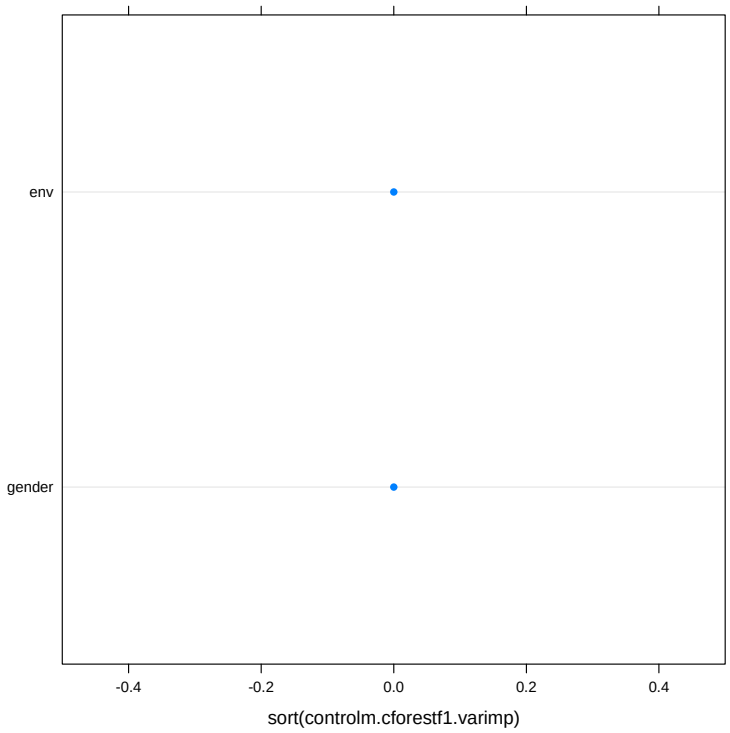
CLASS, GENDER, AND SUBSTRATE ERASURE IN SOCIOLINGUISTIC CHANGE: A SOCIOPHONETIC STUDY OF SCHWA IN DERACIALIZING SOUTH AFRICAN ENGLISH:

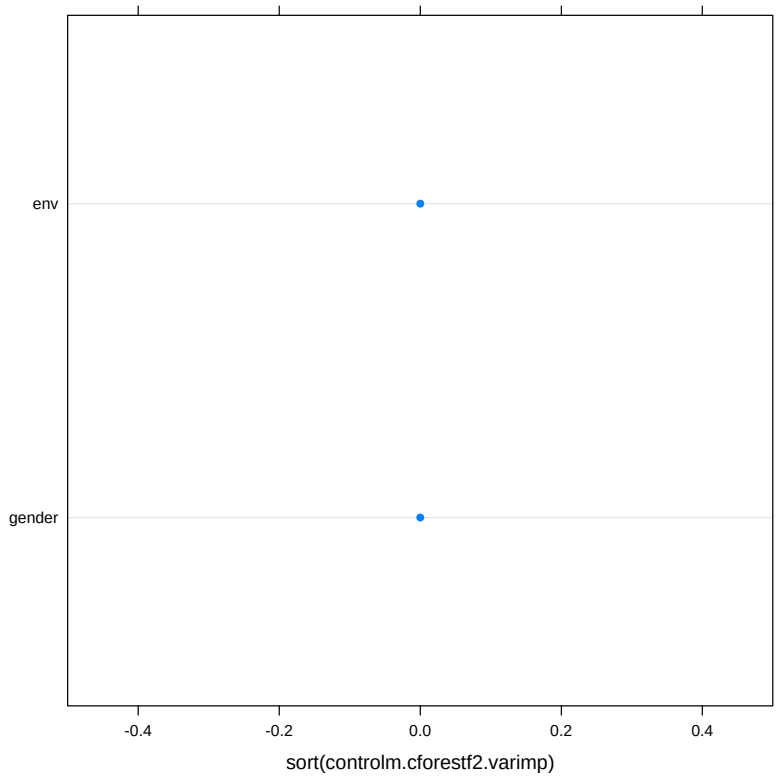
ONLINE SUPPLEMENTARY MATERIALS 3d: MEDIAL 'O-SCHWA'

