



[https://drive.google.com/open?id=1zf6h5fLG1fVThfQUSP\\_wvKCFaUpNigvh](https://drive.google.com/open?id=1zf6h5fLG1fVThfQUSP_wvKCFaUpNigvh)  
<https://drive.google.com/open?id=1olZhYMUSaSLH1qo0bNbt1PZzmgq347LJ>



# SPEECH EMOTION ANALYSIS: EXTRALINGUISTICS FEATURE INFLUENCE ON EMBARRASSMENT DETECTION

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## RESEARCH HYPOTHESIS

- gender, age, education and foreign language acquisition do not influence the precision value

# DATA

Russian	French
Неужели этот огромный букет мне?	Est-ce que ce gros bouquet de fleurs est vraiment pour moi?
Я написал(а) эту диссертацию за 10 дней.	J'ai écrit cette thèse en 10 jours
Ну что вы, не надо было, я того не стою.	Arrêtez, vous n'auriez pas dû faire ça, je n'en vaud pas la peine
рестаньте, мне было совсем не трудно.	Allez, ça va, c'était pas du tout difficile pour moi
Спасибо, без вашей помощи я бы не справился(ась)	Merci beaucoup pour votre aide, je n'aurais jamais réussi seul



# POWER TEST

```
##  
##    Balanced one-way analysis of variance power calculation  
##  
##          groups = 64  
##              n = 2.317563  
##    between.var = 1  
##    within.var = 3  
##    sig.level = 0.05  
##    power = 0.8  
##  
## NOTE: n is number in each group
```

# DATA FORMATTING

- standardize the values by dividing each by 5
- change for English and French knowledge representation from binary values 0 and 1 to factors ("English yes", "English no" and "French yes", "French no")
- add ID column for rater identification
- transform the data to long format
- add a new column that contains the speaker

# DATA CONSIDERATION

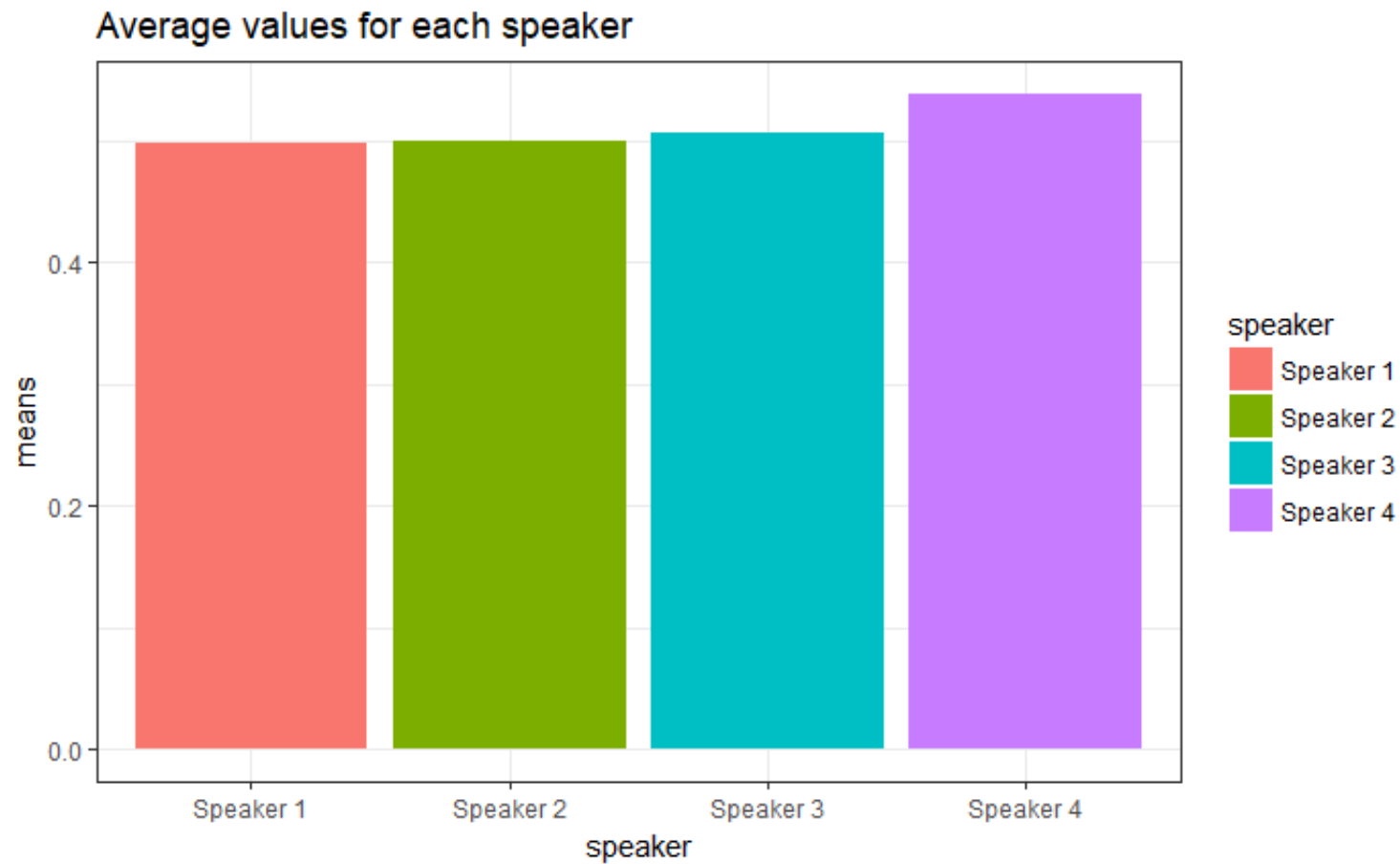
- non-professional speakers
- other external parameters might also be important for detecting dependencies



