

Description of system performance

AC

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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/",j,".csv"))))

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

#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  16
```

```
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      corpus      child.id
## Min.   : 0.42   Min.   : 0.03003   namibia :1062   fhugo  : 71
## 1st Qu.: 11.87   1st Qu.: 0.71457   paido   : 649   nath   : 48
## Median : 24.70   Median : 0.84570   lena_lyon: 323   ern    : 36
## Mean   : 190.21   Mean   : 13.56329   tsay    : 237   flore  : 36
## 3rd Qu.: 61.69   3rd Qu.: 1.96800   tsimane : 154   leon   : 36
## Max.   :7659.23   Max.   :104.58705   (Other) : 122   (Other):2320
##                                     NA's    : 334   NA's   : 334
##
##      age
## Min.   : 1.00
## 1st Qu.:15.50
## Median :30.00
## Mean   :29.19
## 3rd Qu.:39.00
## Max.   :66.00
## 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 25
```

```
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 corpus
## Min. :0.3000 Min. : 0.97 Min. : 0.0977 namibia :155
## 1st Qu.:0.9100 1st Qu.: 11.21 1st Qu.: 0.6831 paido : 68
## Median :0.9800 Median : 20.51 Median : 0.7791 lena_lyon: 48
## Mean :0.9467 Mean : 105.37 Mean : 9.8108 tsimane : 42
## 3rd Qu.:1.0000 3rd Qu.: 34.51 3rd Qu.: 0.9818 tsay : 40
## Max. :1.0000 Max. :1334.05 Max. :88.2541 (Other) : 26
## NA's :1 NA's :1 NA's :1 NA's : 35
## child.id age
## nohlan : 36 Min. : 3.00
## uebn_20170309: 26 1st Qu.:20.50
## C24 : 17 Median :27.00
## uoga_20170311: 14 Mean :26.93
## uoga_20170313: 14 3rd Qu.:34.00
## (Other) :272 Max. :66.00
## 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 $\text{RMS}(x_speech)/\text{RMS}(x_sil)$ where x_speech is an array with all the areas of speech in the gold annotation, and x_sil is an 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$corpus],.1))
    abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
    print(summary(lm(no_outliers[,thismet]~no_outliers[,thispred])))
    if(max(no_outliers[,thismet])>300){
      plot(no_outliers[,thismet]~no_outliers[,thispred], pch=20,col=alpha(cor_color[no_outliers$corpus],.1))
      abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
    }
  }
}
```

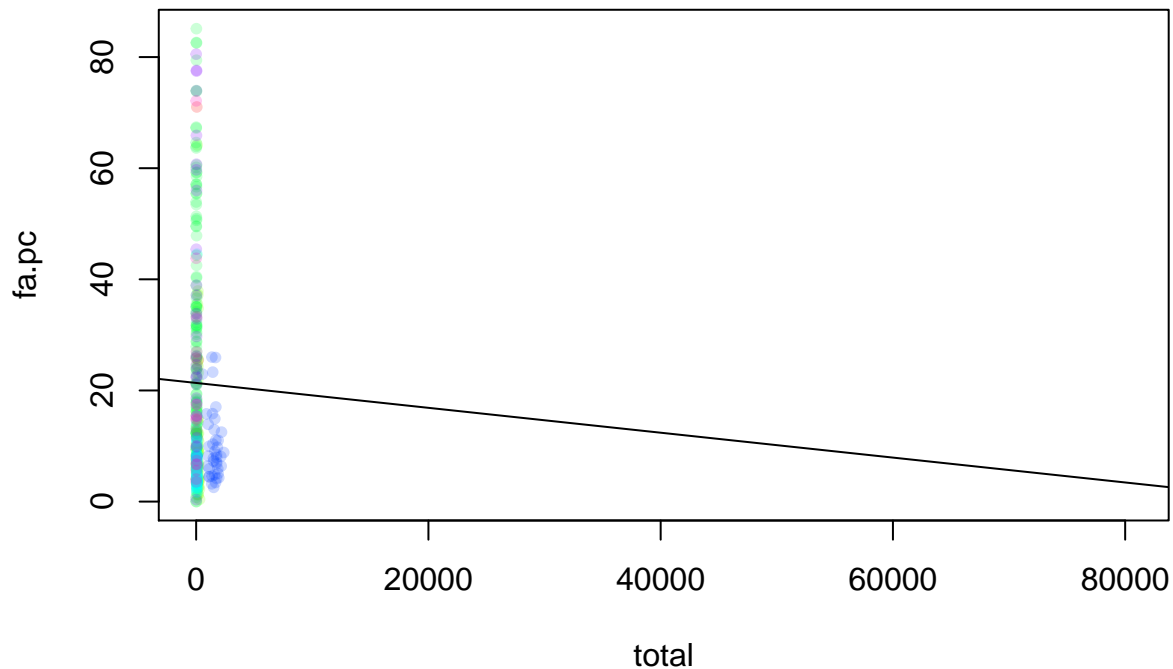
```
## [1] "removing 67 outliers in fa.pc specifically the following files:"
## [1] "aclew_starter_ROS_9559_15_01_03600"
## [2] "lena_lyon_day1_nohlan_12h30"
## [3] "lena_lyon_day1_nohlan_17h00"
## [4] "lena_lyon_day1_nohlan_17h05"
## [5] "lena_lyon_day2_nohlan_8h00"
## [6] "lena_lyon_day3_nohlan_20h40"
## [7] "namibia_uebn_20160710_27180"
```

```

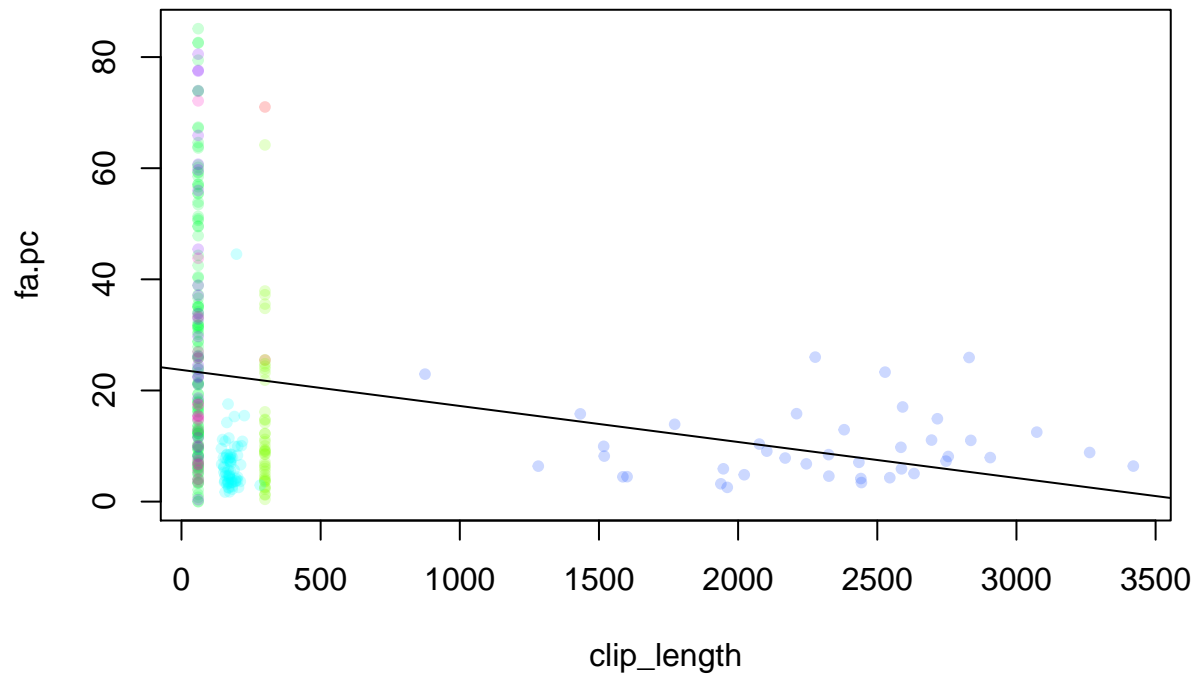
## [8] "namibia_uebn_20160710_5580"
## [9] "namibia_uebn_20160710_9180"
## [10] "namibia_uebn_20160711_12780"
## [11] "namibia_uebn_20160711_1980"
## [12] "namibia_uebn_20160711_23580"
## [13] "namibia_uebn_20160711_5580"
## [14] "namibia_uebn_20160713_30780"
## [15] "namibia_uebn_20160713_37980"
## [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"

```

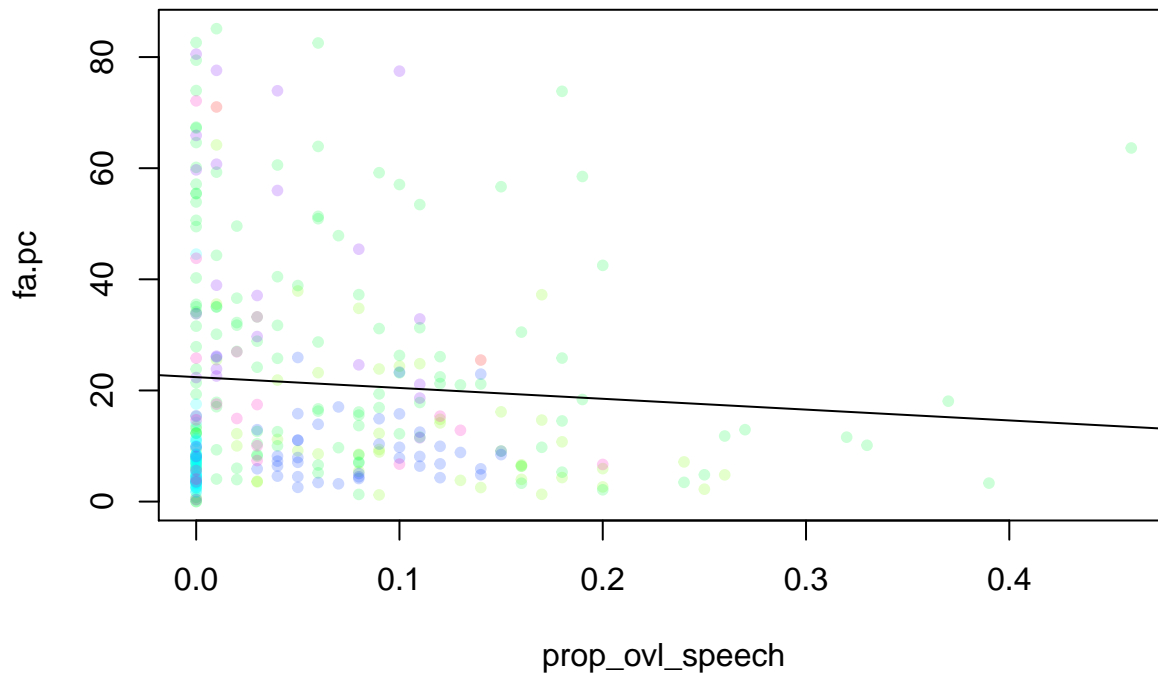
```
## [62] "tsimane_C25_20170719_5640"
## [63] "tsimane_C25_NA_M14_20170712_27240"
## [64] "tsimane_C25_NA_M14_20170719_20040"
## [65] "tsimane_C25_NA_M14_20170719_48840"
## [66] "tsimane_C25_NA_M14_20170719_5640"
## [67] "vanuatu_van7_20170803_1_05_16380_16440"
```



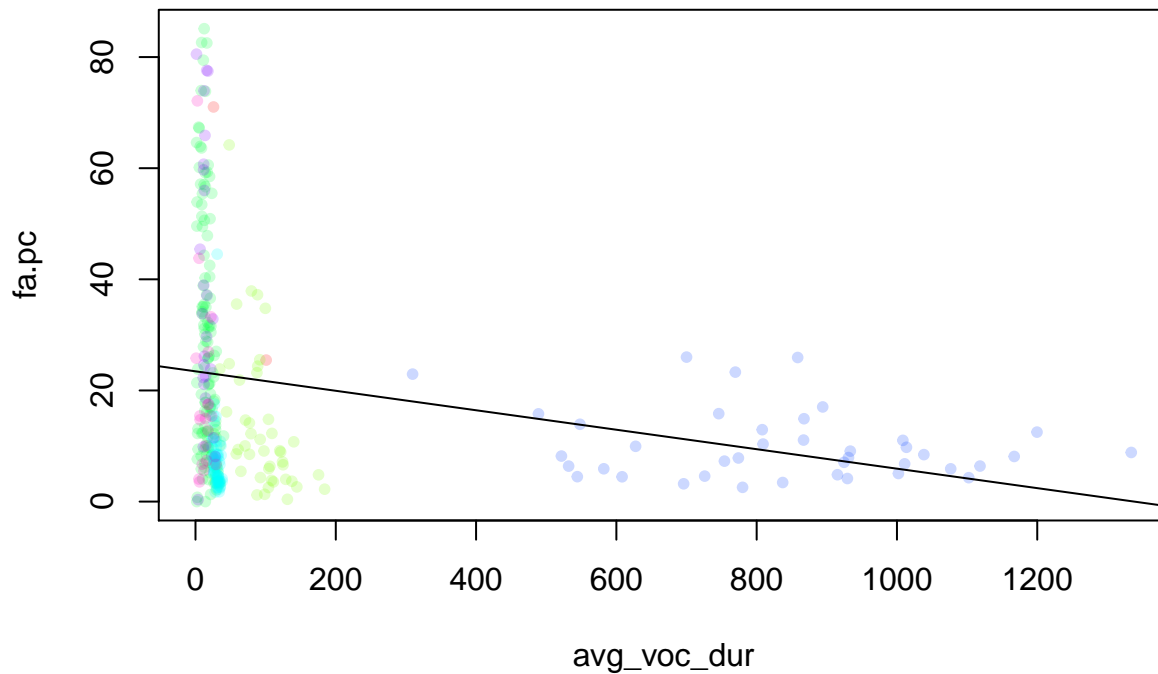
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -21.351 -14.756  -8.977  10.087  63.763
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    21.3516097   1.1068293   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
```