RAJEND MESTHRIE
University of Cape Town

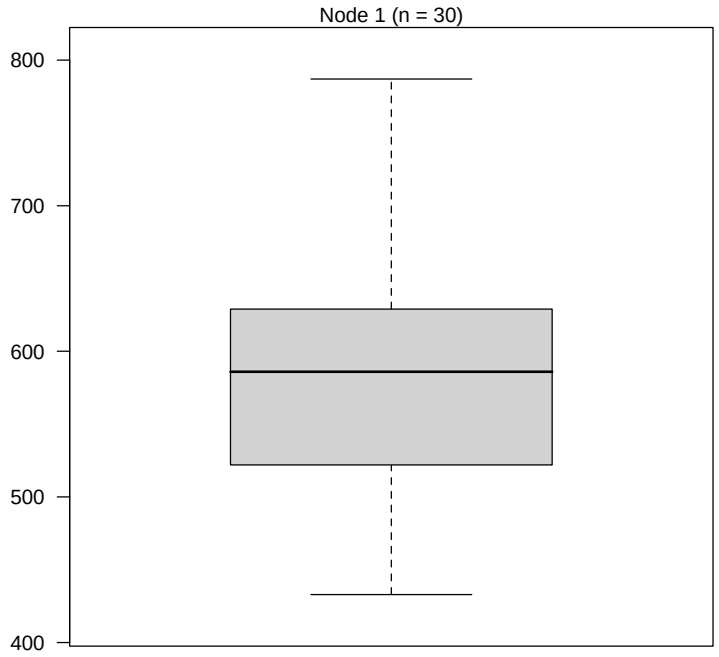
m ENVIRONMENT = medial schwa; fourth subtype: medial 'o-schwa'

CONTROL GROUP (WHITES): AMPLIFICATION OF DETAILS IN §4.4 OF THE MAIN TEXT. Medial environment, for 'i'. The medial environment has 162 'a', 163 'e', seventy-three 'i', **thirty 'o'**, forty-five 'u'. C-forest diagrams given below, followed by conditional inference trees and results of linear mixed-effects regression model.

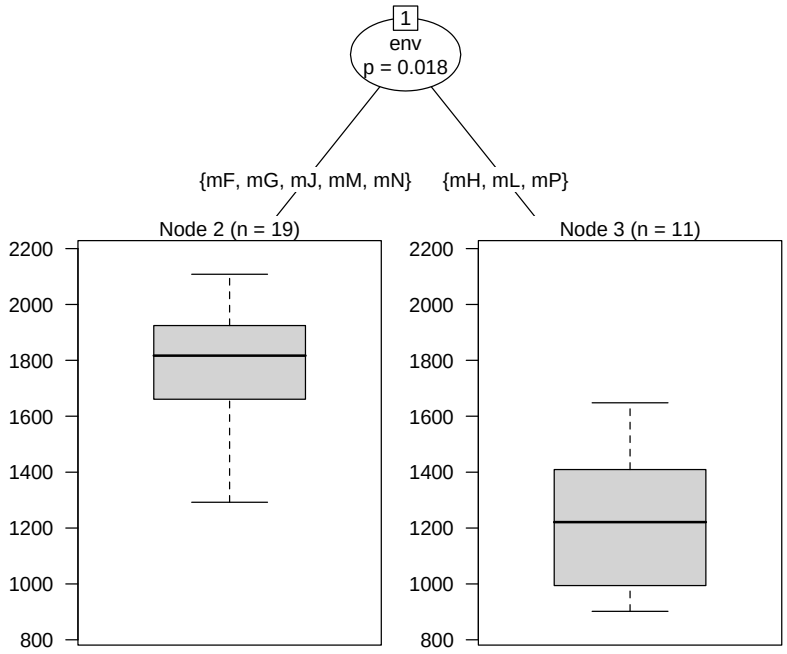



env
gender
-0.4
-0.2
0.0
0.2
0.4
sort(controlm.cforestf2.varimp)