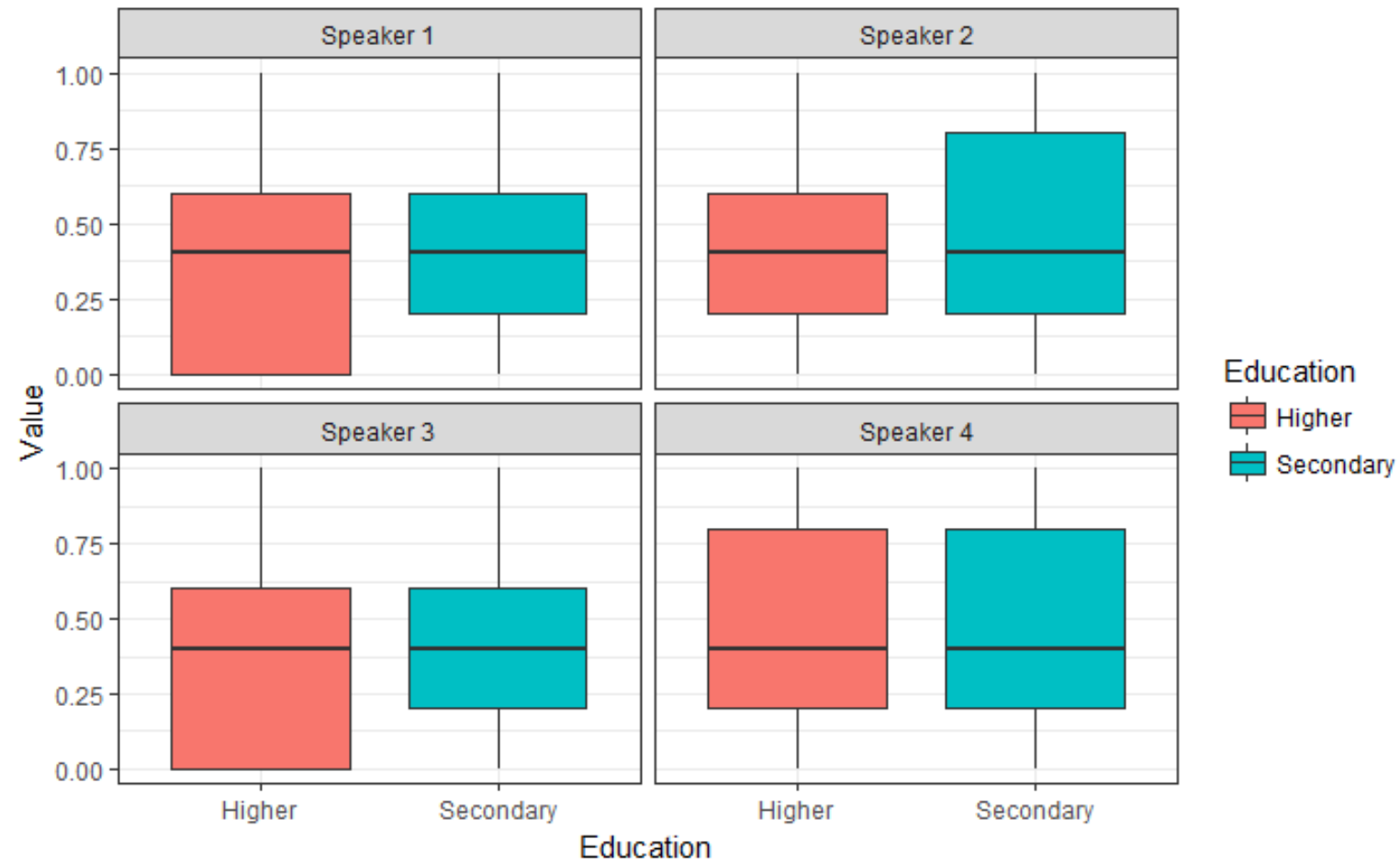
# RATER AGREEMENT

- $ICC(I) = 0.0619$

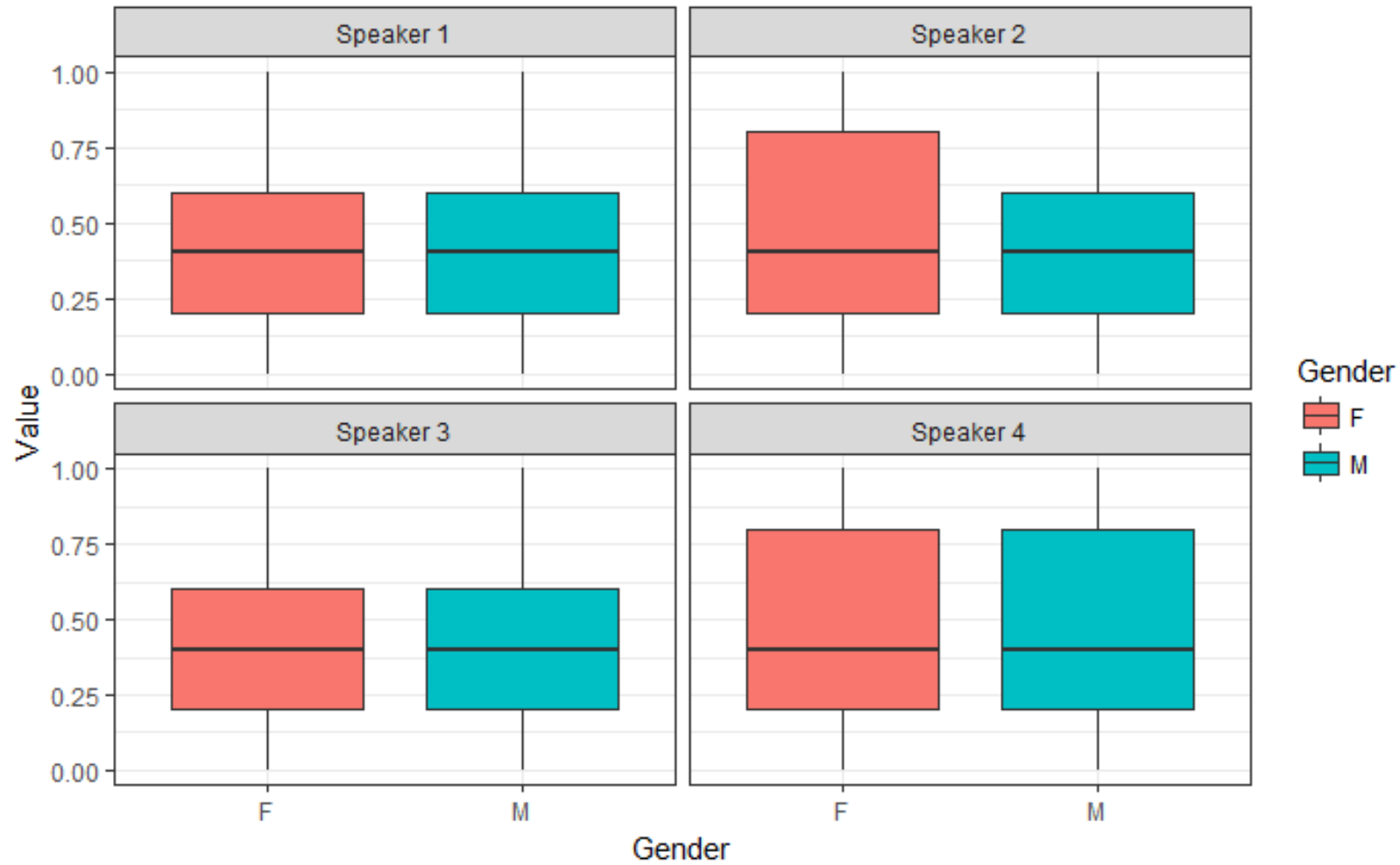
# DESCRIPTIVE STATISTICS



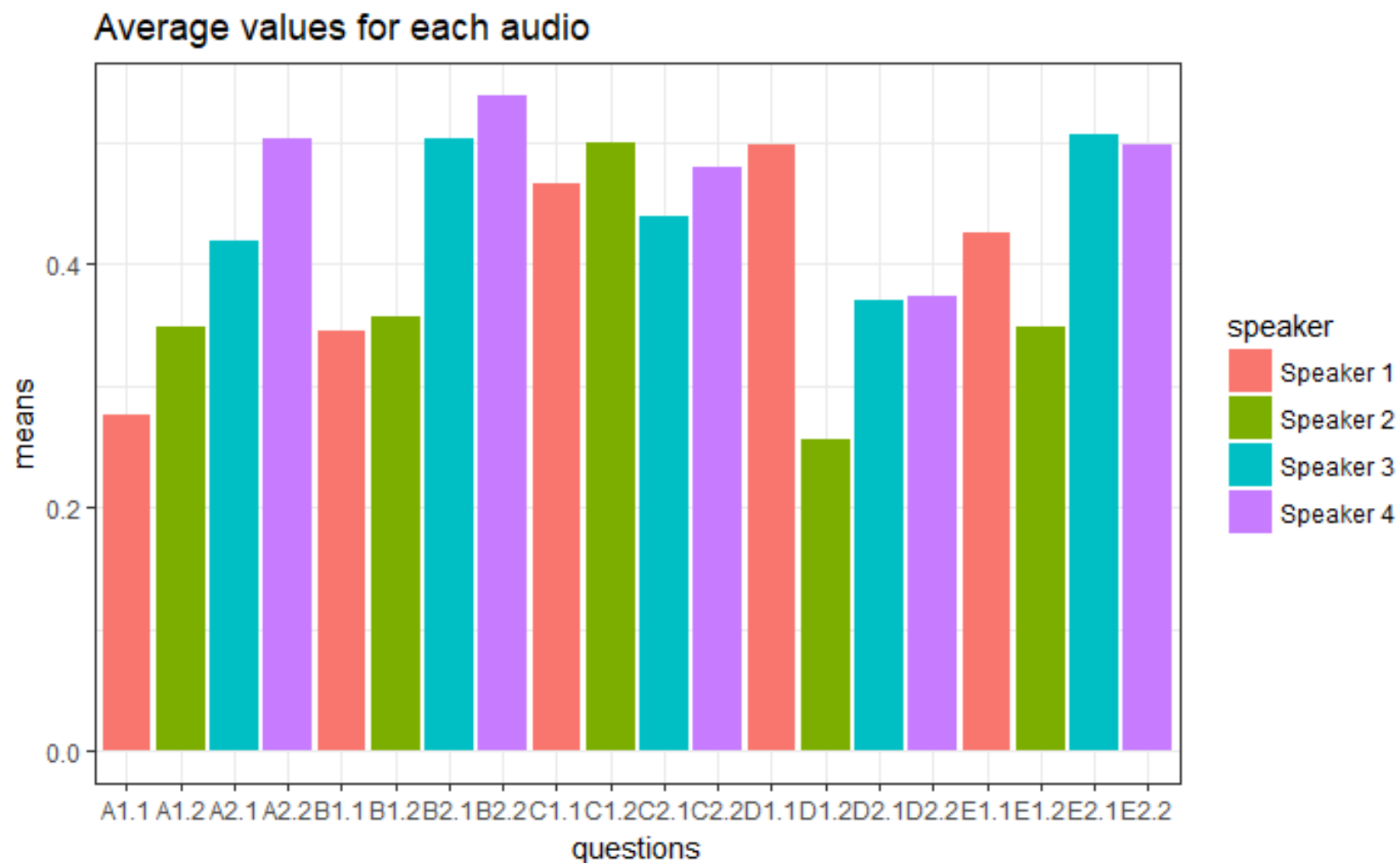
# DESCRIPTIVE STATISTICS



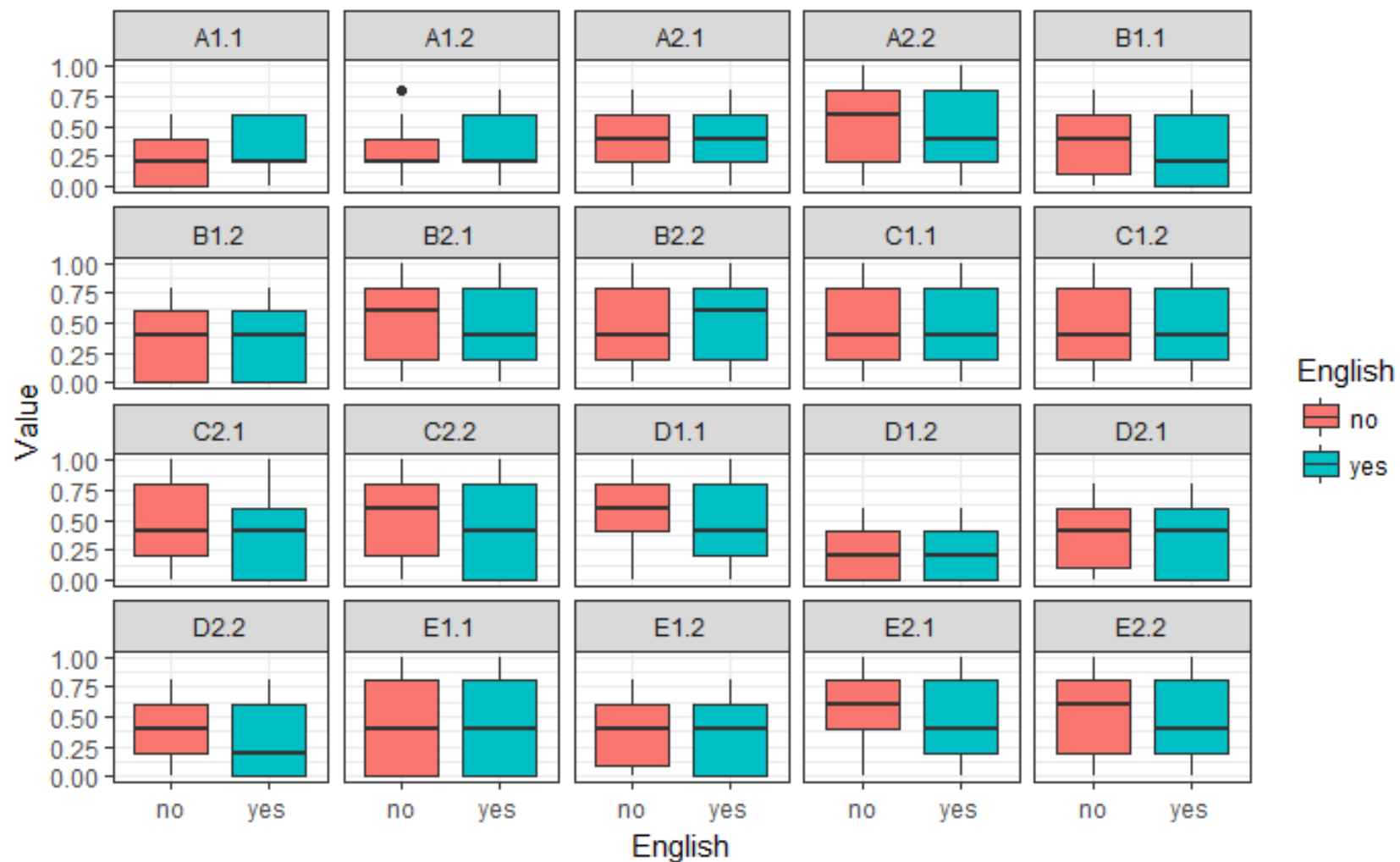
# DESCRIPTIVE STATISTICS



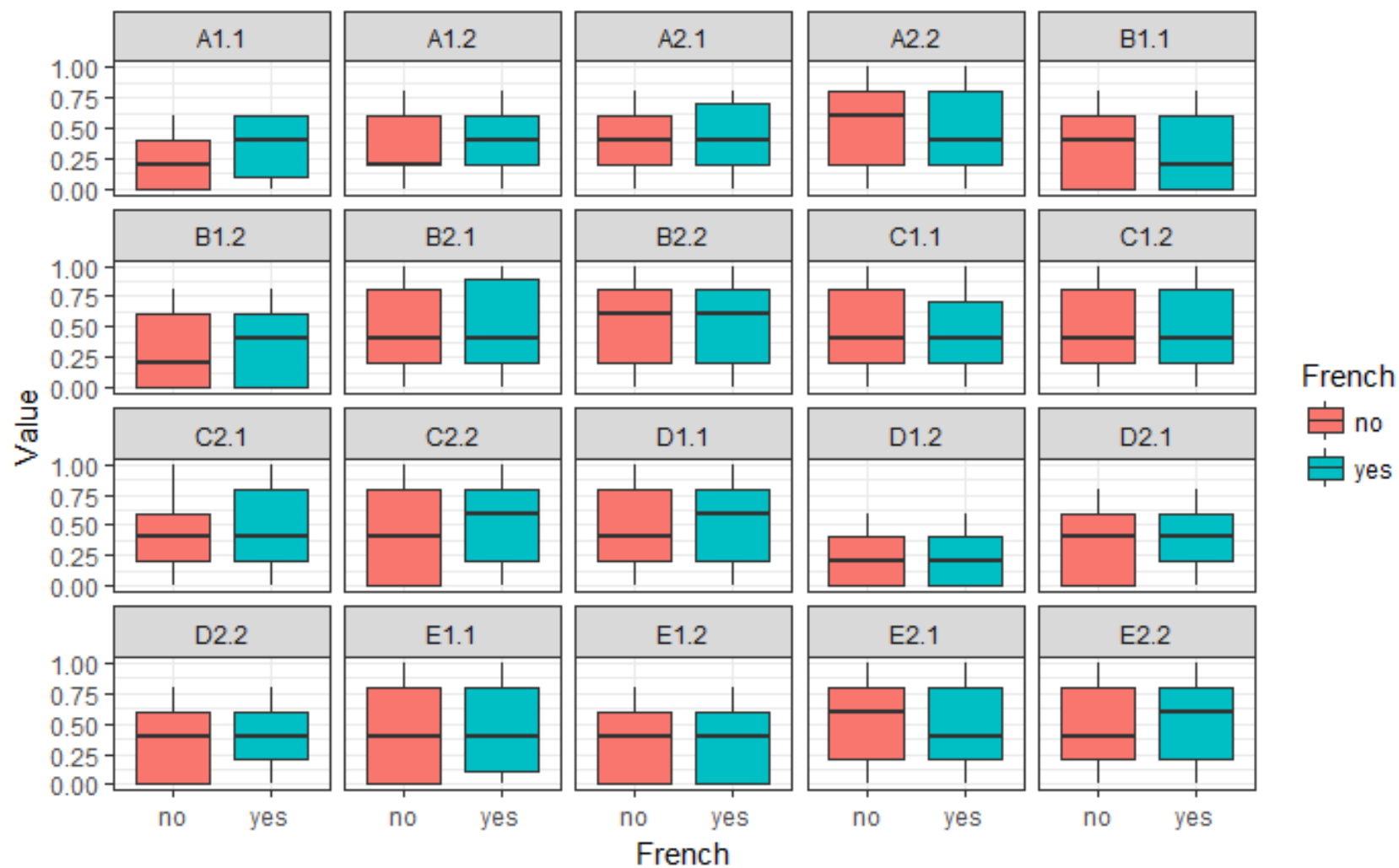
# DESCRIPTIVE STATISTICS



# DESCRIPTIVE STATISTICS



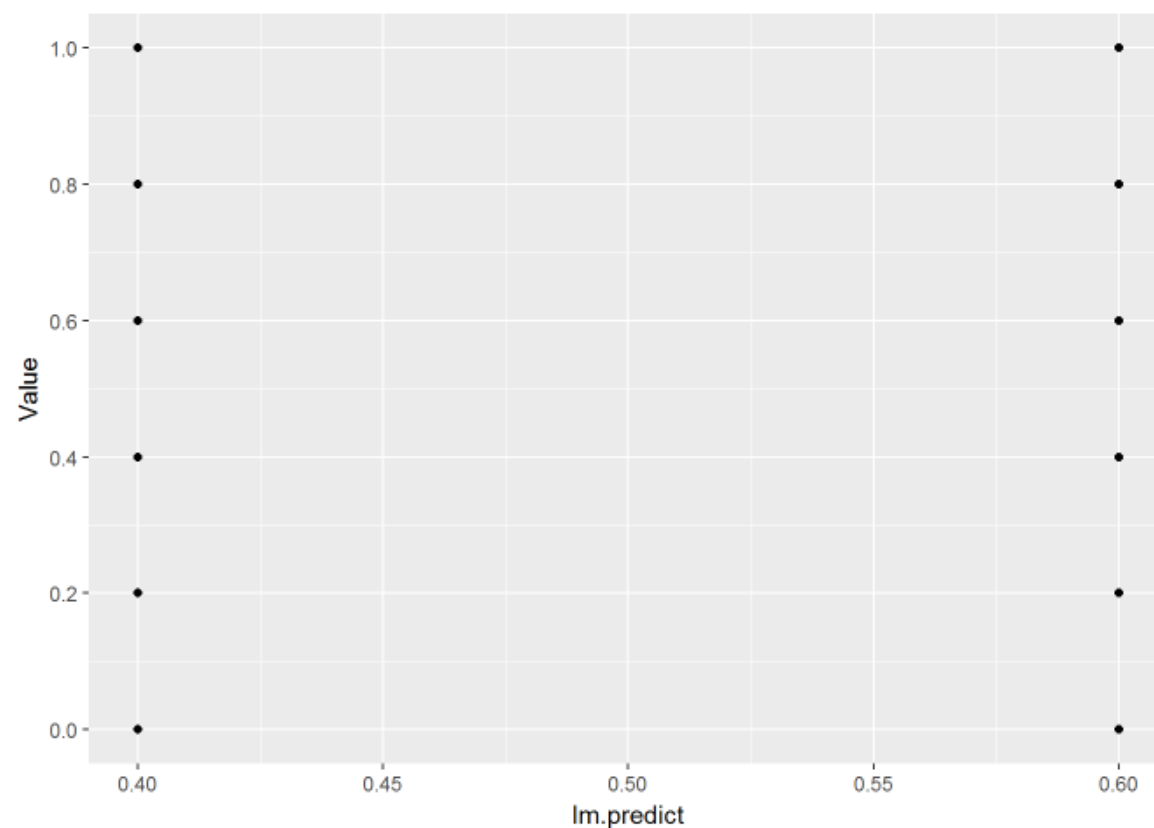