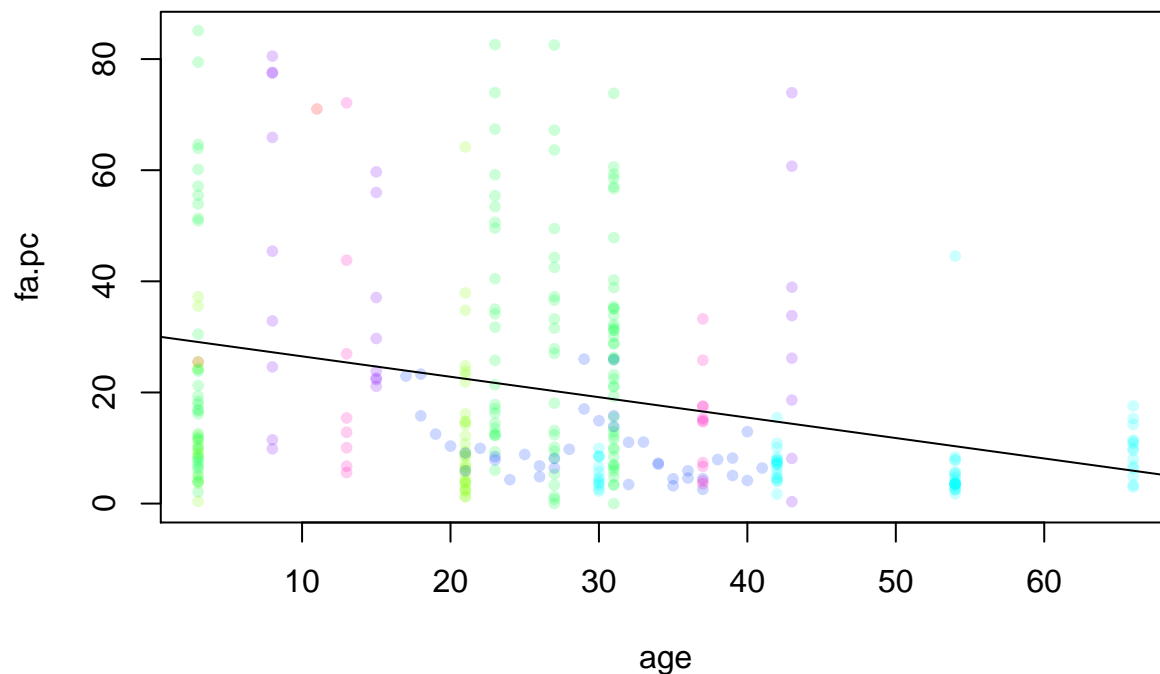
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -23.307 -15.375  -6.512   9.400  61.803
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    23.696439    1.211247   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
```



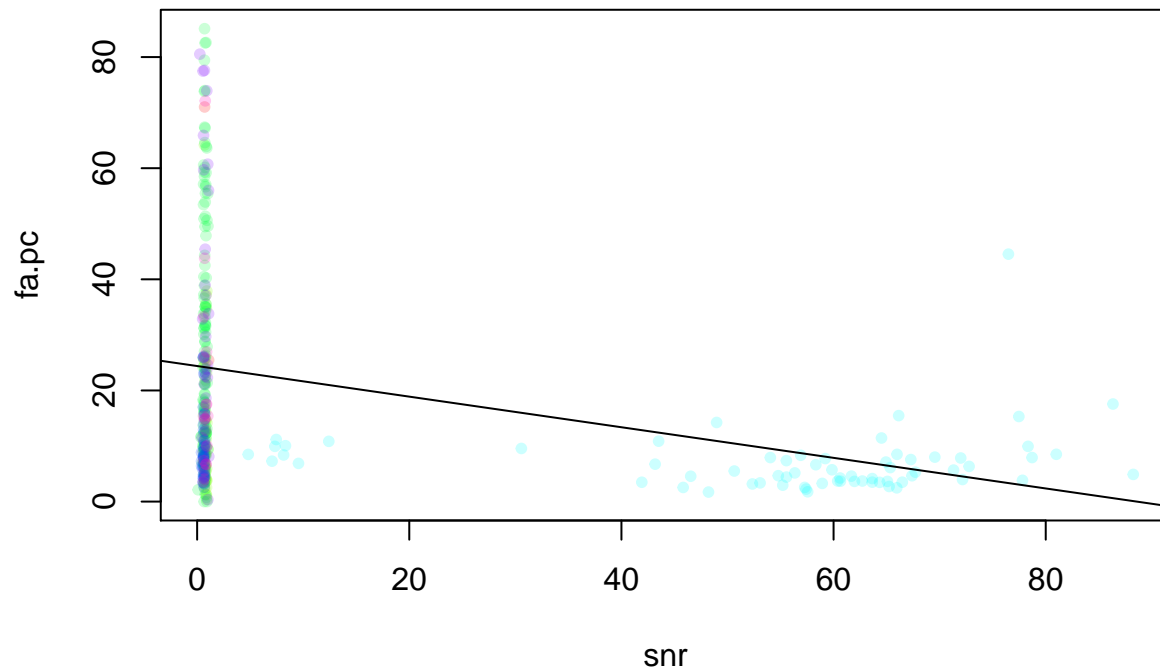
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
```