F1 controlm for o by gender, env



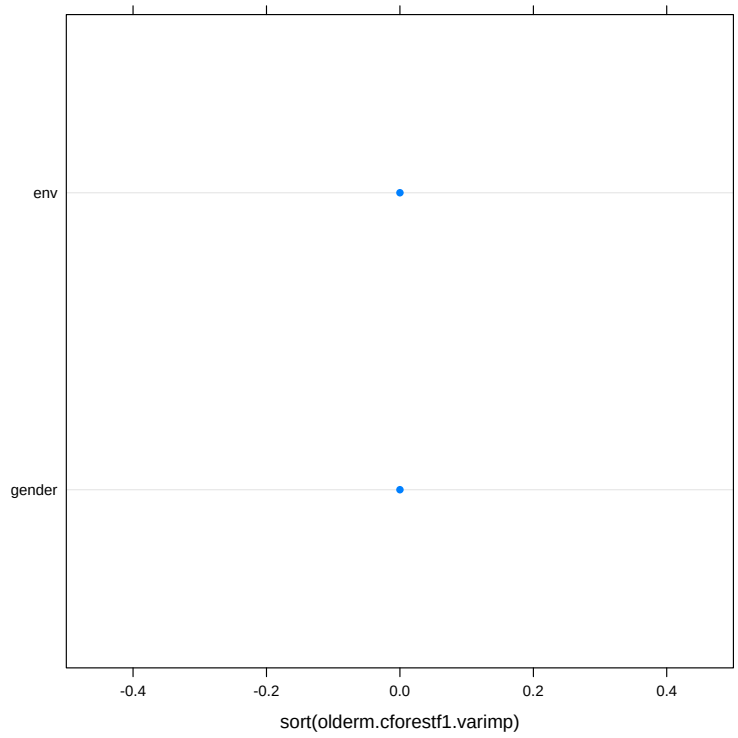
F2 controlm for o by gender, env

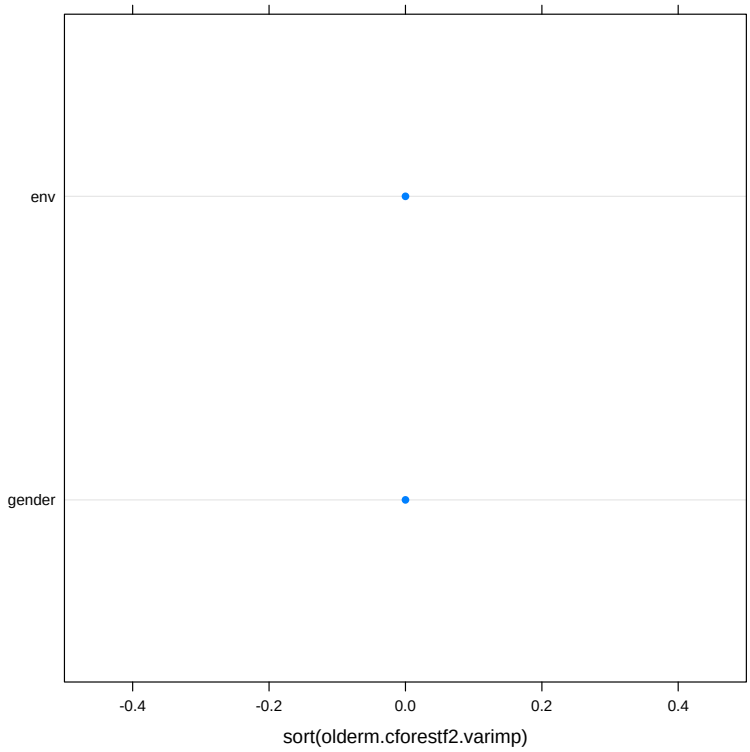


```
> controlm$env <- relevel(controlm $env, ref="mG")
> lmer=lmer(f1 ~ gender + env + (1|speaker) + (1|word), data= co
> summary(lmer)
Linear mixed model fit by REML ['merModLmerTest']
Formula: f1 ~ gender + env + (1 | speaker) + (1 | word)
   Data: controlm[controlm$vowel == "o", ]

REML criterion at convergence: 244.6

Scaled residuals:
     Min       1Q   Median       3Q      Max
-1.33666 -0.52750 -0.04776  0.53165  1.47977

Random effects:
 Groups   Name        Variance Std.Dev.
 word     (Intercept)  698.5   26.43
 speaker  (Intercept)    0.0    0.00
 Residual             3495.8   59.13
Number of obs: 30, groups:  word, 24; speaker, 11

Fixed effects:
            Estimate Std. Error      df t value Pr(>|t|)
(Intercept)  570.728     29.702  16.792  19.215 7.25e-13 ***
genderM       12.358     32.926   8.626   0.375   0.7165
envmF        -56.728     71.250  17.189  -0.796   0.4368
envmH        175.413     60.248  15.377   2.912   0.0105 *
envmJ         19.248     42.743   7.291   0.450   0.6656
envmL        -53.587     60.248  15.377  -0.889   0.3875
envmM          9.409     39.668  13.955   0.237   0.8160
envmN        -75.587     60.248  15.377  -1.255   0.2284
envmP         27.940     40.157   7.664   0.696   0.5071
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

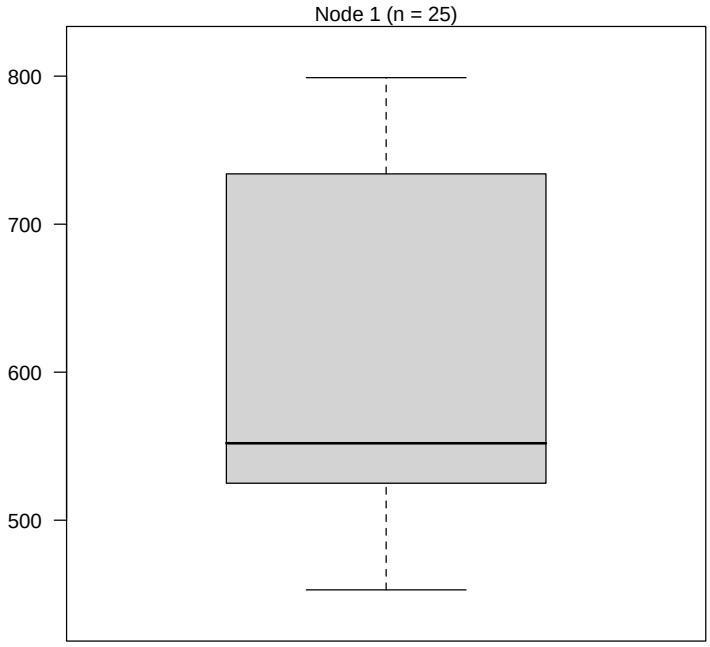
```
> controlm$env <- relevel(controlm $env, ref="mG")
> lmer=lmer(f2 ~ gender + env + (1|speaker) + (1|word), data= con
> summary(lmer)
Linear mixed model fit by REML ['merModLmerTest']
Formula: f2 ~ gender + env + (1 | speaker) + (1 | word)
   Data: controlm[controlm$vowel == "o", ]