# DESCRIPTIVE STATISTICS



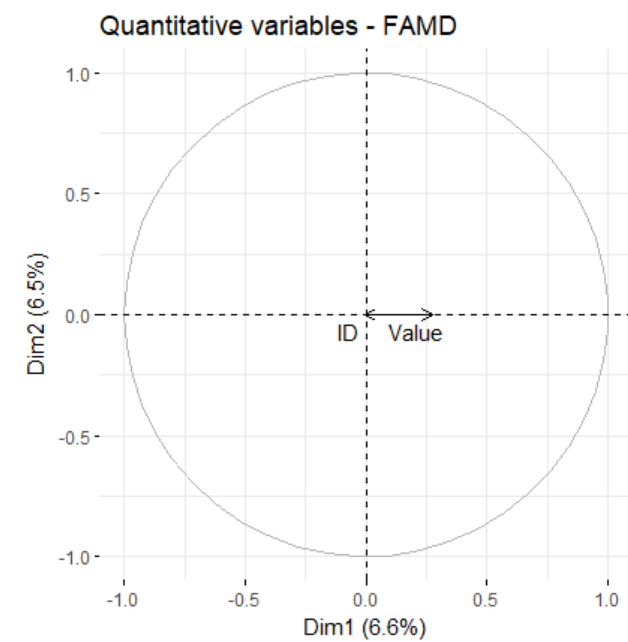
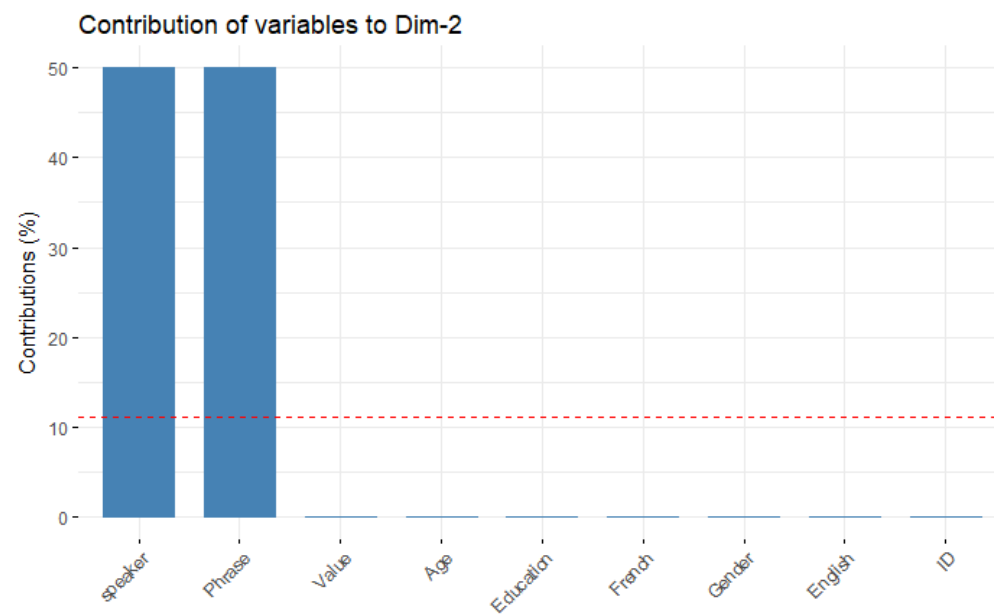
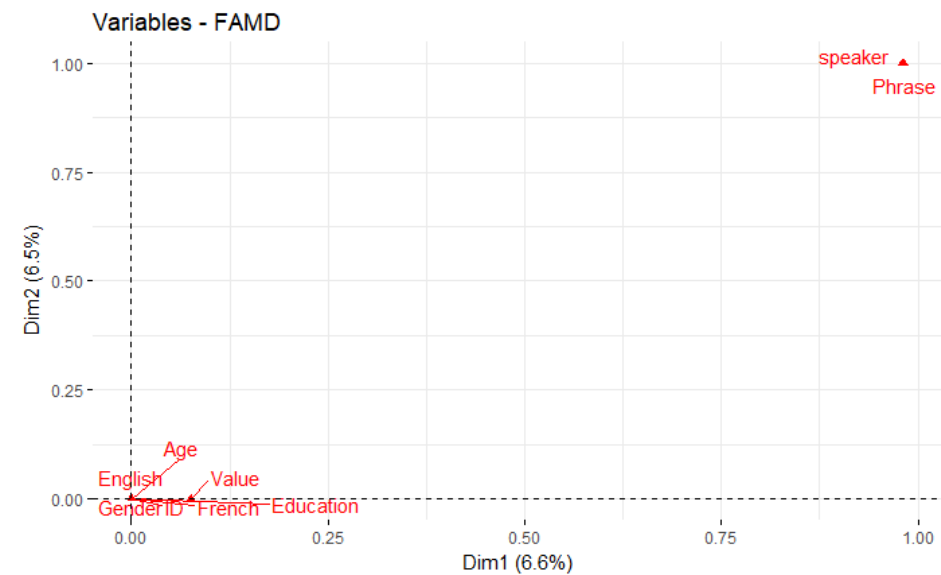
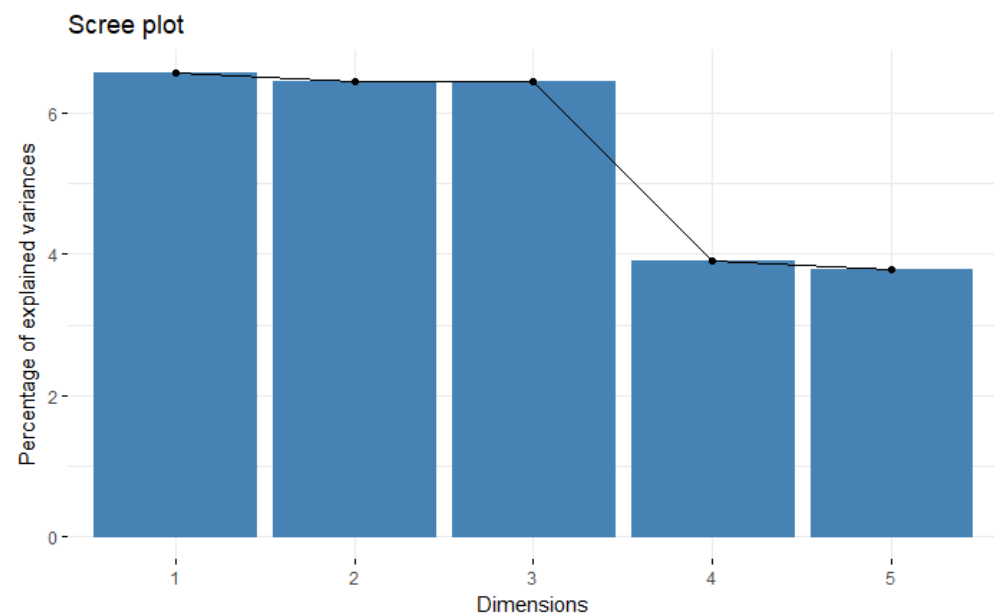
# DESCRIPTIVE STATISTICS: LINEAR REGRESSION

```
lmer(Value~Age+Gender+Education+English+ French + (1|speaker))
```

```