	Min	1Q	Median	3Q	Max
	-28.664	-12.567	-6.692	7.620	62.290

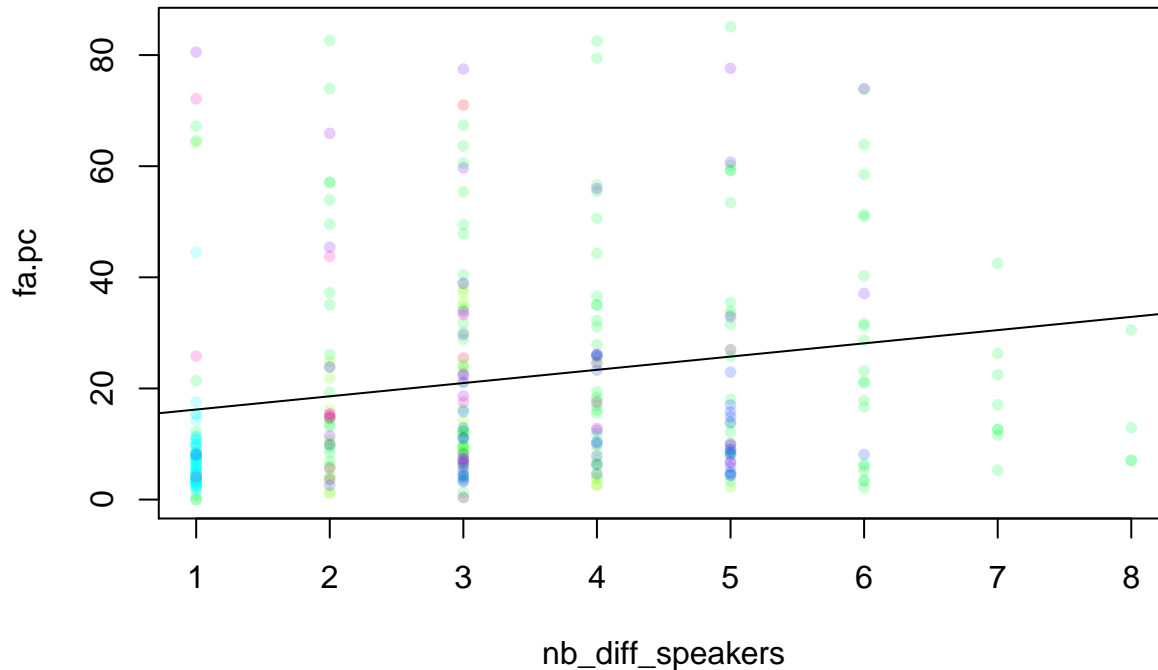
```
##
## Coefficients:
```

	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
```

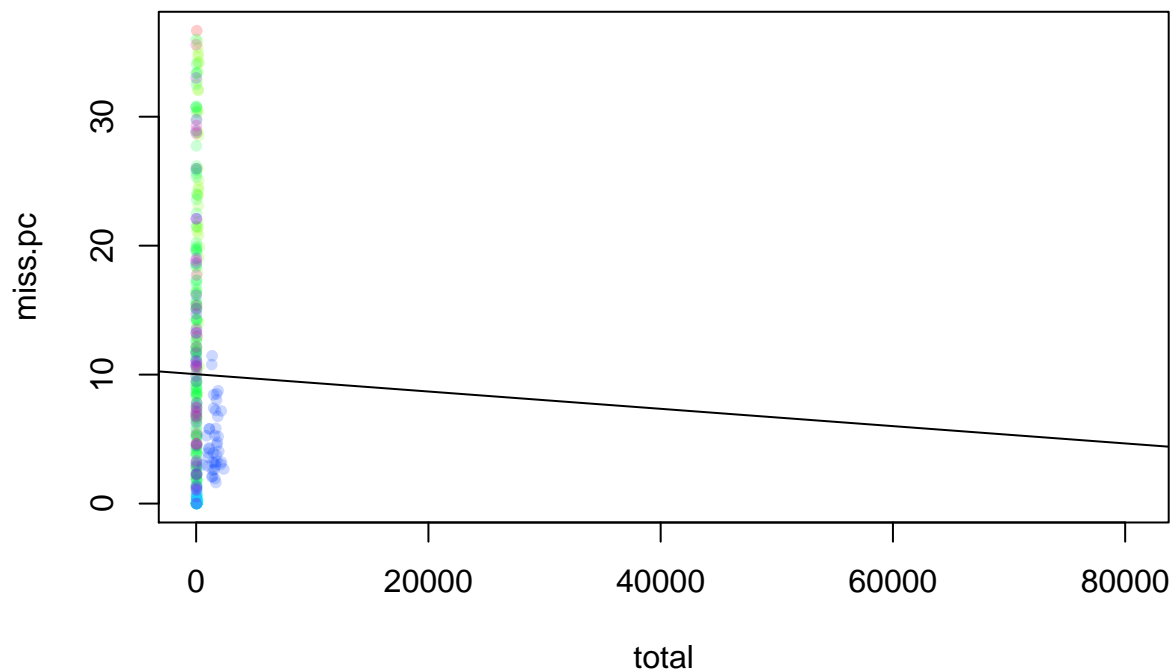


```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -24.216 -14.731  -4.755   7.922  60.906
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    24.39687    1.16508   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
```

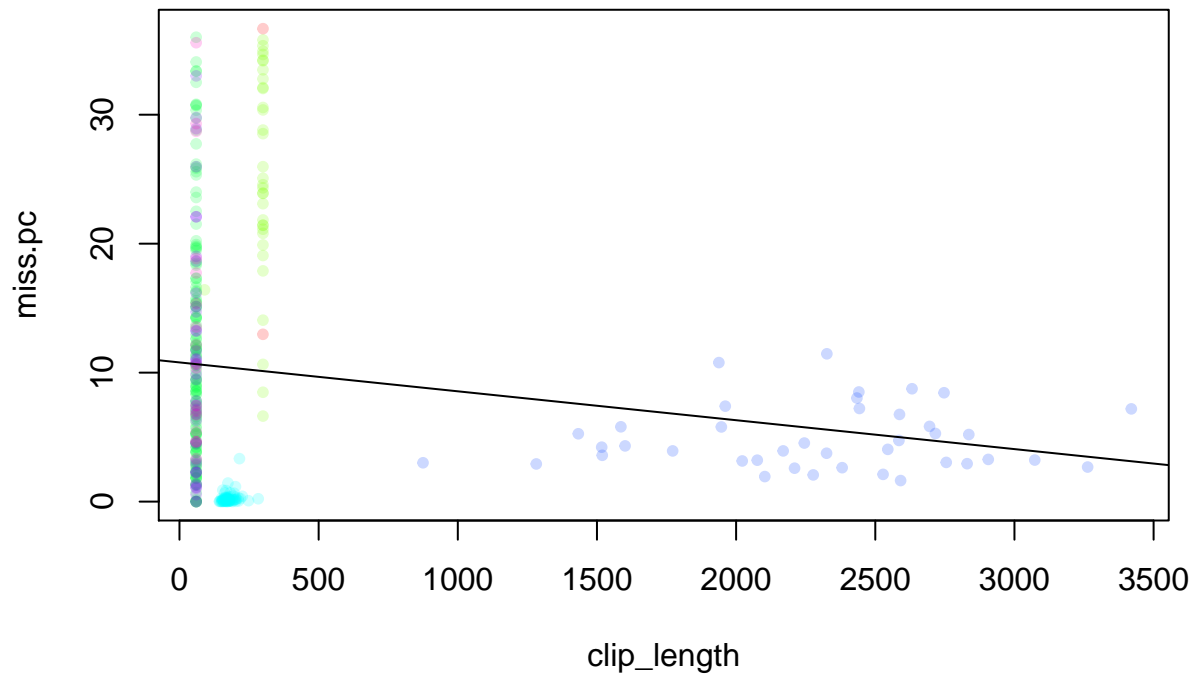


