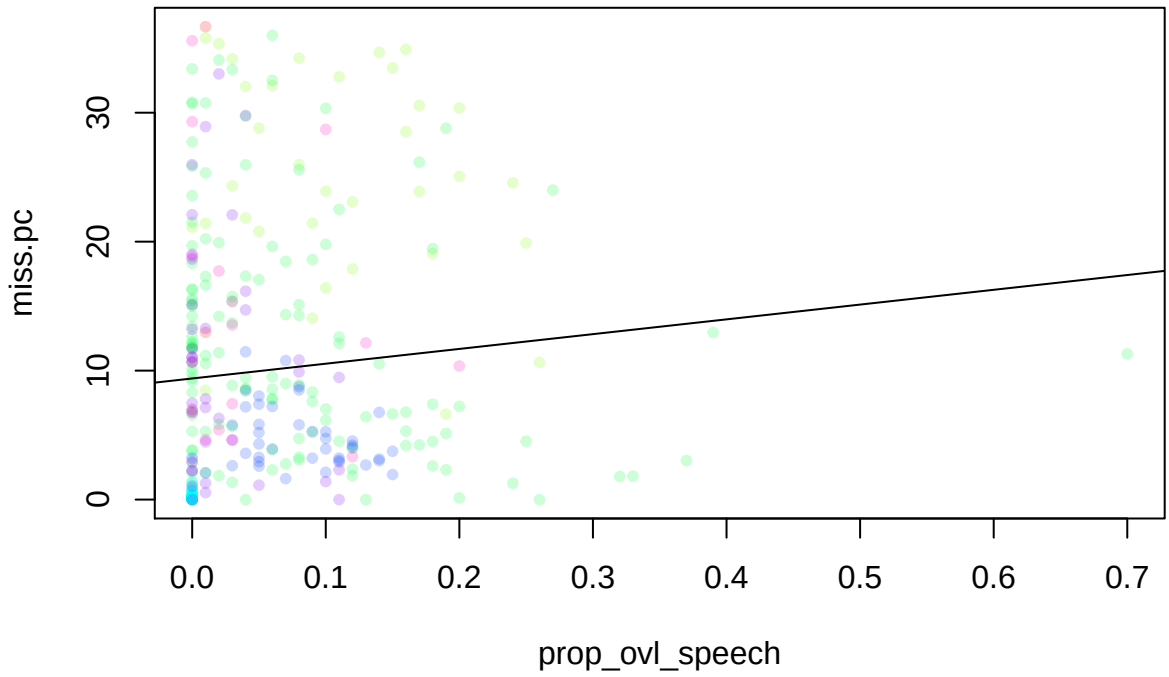
```
## [12] "lena_lyon_day3_nohlan_10h50"
## [13] "lena_lyon_day3_nohlan_18h30"
## [14] "lena_lyon_day3_nohlan_9h05"
## [15] "lena_lyon_day3_nohlan_9h55"
## [16] "namibia_uebn_20160710_19980"
## [17] "namibia_uebn_20160711_12780"
## [18] "namibia_uebn_20160711_19980"
## [19] "namibia_uebn_20160713_16380"
## [20] "namibia_uebn_20161112_19980"
## [21] "namibia_uebn_20161112_27180"
## [22] "namibia_uebn_20161112_41580"
## [23] "namibia_uebn_20161112_45180"
## [24] "namibia_uebn_20161112_5580"
## [25] "namibia_uebn_20161112_9180"
## [26] "namibia_uebn_20161113_1980"
## [27] "namibia_uebn_20161113_34380"
## [28] "namibia_uebn_20161113_37980"
## [29] "namibia_uebn_20161113_41580"
## [30] "namibia_uebn_20161113_5580"
## [31] "namibia_uebn_20170308_34380"
## [32] "namibia_uebn_20170309_106680"
## [33] "namibia_uebn_20170309_34380"
## [34] "namibia_uebn_20170309_59880"
## [35] "namibia_uoga_20170311_27180"
## [36] "namibia_uoga_20170311_41580"
## [37] "namibia_uoga_20170311_5580"
## [38] "tsimane_C24_20170712_12840"
## [39] "tsimane_C24_C23_M14_20170712_12840"
## [40] "tsimane_C24_C23_M14_20170719_30840"
## [41] "tsimane_C25_20170719_12840"
## [42] "tsimane_C25_20170719_48840"
## [43] "tsimane_C25_NA_M14_20170719_48840"
## [44] "vanuatu_van7_20170803_1_11_37980_38040"
## [45] "vanuatu_van8_20170809_1_05_16380_16440"
## [46] "vanuatu_van8_20170809_1_12_41580_41640"
```