## REML criterion at convergence: 2458.9
##
## Scaled residuals:
##      Min       1Q   Median       3Q      Max
## -1.66423 -0.83198 -0.05958  0.78218  2.16114
##
## Random effects:
##   Groups   Name      Variance Std.Dev.
##   speaker  (Intercept) 0.002522 0.05021
##   Residual              0.101989 0.31936
## Number of obs: 4320, groups: speaker, 4
##
## Fixed effects:
##              Estimate Std. Error t value
## (Intercept)    0.400232   0.028544  14.022
## Age30          0.005390   0.013704   0.393
## Age35          0.040383   0.013718   2.944
## Age40          0.042290   0.013507   3.131
## GenderM       -0.006396   0.009732  -0.657
## EducationSecondary 0.017591   0.009738   1.806
## EnglishEnglish yes -0.025554   0.009744  -2.622
## FrenchFrench yes  0.017374   0.009724   1.787
##
## Correlation of Fixed Effects:
##              (Intr) Age30  Age35  Age40  GendrM  EdctnS  EnglEy
## Age30         -0.230
## Age35         -0.226  0.478
## Age40         -0.226  0.484  0.485
## GenderM       -0.160 -0.018 -0.045 -0.025
## EdctnScndry  -0.173  0.022  0.009  0.001 -0.009
## EnglishEngly  -0.196  0.018  0.031  0.012  0.017  0.045
## FrnchFrnchy  -0.157 -0.019 -0.018 -0.025 -0.018 -0.009 -0.002
```







# LINGUISTIC INTERPRETATION

- extralinguistic parameters do not influence on rater's ability to recognize embarrassment
- difficult to comment on statistical results
- the characteristics of the listener do not influence on their ability to understand the embarrassment
- listeners' understanding of the phrase does not matter

# IMPROVEMENTS

- the dataset that would be more accurate.
- to replace the audio with videos
- to study not only listeners characteristics but also speaker characteristics

# THANKS

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- Neige Rochant
- Simon Vilmin

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# THANK YOU FOR YOUR ATTENTION!

*‘СДЕЛАЛ Я ВСЁ, ЧТО СМОГ. НО ИТОГИ НАС ПОДВЕЛИ.’  
СБПЧ ‘КОМНАТА’*