```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -25.996 -13.005  -7.820   7.768  64.326
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      13.8215     2.2177   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"
```

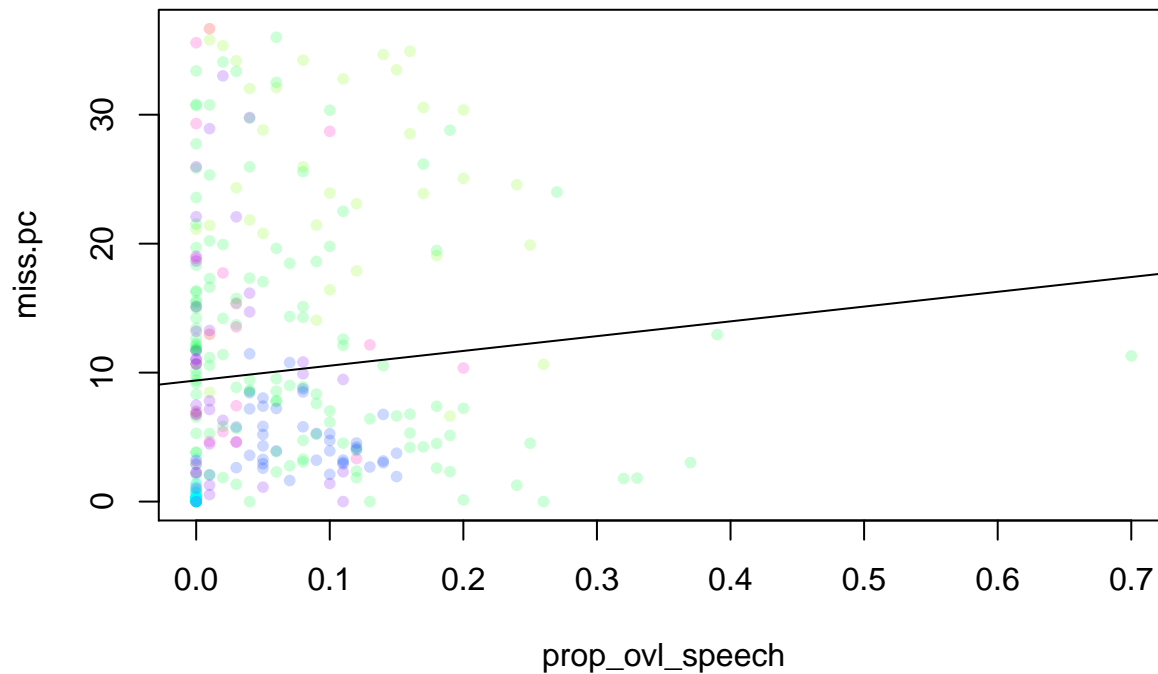
[12] "lena_lyon_day3_nohlan_10h50"
[13] "lena_lyon_day3_nohlan_18h30"
[14] "lena_lyon_day3_nohlan_9h05"
[15] "lena_lyon_day3_nohlan_9h55"
[16] "namibia_uebn_20160710_19980"
[17] "namibia_uebn_20160711_12780"
[18] "namibia_uebn_20160711_19980"
[19] "namibia_uebn_20160713_16380"
[20] "namibia_uebn_20161112_19980"
[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"



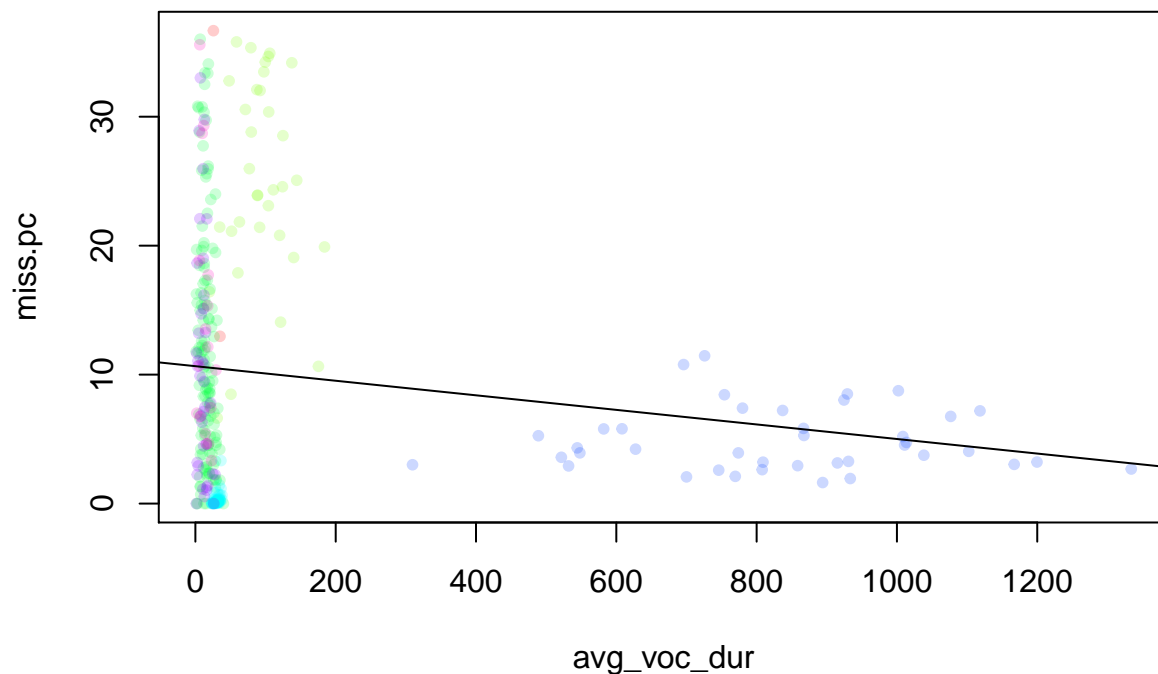
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -10.031  -8.454  -3.123   5.427  26.642
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    1.003e+01  5.257e-01   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
```

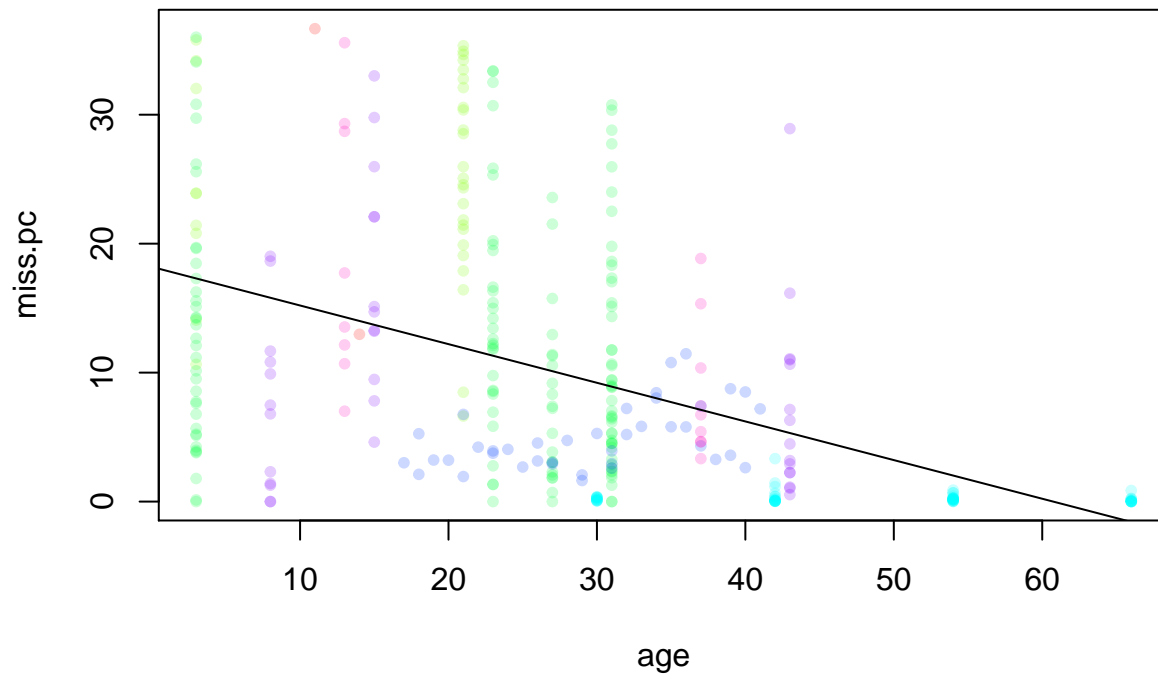
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -10.658  -8.915  -2.321   5.002  26.550
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    10.7922519   0.5781005   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
```



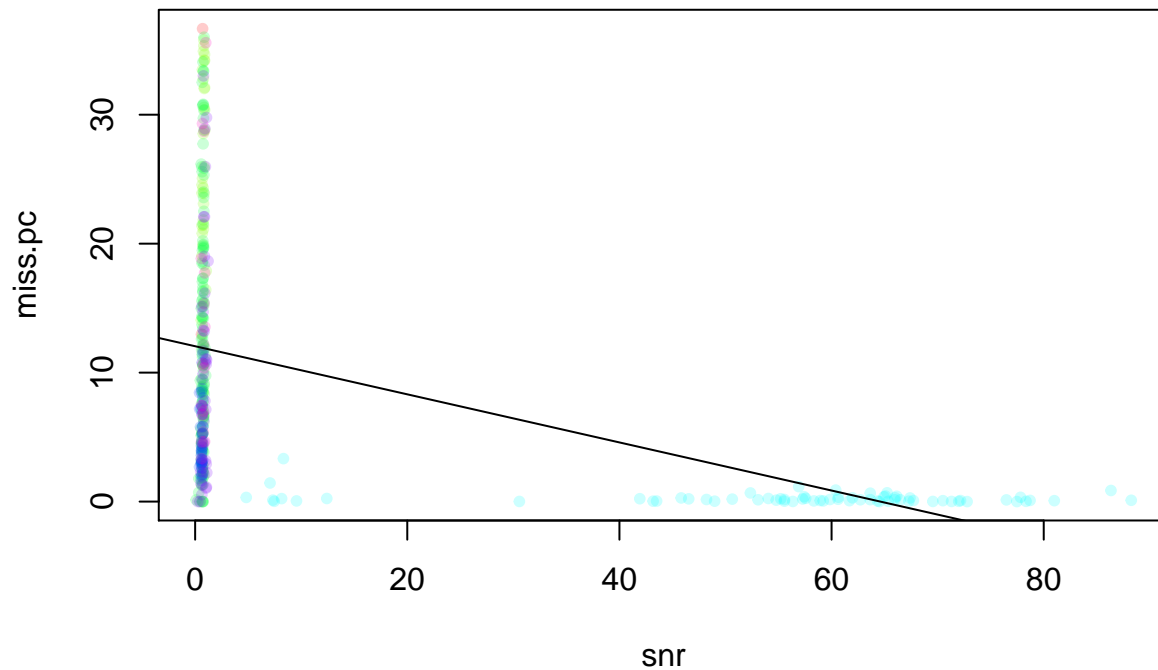
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -12.369  -8.515  -3.506   5.950  27.166
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)      9.3897     0.6374  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
```