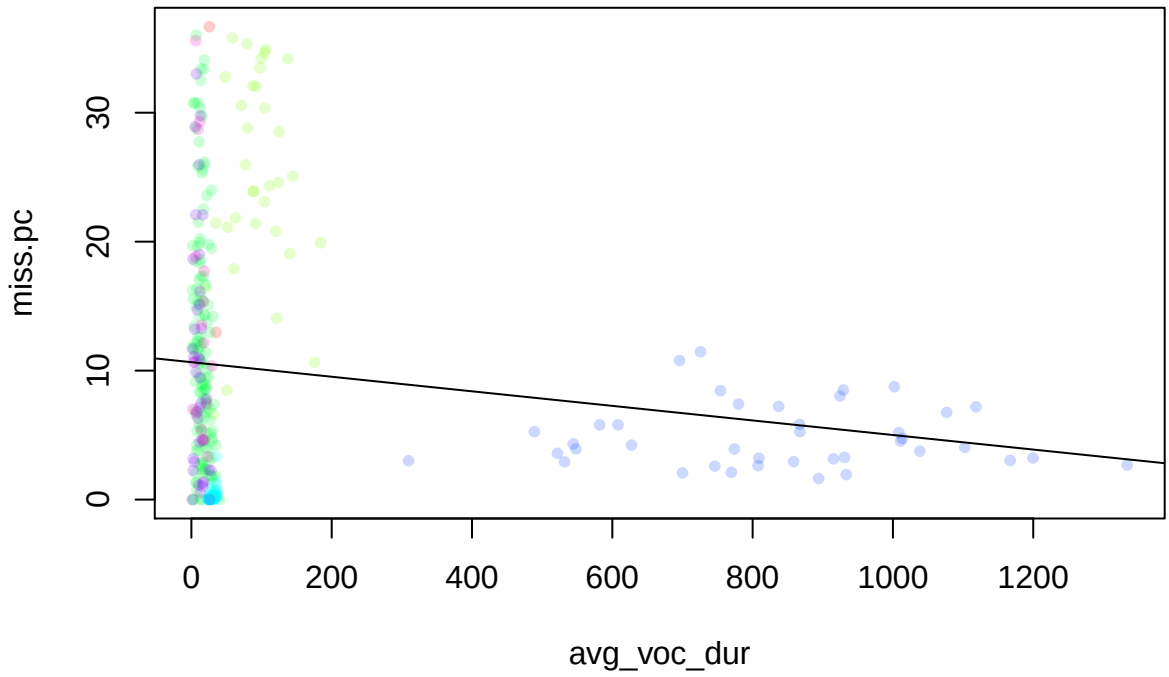

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -10.031  -8.454  -3.123   5.427  26.642
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               1.003e+01  5.257e-01   19.08   <2e-16 ***
## no_outliers[, thispred] -6.708e-05  1.242e-04   -0.54     0.59
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.03 on 366 degrees of freedom
## Multiple R-squared:  0.0007959,  Adjusted R-squared:  -0.001934
## F-statistic: 0.2915 on 1 and 366 DF,  p-value: 0.5896
```



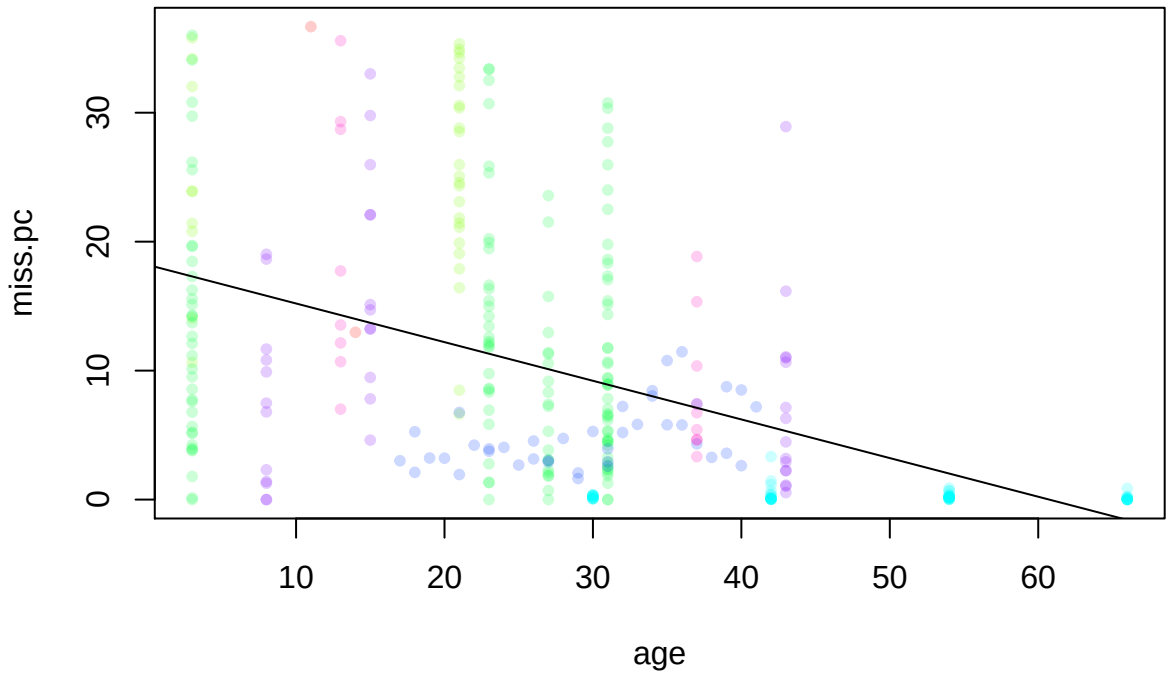

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -10.658  -8.915  -2.321   5.002  26.550
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              10.7922519  0.5781005  18.668  < 2e-16 ***
## no_outliers[, thispred] -0.0022408  0.0007334  -3.055  0.00241 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.923 on 365 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.02494,    Adjusted R-squared:  0.02227
## F-statistic: 9.336 on 1 and 365 DF,  p-value: 0.002413
```



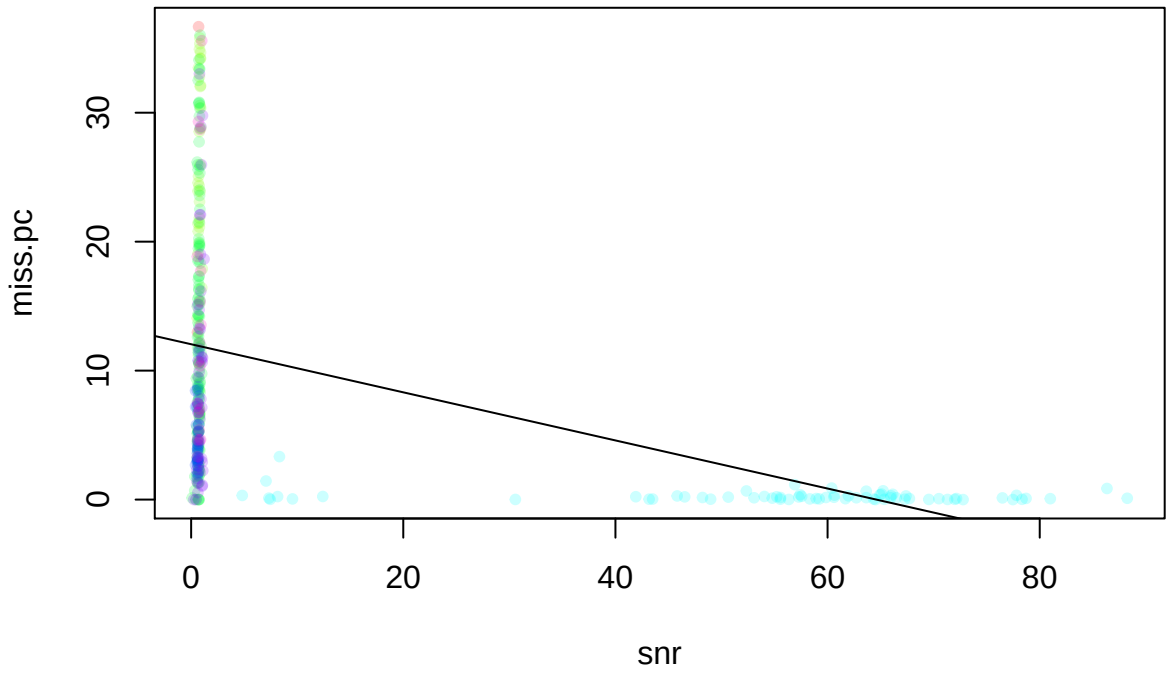

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -12.369  -8.515  -3.506   5.950  27.166
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                9.3897     0.6374  14.731   <2e-16 ***
## no_outliers[, thispred]   11.4605     6.7658   1.694   0.0911 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 10.01 on 365 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.0078, Adjusted R-squared:  0.005081
## F-statistic: 2.869 on 1 and 365 DF,  p-value: 0.09114
```



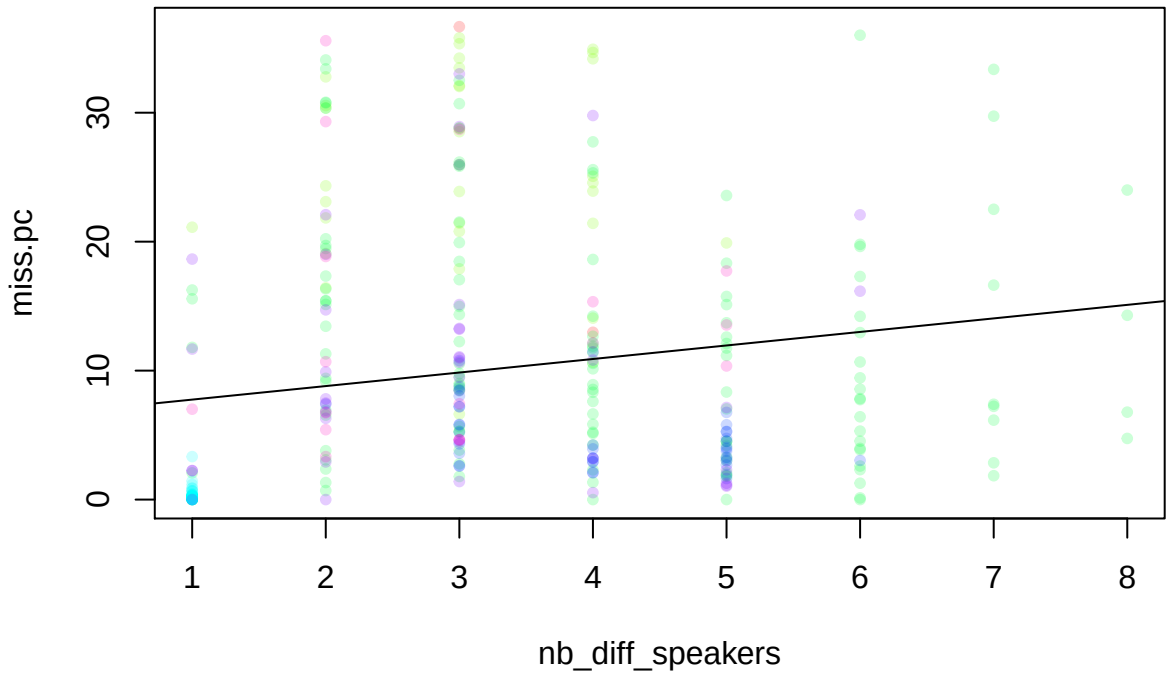

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -10.646  -8.888  -2.354   4.917  26.161
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              10.654538   0.565812  18.831  < 2e-16 ***
## no_outliers[, thispred] -0.005646   0.001972  -2.863  0.00444 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.938 on 365 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.02196,    Adjusted R-squared:  0.01928
## F-statistic: 8.195 on 1 and 365 DF,  p-value: 0.004442
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -17.303  -5.922  -1.879   3.442  23.604
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              18.20241    0.98229  18.531   <2e-16 ***
## no_outliers[, thispred] -0.29969    0.03089  -9.703   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 8.981 on 334 degrees of freedom
##   (32 observations deleted due to missingness)
## Multiple R-squared:  0.2199, Adjusted R-squared:  0.2176
## F-statistic: 94.15 on 1 and 334 DF,  p-value: < 2.2e-16
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -11.999  -7.276  -1.478   4.062  24.755
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              12.04675    0.52413  22.984   <2e-16 ***
## no_outliers[, thispred] -0.18650    0.02052  -9.089   <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.075 on 365 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.1846, Adjusted R-squared:  0.1823
## F-statistic: 82.61 on 1 and 365 DF,  p-value: < 2.2e-16
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -13.000  -7.616  -3.610   5.525  26.819
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 6.7016     1.0653   6.291 9.04e-10 ***
## no_outliers[, thispred]     1.0497     0.2959   3.547  0.00044 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 9.88 on 365 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.03332,    Adjusted R-squared:  0.03067
## F-statistic: 12.58 on 1 and 365 DF,  p-value: 0.0004404
```