REML criterion at convergence: 282.5

Scaled residuals:
     Min       1Q   Median       3Q      Max
-1.26763 -0.15219  0.02696  0.13638  1.36486

Random effects:
 Groups   Name        Variance Std.Dev.
 word     (Intercept) 30126    173.57
 speaker  (Intercept) 25439    159.49
 Residual              3034     55.08
Number of obs: 30, groups:  word, 24; speaker, 11

Fixed effects:
            Estimate Std. Error      df t value Pr(>|t|)
(Intercept)  1500.06     124.35   11.13  12.064 9.83e-08 ***
genderM       194.44     149.10   10.04   1.304   0.2213
envmF         140.50     242.62   13.99   0.579   0.5717
envmH        -625.83     218.66   15.18  -2.862   0.0118 *
envmJ         374.16     172.90   14.96   2.164   0.0471 *
envmL        -394.76     207.27   14.06  -1.905   0.0775 .
envmM         223.67     148.39   15.08   1.507   0.1524
envmN          37.66     216.06   15.12   0.174   0.8640
envmP        -321.67     150.92   14.04  -2.131   0.0512 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

OLDER CONTROL GROUP (BLACK SPEAKERS; §4.4). Medial environment, for ‘o’. The medial environment has 152 ‘a’, 137 ‘e’, fifty-seven ‘i’, **twenty-five ‘o’**, fifty-nine ‘u’. C-forest diagrams given below, followed by conditional inference trees and results of linear mixed-effects regression model.