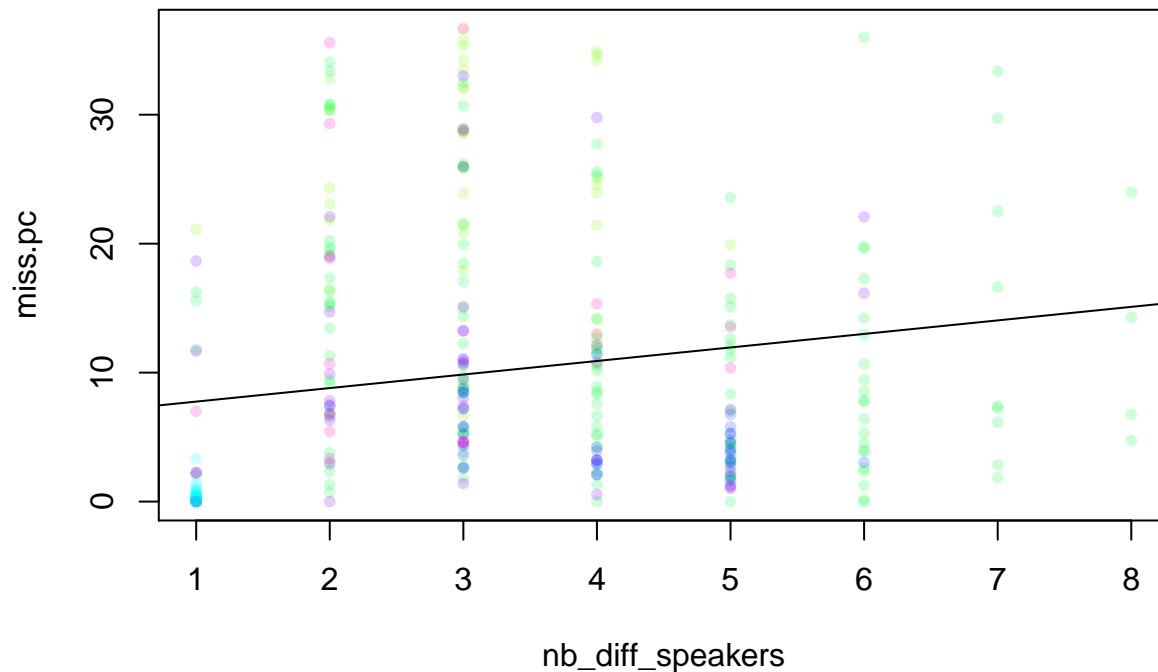
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
```

	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],.1))
```

```
    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],.1))
```

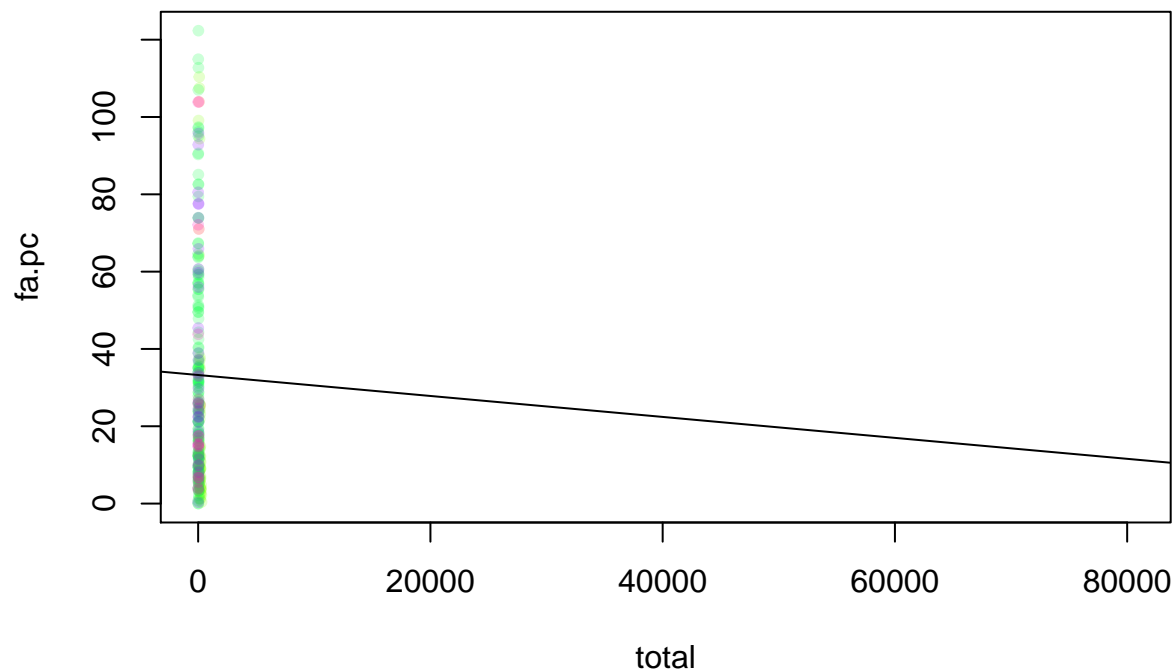
```
      abline(lm(no_outliers[,thismet]~no_outliers[,thispred]))
```

```
    }
```

```
  }
```

```
}
```