Messages I take away from this:

For FA rate

- no sig rel with total speech duration
- sig lower FA for longer files
- no sig rel with proportion of overlapping speech
- sig higher FA for files with shorter voc duration
- sig lower FA for files from older children
- sig lower FA for files with higher SNR
- sig higher FA when higher number of different speakers

For miss rate

- no sig rel with total speech duration

- sig lower FA for longer files
- trend for higher miss for files with higher prop overlapping speech
- sig lower miss for files with longer voc dur
- sig fewer misses for files from older children
- sig fewer misses for files with higher SNR
- sig higher miss when more speakers

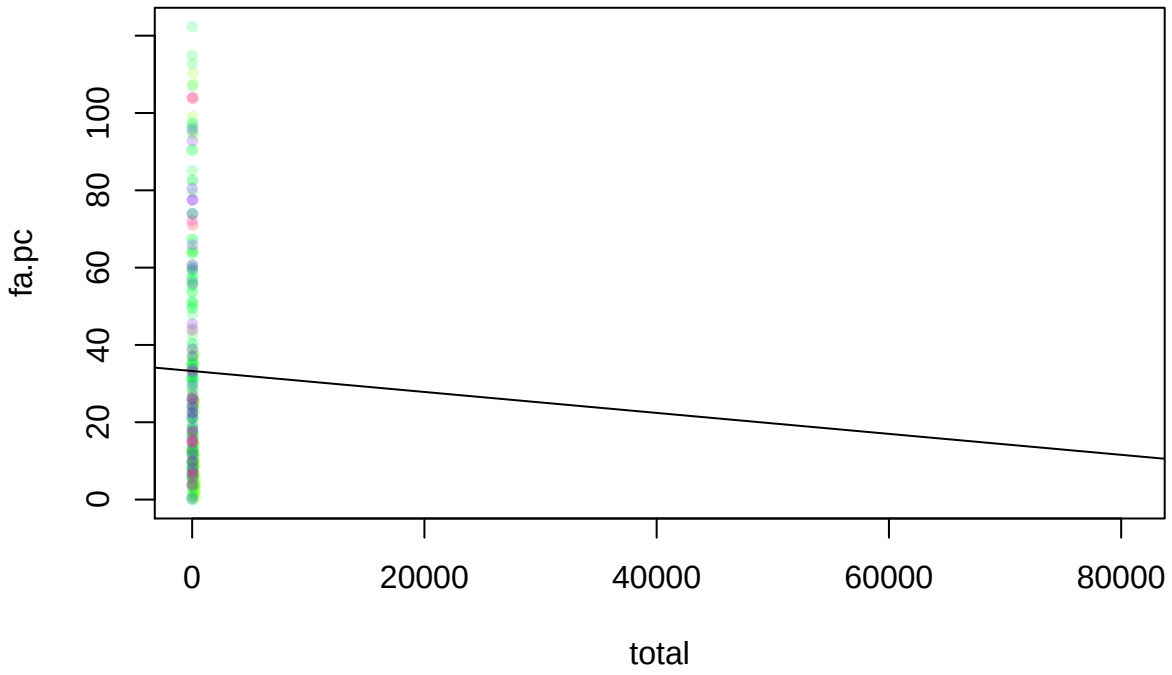
ConvRNN version continued, now excluding Tsay and Paido

```
# subanalyses without paido and tsay

print("**removing paido and tsay**")
```

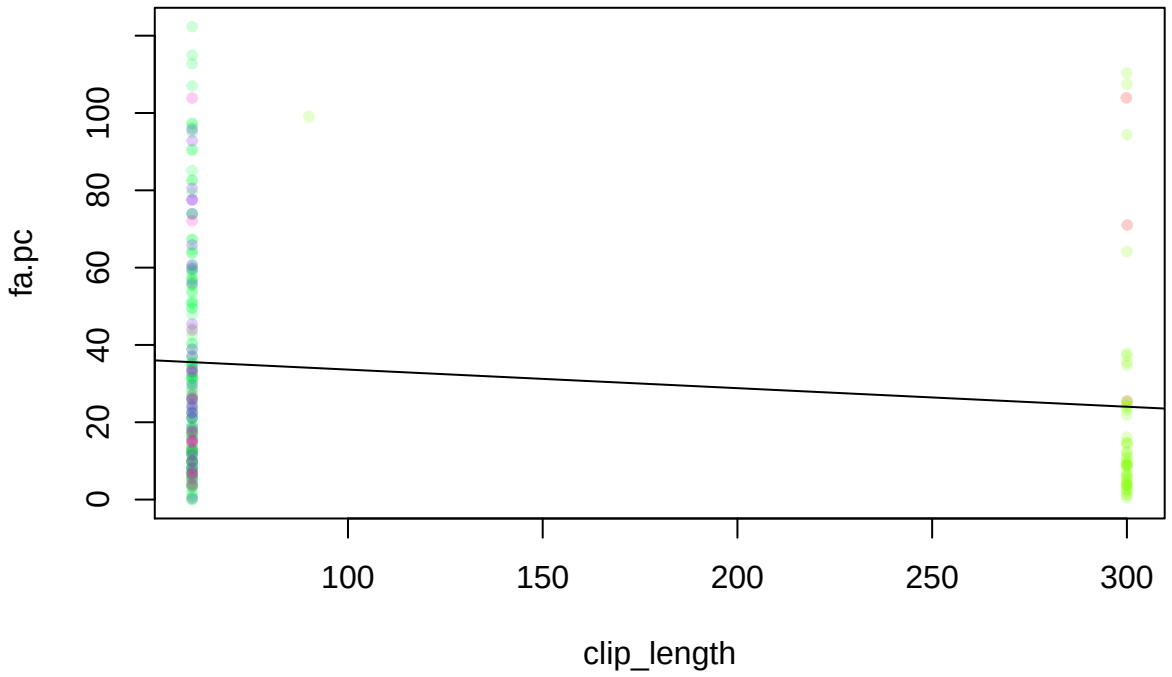
```
## [1] "**removing paido and tsay**"
```

```
npnt=file_eval[!(file_eval$corpus %in% c("tsay","paido")),]

for(thismet in file_eval_metrics){
  iqr=IQR(npnt[,thismet])
  med=median(npnt[,thismet])
  no_outliers=npnt[npnt[,thismet]<med+1.5*iqr,]
  print(paste("removing",dim(npnt)[1]-dim(no_outliers)[1], "outliers in",thismet))
  for(thispred in predictors){
    plot(no_outliers[,thismet]~no_outliers[,thispred], pch=20,col=alpha(cor_color[no_outliers$corpus],.
    abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
     print(summary(lm(no_outliers[,thismet]~no_outliers[,thispred])))
   if(max(no_outliers[,thismet])>300){
        plot(no_outliers[,thismet]~no_outliers[,thispred], pch=20,col=alpha(cor_color[no_outliers$corpus
    abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
    }
  }
}
```

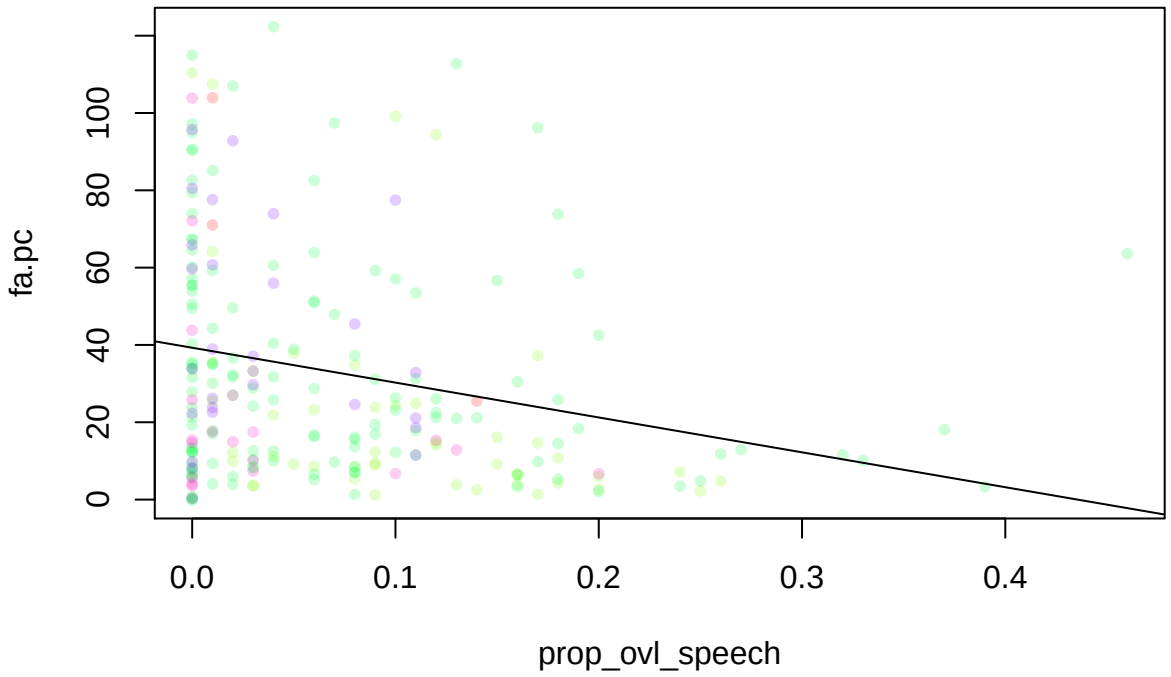
```
## [1] "removing 45 outliers in fa.pc"
```



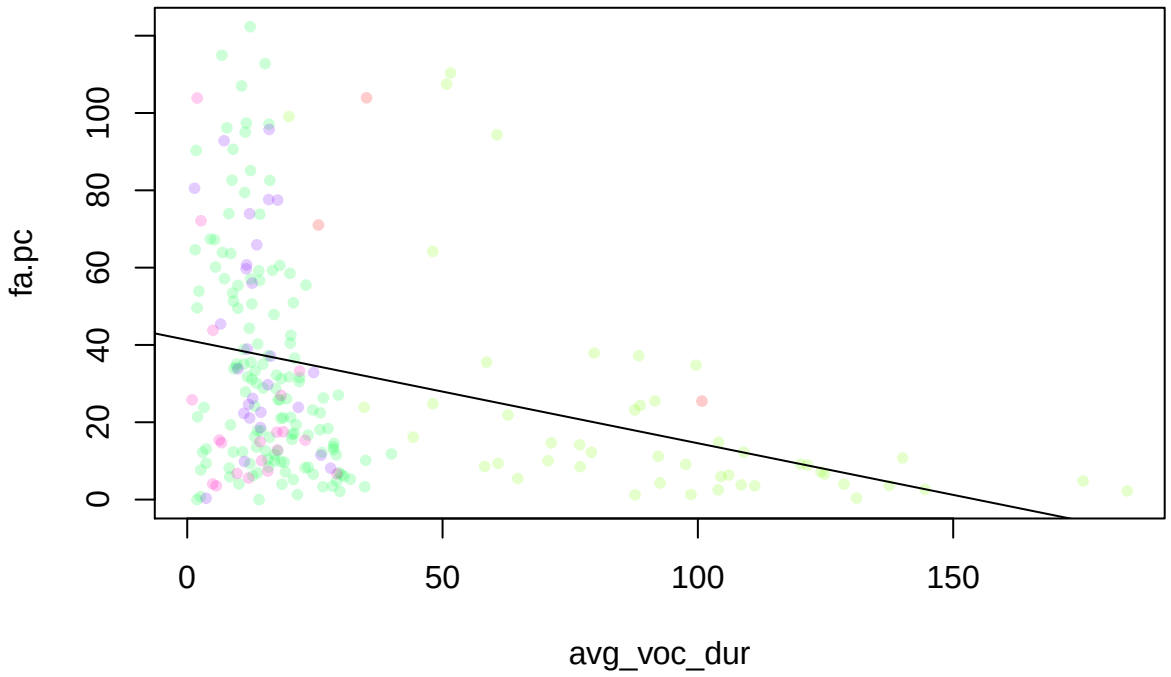

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -33.255 -23.206  -9.069  16.325  89.080
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)              33.2556177  1.8285927  18.186   <2e-16 ***
## no_outliers[, thispred] -0.0002711  0.0003668  -0.739    0.461
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 29.46 on 259 degrees of freedom
## Multiple R-squared:  0.002104,   Adjusted R-squared:  -0.001749
## F-statistic: 0.546 on 1 and 259 DF,  p-value: 0.4606
```



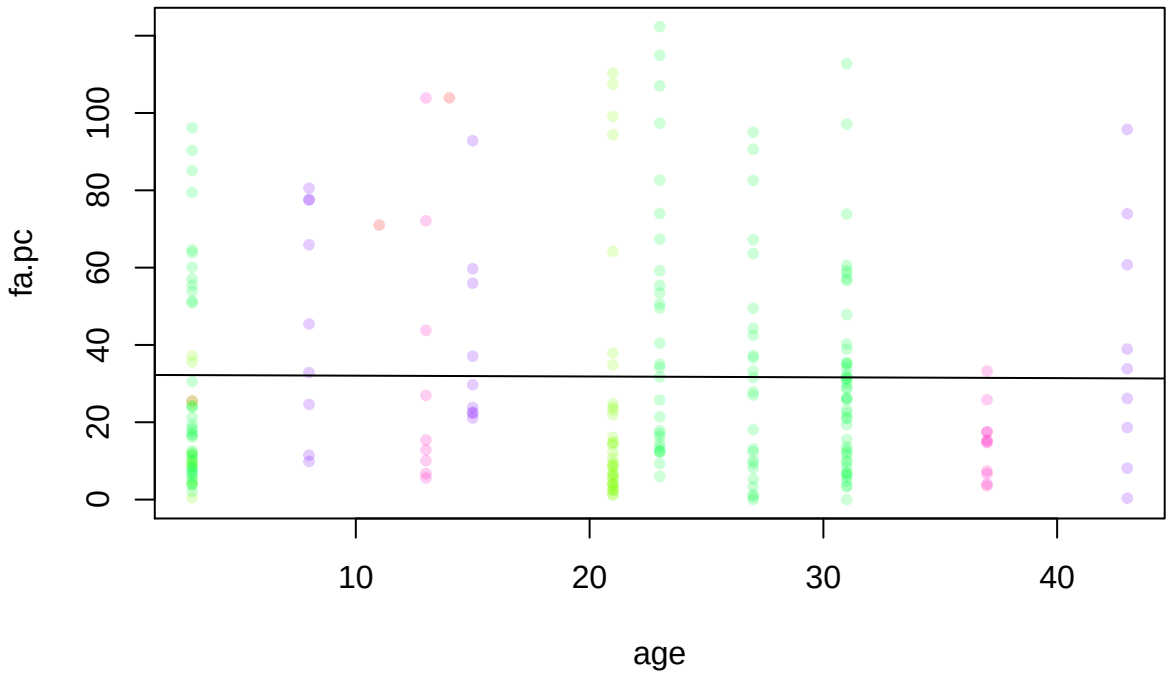

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -35.55 -21.90  -9.44  15.45  86.78
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              38.42754    2.72437  14.105   <2e-16 ***
## no_outliers[, thispred] -0.04803    0.01885  -2.549   0.0114 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 29.16 on 258 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.02456,    Adjusted R-squared:  0.02078
## F-statistic: 6.496 on 1 and 258 DF,  p-value: 0.01139
```