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



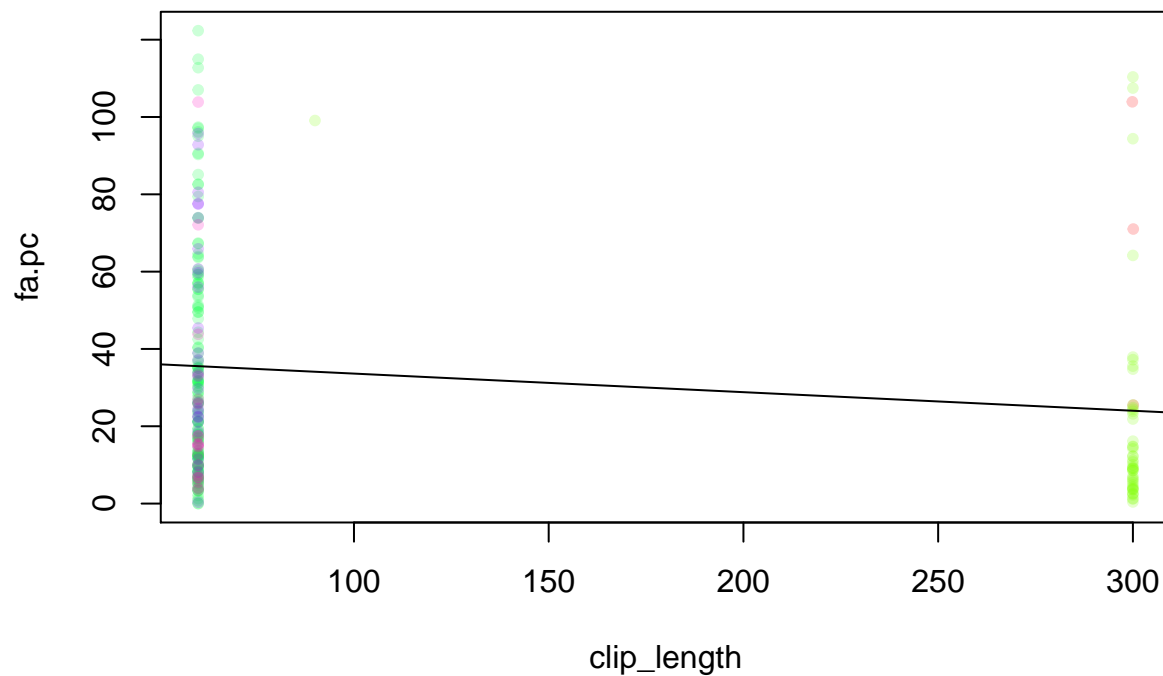
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
```

	Min	1Q	Median	3Q	Max
	-33.255	-23.206	-9.069	16.325	89.080

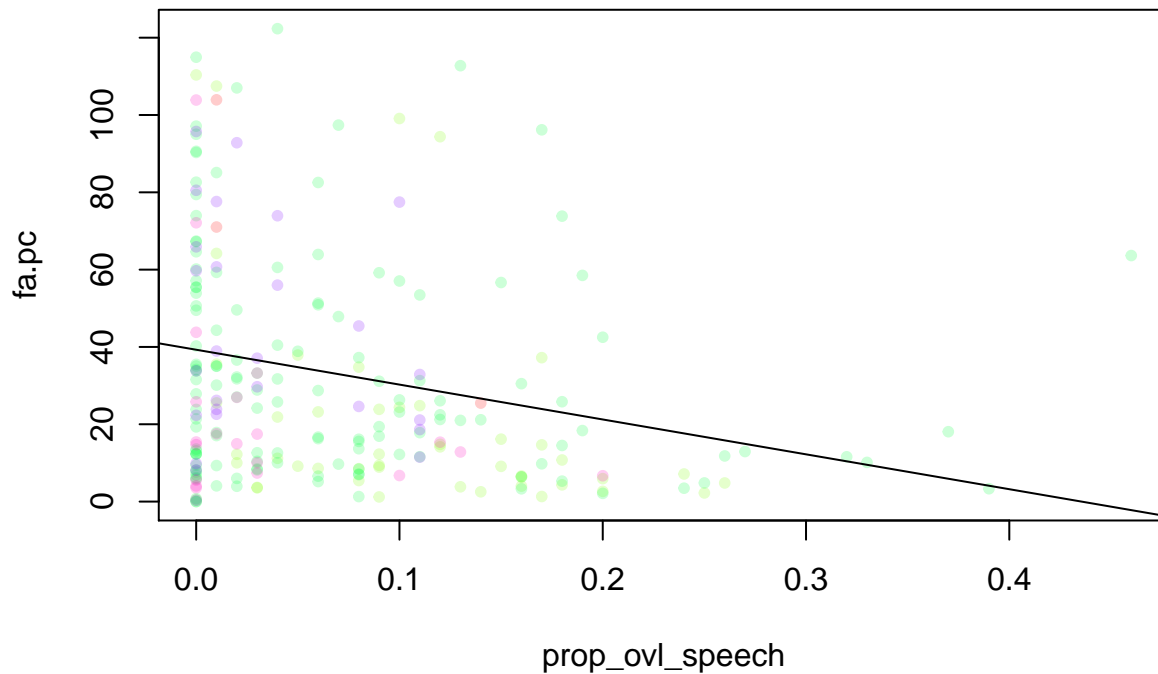
```
##
## Coefficients:
```

	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

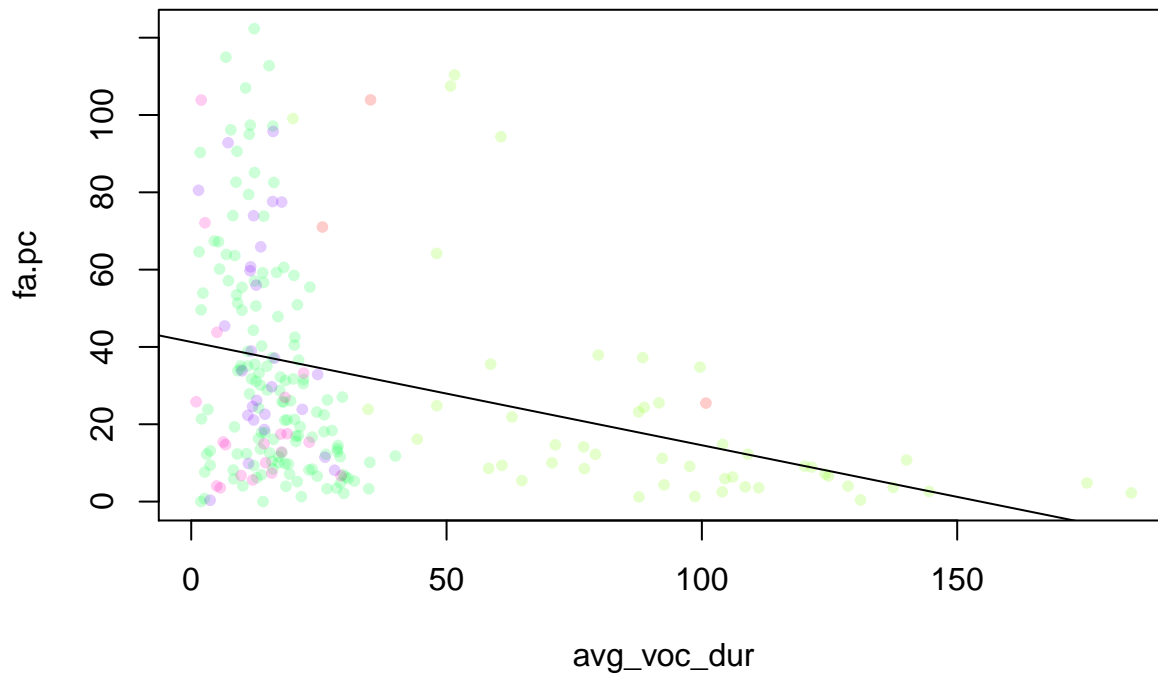
```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 29.46 on 259 degrees of freedom
## Multiple R-squared:  0.002104,    Adjusted R-squared:  -0.001749
## F-statistic: 0.546 on 1 and 259 DF,  p-value: 0.4606
```

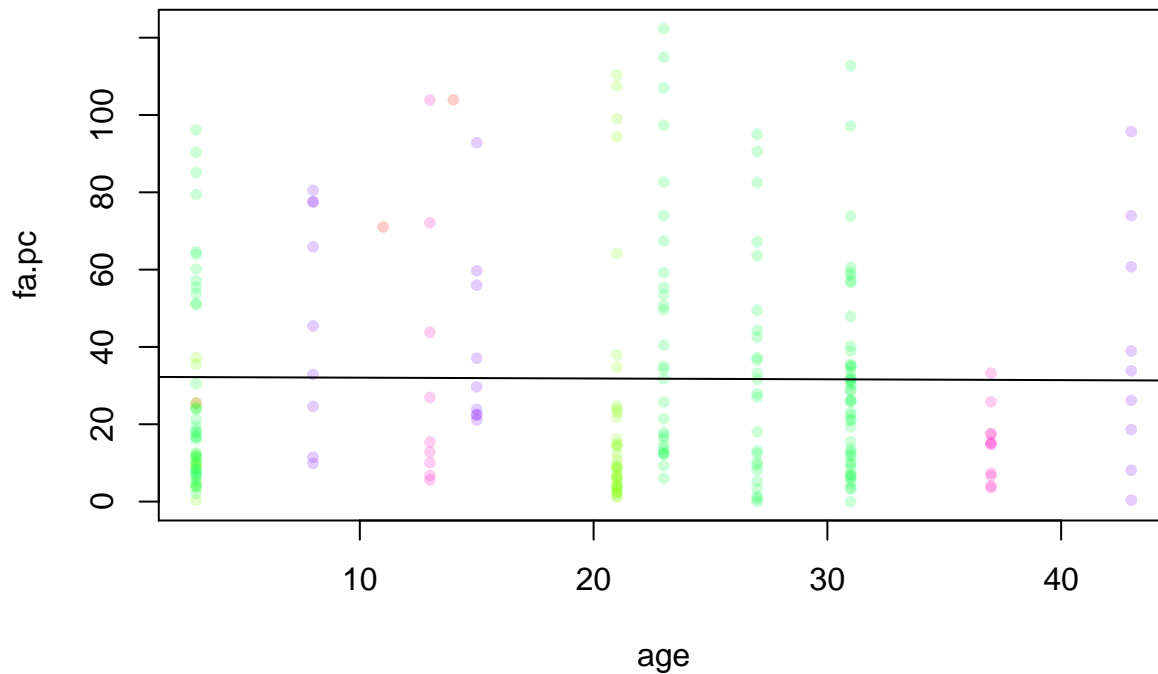
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -35.55 -21.90  -9.44   15.45   86.78
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    38.42754     2.72437   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
```



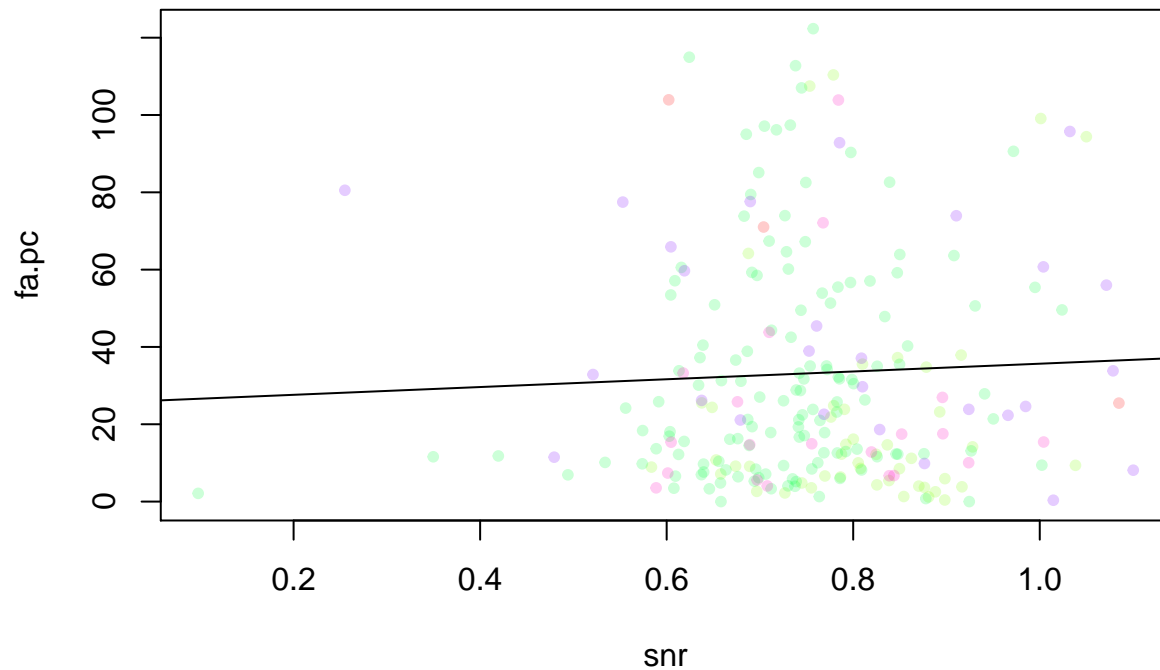
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -39.277 -20.838  -7.376  16.150  86.660
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)       39.28        2.33   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
```



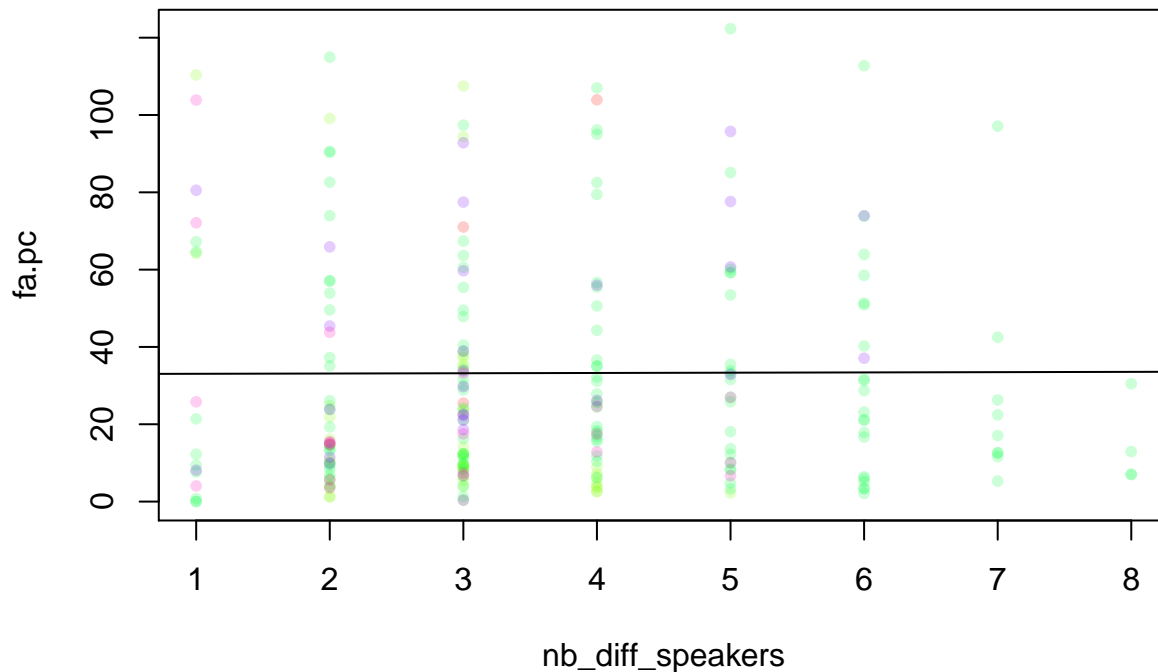
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -40.782 -20.735  -6.368  15.574  84.334
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    41.29277     2.31240   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
```