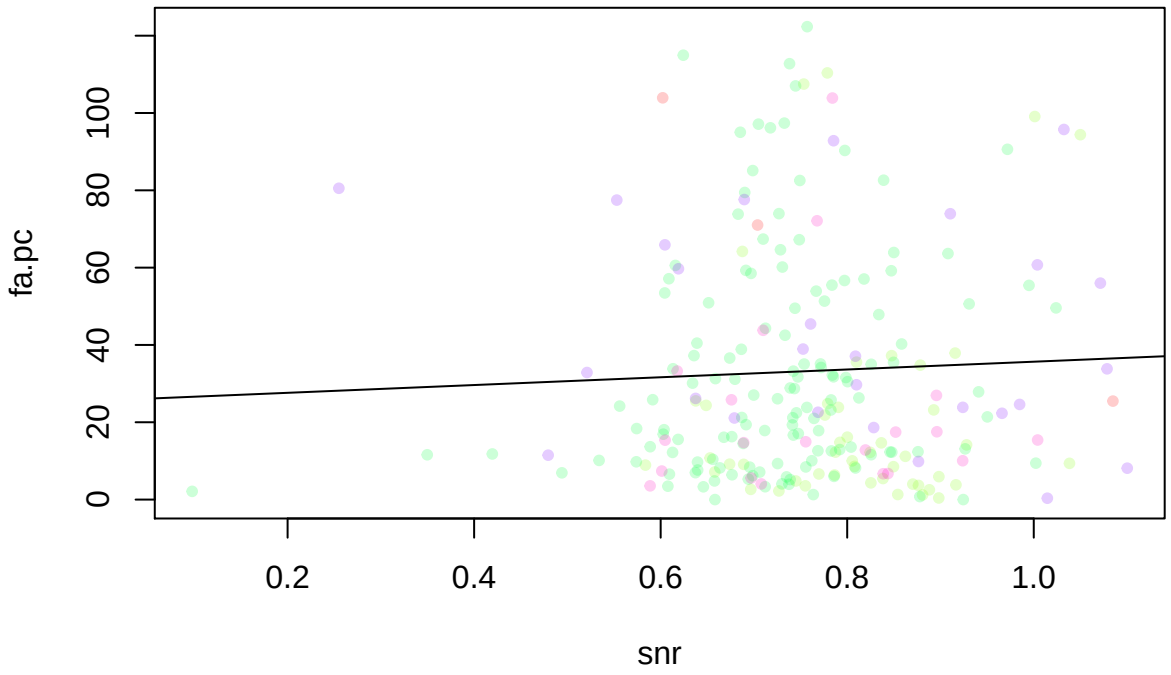

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -39.277 -20.838  -7.376  16.150  86.660
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 39.28       2.33   16.86  < 2e-16 ***
## no_outliers[, thispred]    -90.20      22.49   -4.01 7.96e-05 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 28.65 on 258 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.05866,    Adjusted R-squared:  0.05502
## F-statistic: 16.08 on 1 and 258 DF,  p-value: 7.962e-05
```



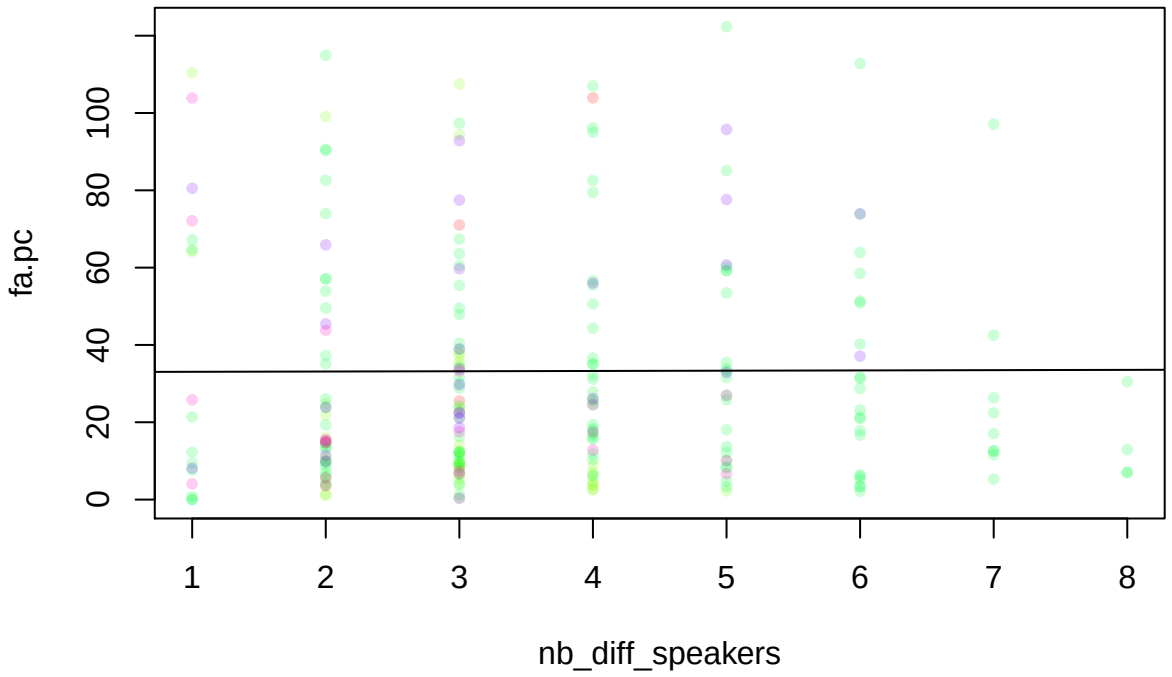

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -40.782 -20.735  -6.368  15.574  84.334
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)               41.29277    2.31240  17.857  < 2e-16 ***
## no_outliers[, thispred] -0.26719    0.05053  -5.288 2.63e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 28.04 on 258 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.09779,    Adjusted R-squared:  0.0943
## F-statistic: 27.97 on 1 and 258 DF,  p-value: 2.635e-07
```



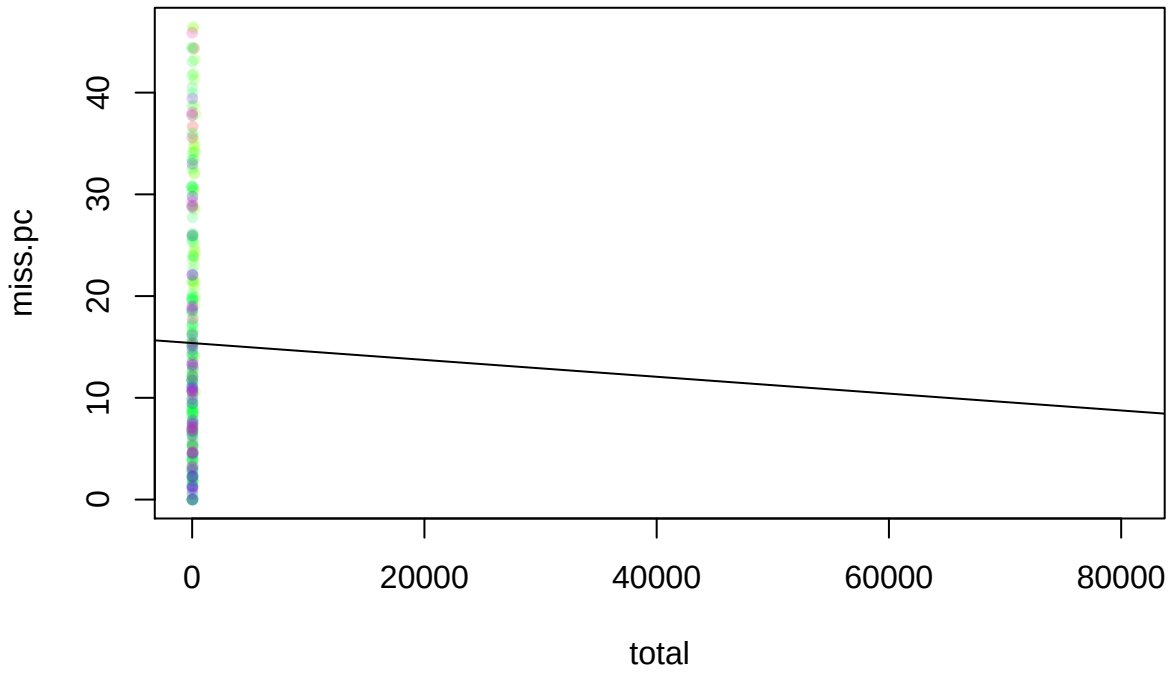

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -31.792 -22.315  -9.265  14.055  90.550
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              32.26553    3.81984   8.447 3.19e-15 ***
## no_outliers[, thispred] -0.02112    0.16294  -0.130    0.897
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 29.01 on 234 degrees of freedom
##   (25 observations deleted due to missingness)
## Multiple R-squared:  7.176e-05,  Adjusted R-squared:  -0.004201
## F-statistic: 0.01679 on 1 and 234 DF,  p-value: 0.897
```



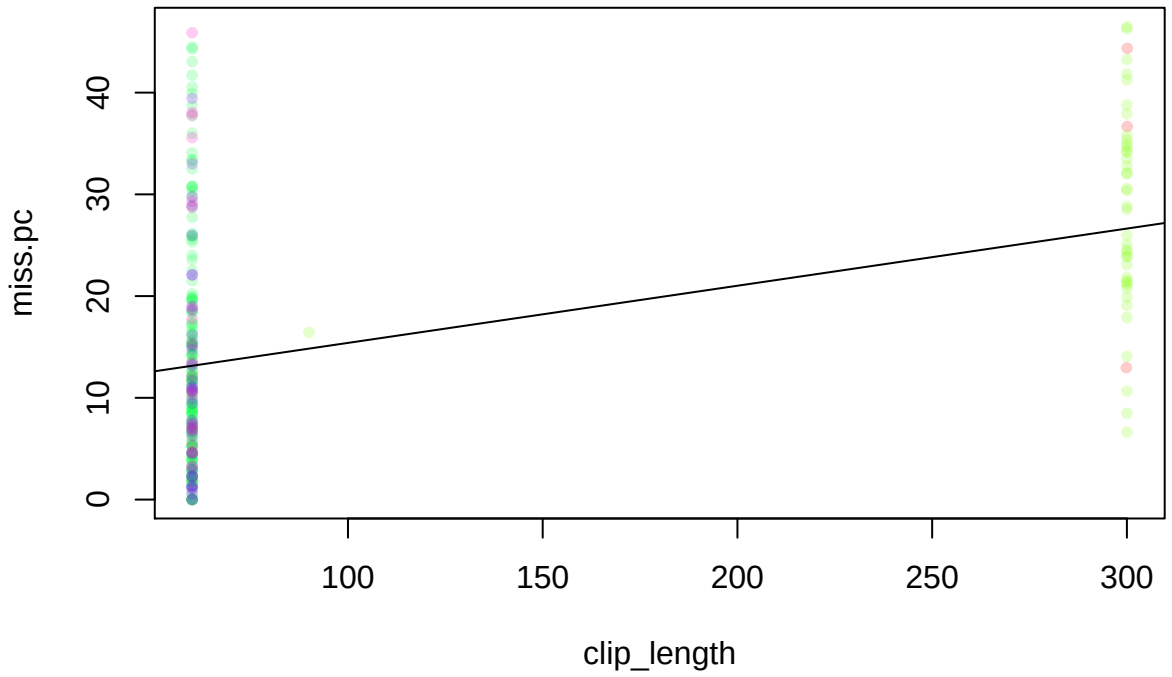

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##    Min     1Q Median     3Q    Max
## -35.46 -23.12 -10.00  16.18  89.11
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                 25.61       9.76   2.624  0.00922 **
## no_outliers[, thispred]     10.06      12.64   0.796  0.42695
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 29.49 on 258 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.002448,   Adjusted R-squared:  -0.001419
## F-statistic: 0.6331 on 1 and 258 DF,  p-value: 0.4269
```