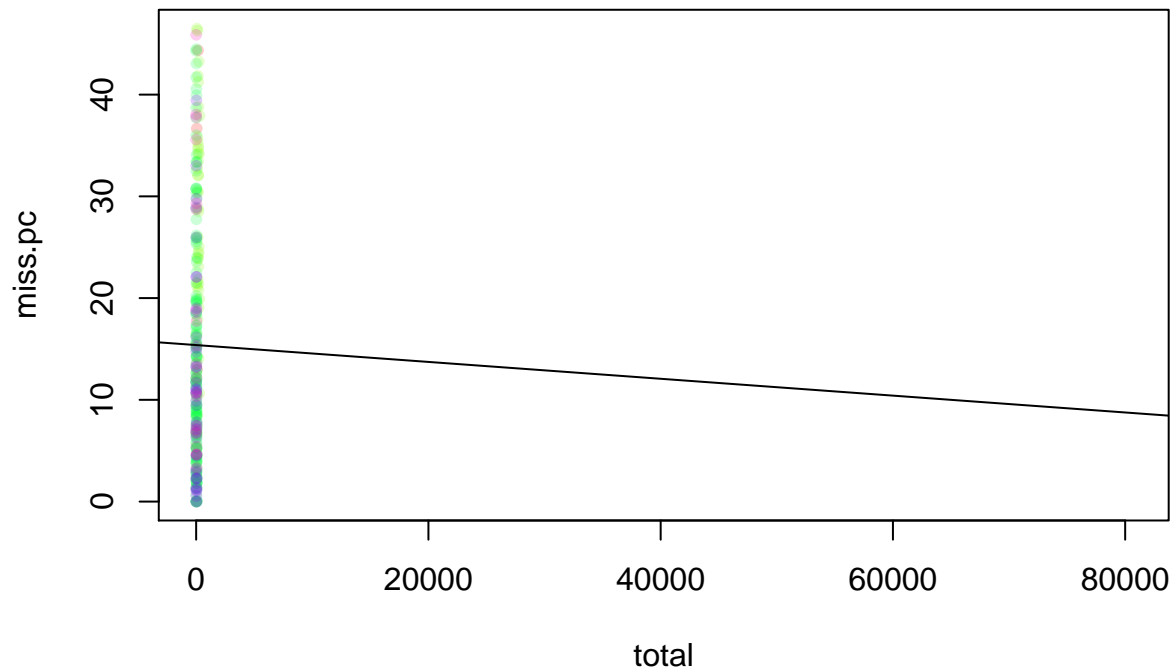
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -31.792 -22.315  -9.265  14.055  90.550
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    32.26553     3.81984   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"
```



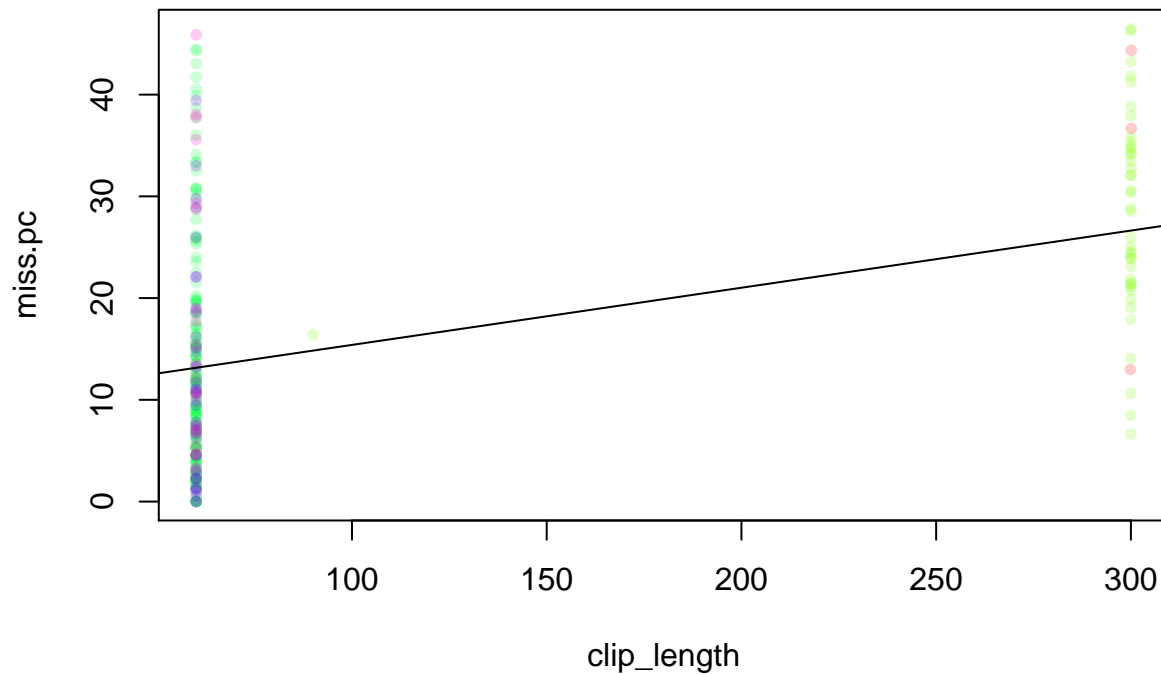
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
```