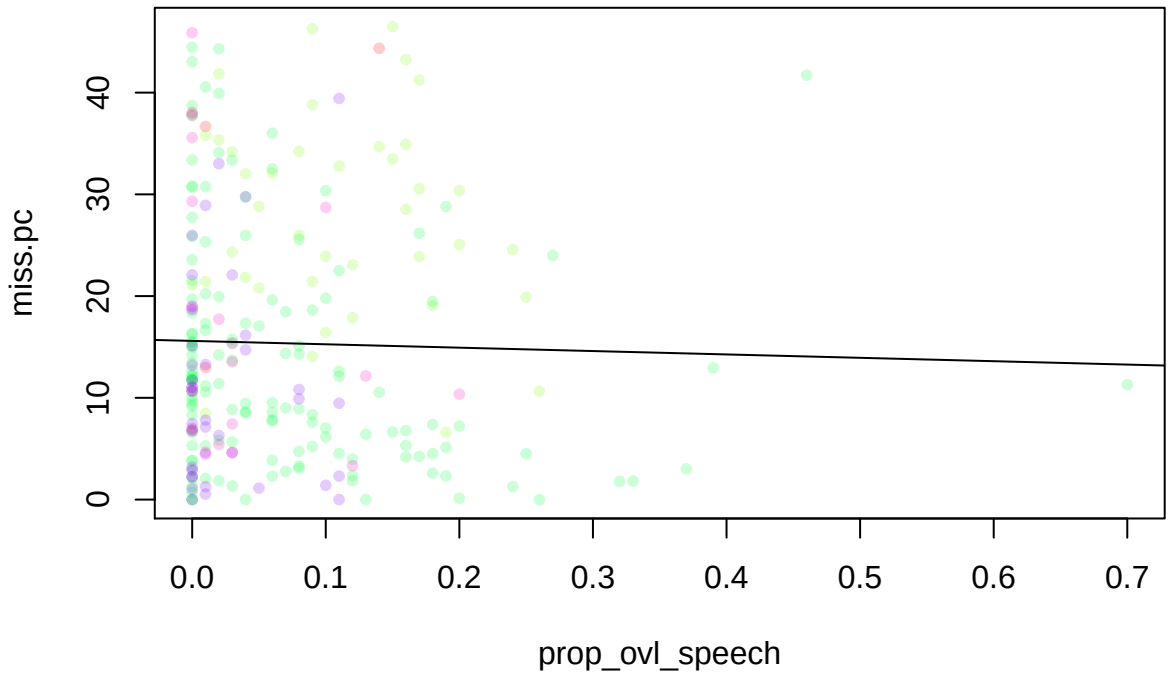

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -33.051 -23.276  -9.138  16.682  88.993
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              32.97977    4.40634   7.485 1.13e-12 ***
## no_outliers[, thispred]  0.07137    1.12410   0.063    0.949
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 29.53 on 258 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  1.562e-05,  Adjusted R-squared:  -0.00386
## F-statistic: 0.004031 on 1 and 258 DF,  p-value: 0.9494
##
## [1] "removing 26 outliers in miss.pc"
```



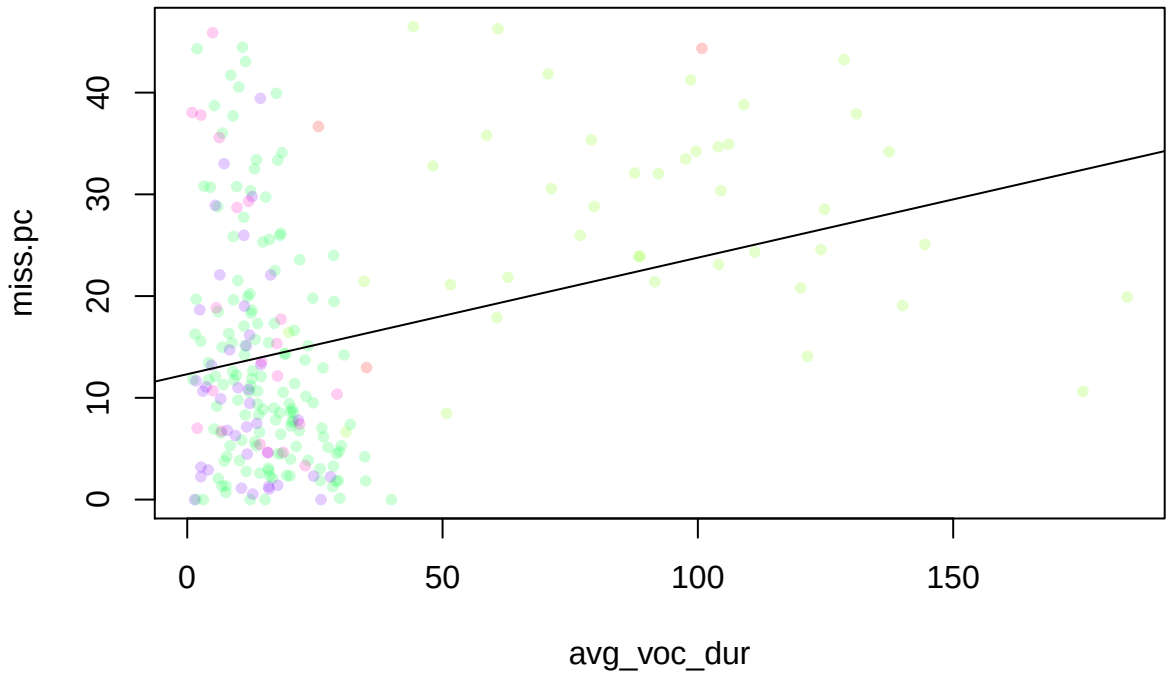

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -15.382 -10.074  -3.250   7.851  31.104
##
## Coefficients:
##                            Estimate Std. Error t value Pr(>|t|)
## (Intercept)               1.538e+01  7.292e-01  21.096   <2e-16 ***
## no_outliers[, thispred] -8.282e-05  1.515e-04  -0.547    0.585
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.17 on 278 degrees of freedom
## Multiple R-squared:  0.001074,   Adjusted R-squared:  -0.002519
## F-statistic: 0.2989 on 1 and 278 DF,  p-value: 0.585
```



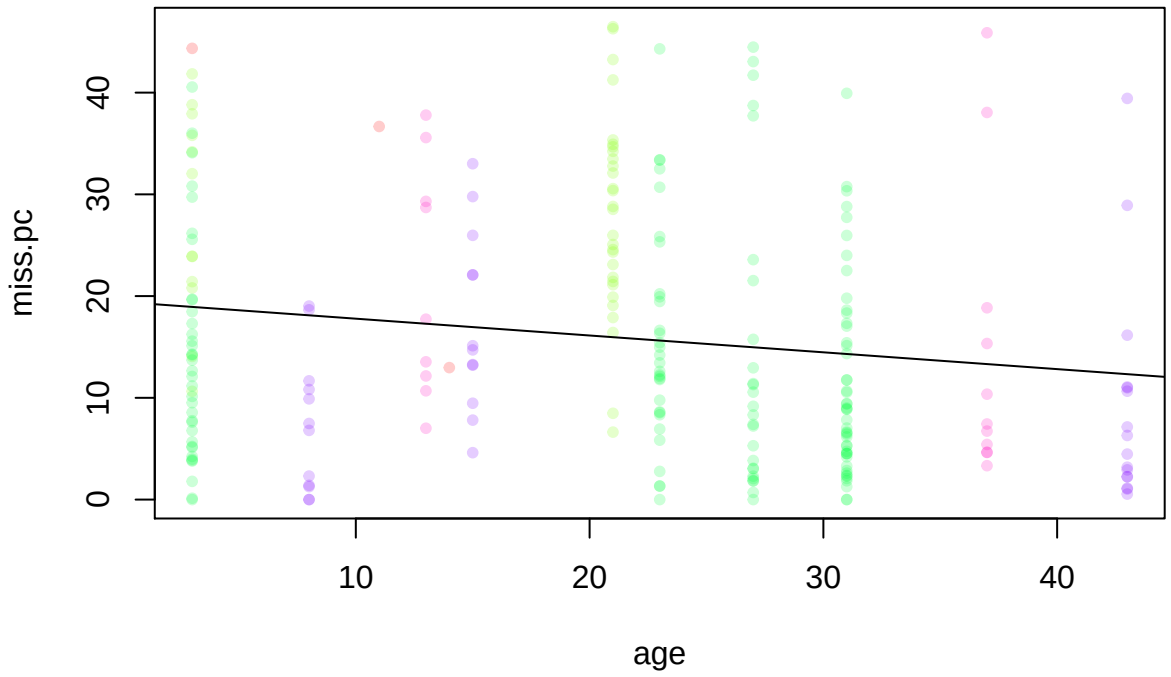

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -25.648  -8.456  -2.461   6.399  32.729
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              9.779775   0.998520   9.794  < 2e-16 ***
## no_outliers[, thispred] 0.056194   0.007471   7.521 7.59e-13 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 11.11 on 277 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.1696, Adjusted R-squared:  0.1666
## F-statistic: 56.57 on 1 and 277 DF,  p-value: 7.595e-13
```



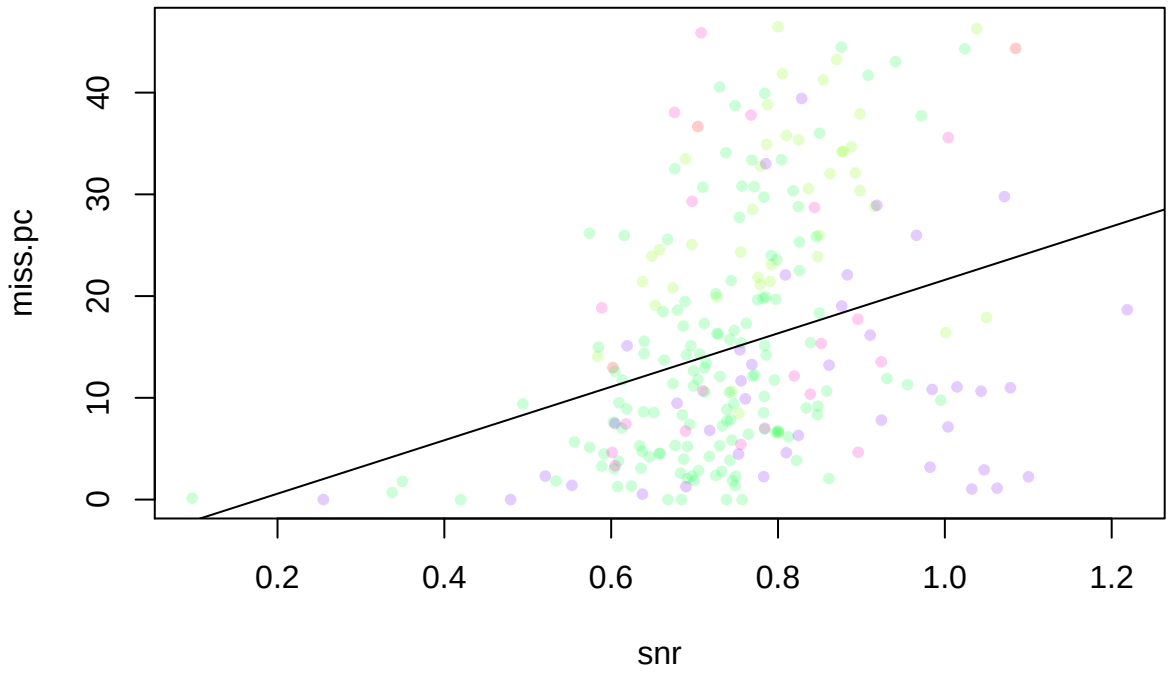

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -15.595 -10.092  -3.120   7.944  31.383
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               15.5953     0.9081  17.174   <2e-16 ***
## no_outliers[, thispred]  -3.3231     8.3828  -0.396    0.692
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.19 on 277 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.000567,   Adjusted R-squared:  -0.003041
## F-statistic: 0.1571 on 1 and 277 DF,  p-value: 0.6921
```