	Min	1Q	Median	3Q	Max
	-15.382	-10.074	-3.250	7.851	31.104

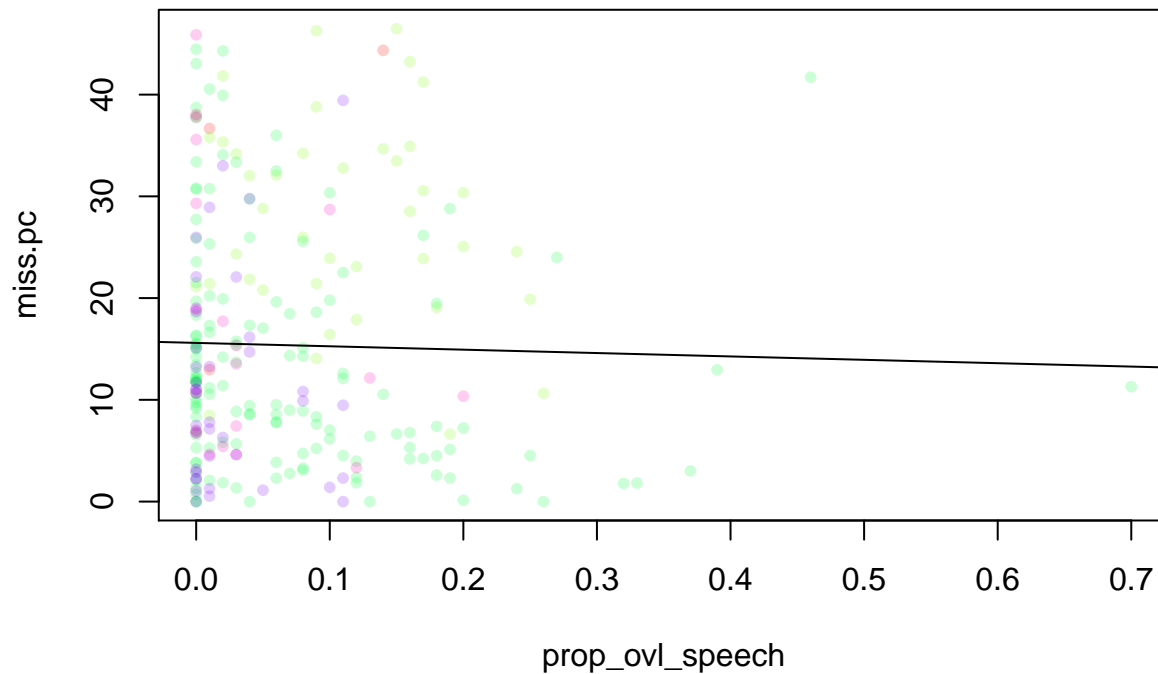
```
##
## Coefficients:
```

	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

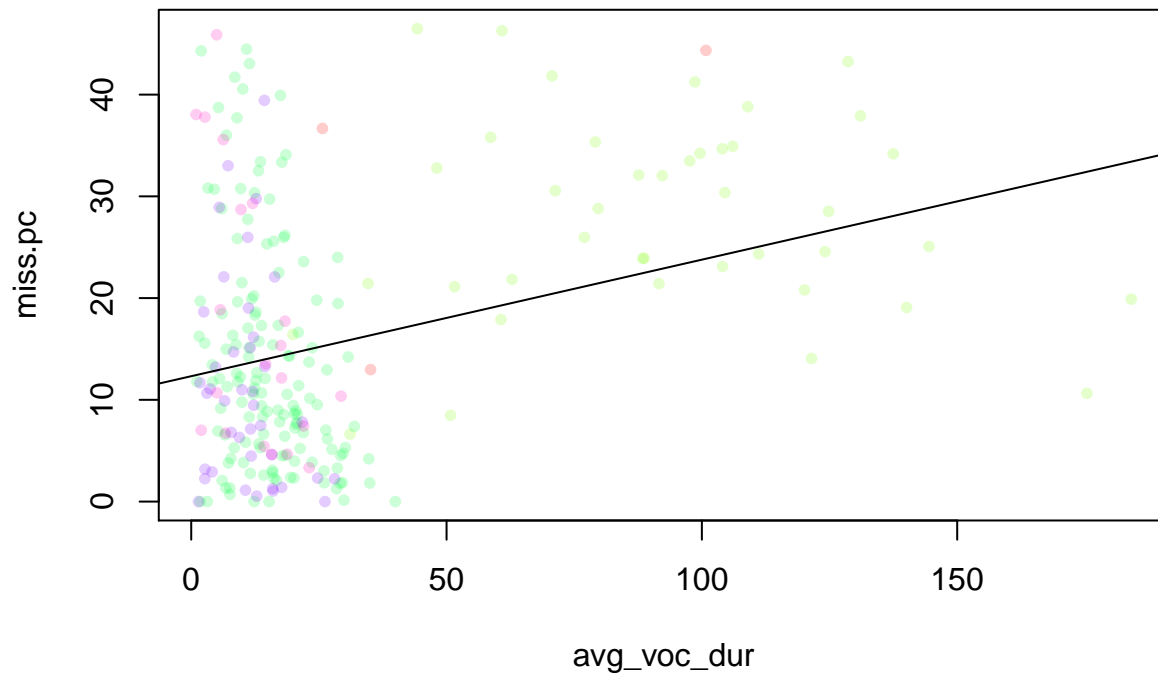
```
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 12.17 on 278 degrees of freedom
## Multiple R-squared:  0.001074,    Adjusted R-squared:  -0.002519
## F-statistic: 0.2989 on 1 and 278 DF,  p-value: 0.585
```



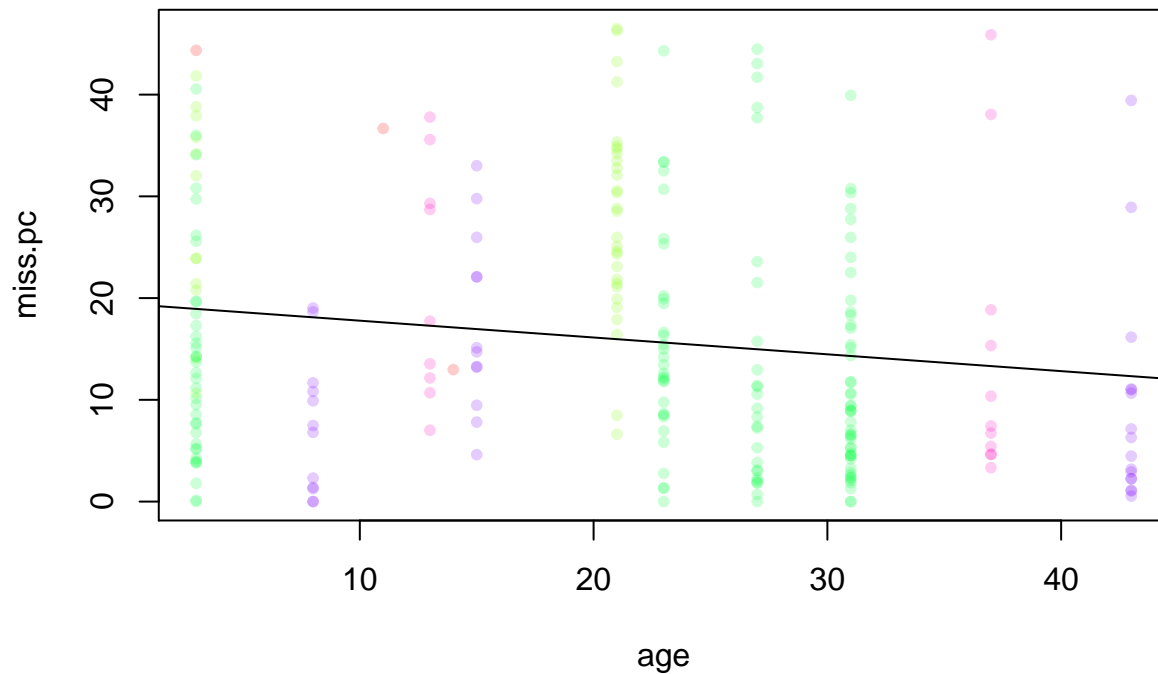
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -25.648  -8.456  -2.461   6.399  32.729
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    9.779775   0.998520   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
```

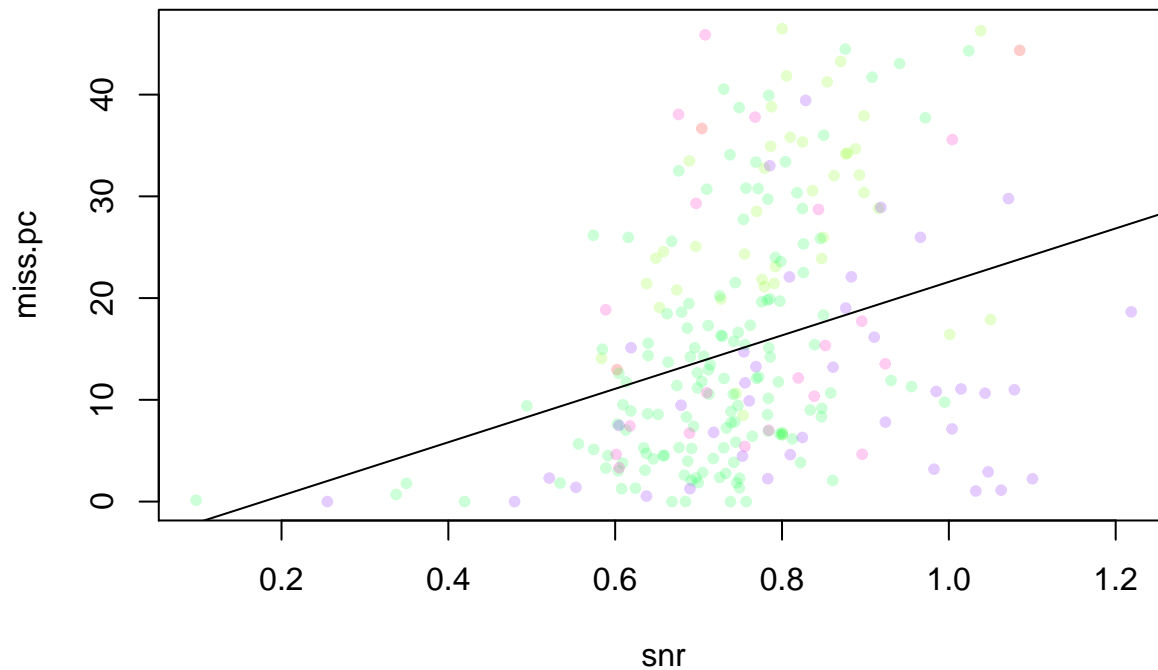
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -15.595 -10.092  -3.120   7.944  31.383
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    15.5953     0.9081  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
```



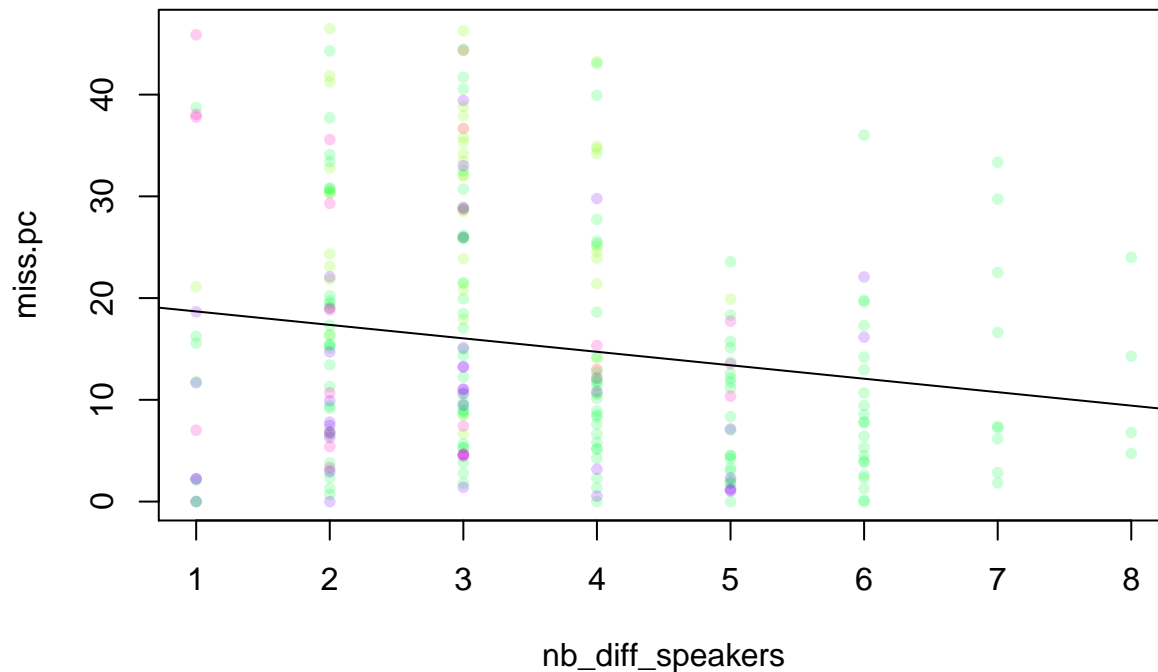
```
##
## Call:
## lm(formula = no_outliers[, thismet] ~ no_outliers[, thispred])
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -21.846  -9.274  -1.972   6.464  32.986
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)    12.32371    0.89268   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))
  }
}
```