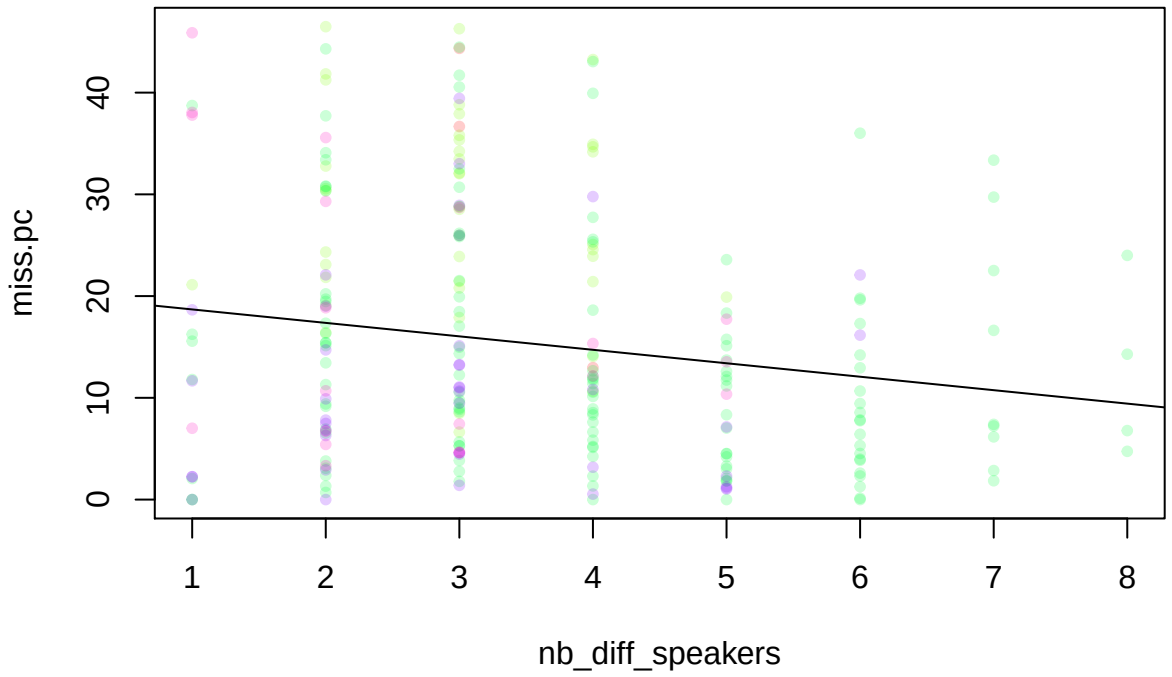

```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -21.846  -9.274  -1.972   6.464  32.986
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)              12.32371    0.89268  13.805  < 2e-16 ***
## no_outliers[, thispred]   0.11455    0.02105   5.442 1.16e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 11.59 on 277 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.0966, Adjusted R-squared:  0.09334
## F-statistic: 29.62 on 1 and 277 DF,  p-value: 1.157e-07
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -18.937  -9.455  -3.605   8.428  32.562
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)               19.4331     1.5723  12.360   <2e-16 ***
## no_outliers[, thispred]  -0.1653     0.0650  -2.543   0.0116 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.29 on 246 degrees of freedom
##   (32 observations deleted due to missingness)
## Multiple R-squared:  0.0256, Adjusted R-squared:  0.02164
## F-statistic: 6.464 on 1 and 246 DF,  p-value: 0.01162
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -22.120  -8.611  -3.355   7.122  31.961
##
## Coefficients:
##                          Estimate Std. Error t value Pr(>|t|)
## (Intercept)                -4.676      3.542  -1.320    0.188
## no_outliers[, thispred]    26.268      4.550   5.773 2.09e-08 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 11.52 on 277 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.1074, Adjusted R-squared:  0.1042
## F-statistic: 33.32 on 1 and 277 DF,  p-value: 2.089e-08
```




```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -18.690  -9.625  -2.651   8.537  30.235
##
## Coefficients:
##                           Estimate Std. Error t value Pr(>|t|)
## (Intercept)                20.0129     1.7177  11.651  < 2e-16 ***
## no_outliers[, thispred]  -1.3227     0.4455  -2.969  0.00325 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12 on 277 degrees of freedom
##   (1 observation deleted due to missingness)
## Multiple R-squared:  0.03084,    Adjusted R-squared:  0.02734
## F-statistic: 8.814 on 1 and 277 DF,  p-value: 0.003251
```

Messages that go away or remain when we excluded paido and tsay:

For FA rate

- no sig rel with total speech duration –> the same
- sig lower FA for longer files –> the same
- no sig rel with proportion of overlapping speech –> NO, lower FA for studies with a higher proportion of overlapping speech
- sig higher FA for files with shorter voc duration –> –> NO, the opposite
- sig lower FA for files from older children –> NO, stable
- sig lower FA for files with higher SNR –> NO, stable
- sig higher FA when higher number of different speakers –> NO, stable

For miss rate

- no sig rel with total speech duration –> the same
- sig lower FA for longer files –> the same
- slight higher miss for files with higher prop overlapping speech –> NO, stable
- sig lower miss for files with longer voc dur –> NO, opposite: higher miss for files with longer voc dur
- sig fewer misses for files from older children –> the same
- sig fewer misses for files with higher SNR –> NO, opposite: higher miss for files with higher SNR
- sig higher miss when more speakers –> NO, opposite: lower miss for files with more speakers

ConvRNN version continued, checking whether subcorpora differences can be explained away via these other variables

We see that many effects are different when paido and tsay are removed. This suggest that some of the apparent correlations are driven by subcorpus differences. So in this section we check whether subcorpus adds any explanatory power once clip diffs are already captured by the other methods

```
for(thismet in file_eval_metrics){
  iqr=IQR(file_eval[,thismet])
  med=median(file_eval[,thismet])
  no_outliers=file_eval[file_eval[,thismet]<med+1.5*iqr,]
  #print(paste("removing",dim(file_eval)[1]-dim(no_outliers)[1], "outliers in",thismet))
  for(thispred in predictors){
     print(paste("Regressions with and without corpus for",thismet,"and",thispred))
   basemodel=lm(file_eval[,thismet]~file_eval[,thispred],subset=c(!is.na(file_eval[,"corpus"])))
    withcor=lm(file_eval[,thismet]~file_eval[,thispred]+file_eval[,"corpus"])
    print(summary(basemodel))
    print(summary(withcor))
    print(anova(basemodel,withcor))
  }
}
```