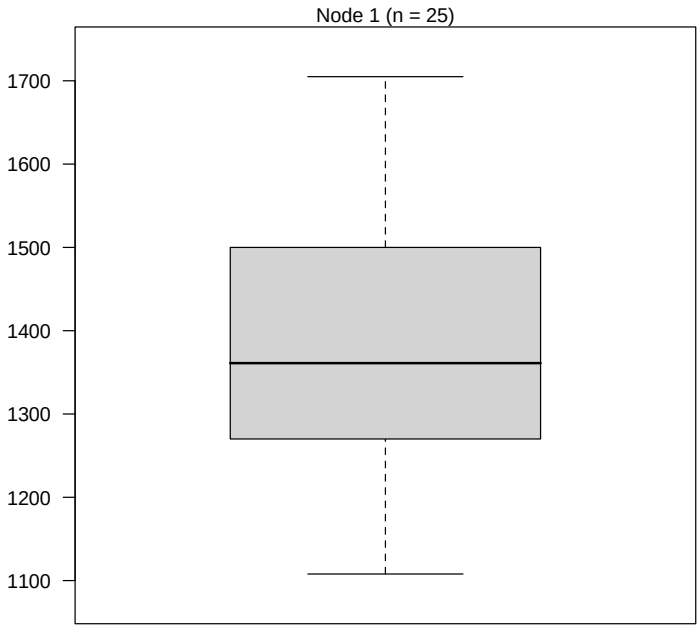




F1 olderm for o by gender, env



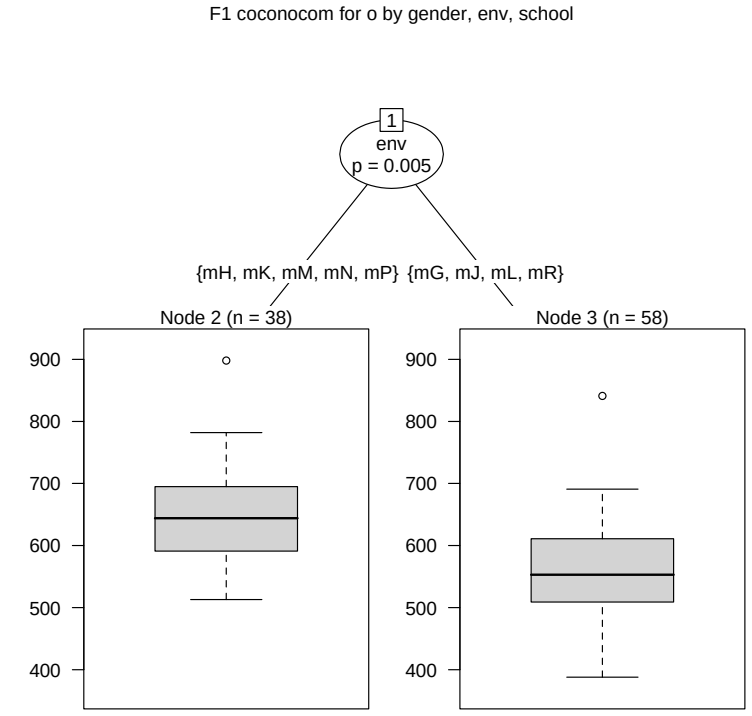
F2 olderm for o by gender, env

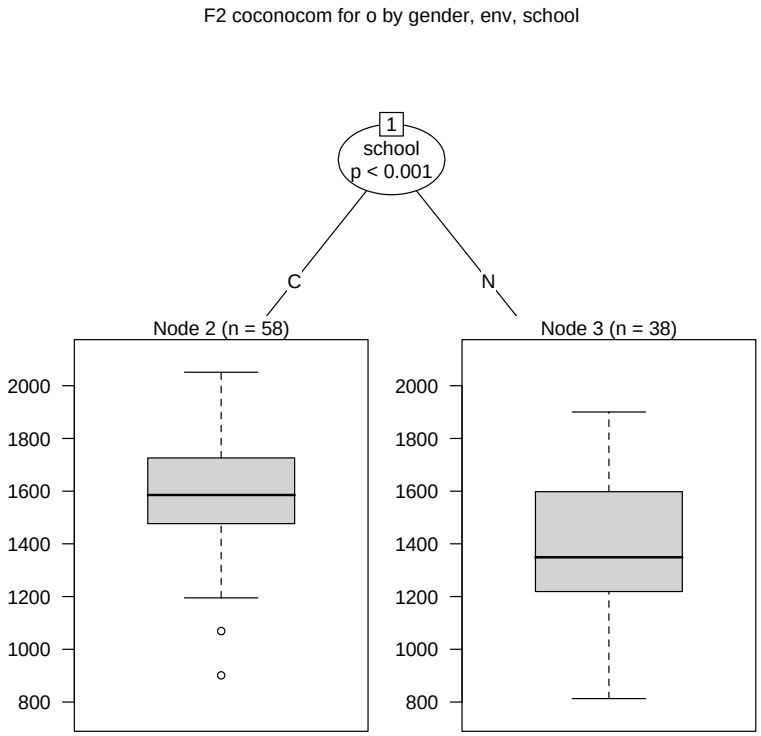


```
> olderm$env <- relevel(olderm$env, ref="mG")
> lmer=lmer(f1 ~ gender + env + (1|speaker) + (1|word), data= ol
> summary(lmer)
Linear mixed model fit by REML ['merModLmerTest']
Formula: f1 ~ gender + env + (1 | speaker) + (1 | word)
   Data: olderm[olderm$vowel == "o", ]

REML criterion at convergence: 198.8

Scaled residuals:
    Min      1Q  Median      3Q     Max
-0.8106 -0.2876  0.0000  0.4734  1.3147

Random effects:
 Groups   Name        Variance Std.Dev.
 word     (Intercept) 6642     81.50
 speaker  (Intercept) 2124     46.08
 Residual             4035     63.52
Number of obs: 25, groups:  word, 22; speaker, 9

Fixed effects:
            Estimate Std. Error       df t value Pr(>|t|)
(Intercept) 599.0570    61.3453   6.0450   9.765 6.33e-05 ***
genderM      -0.3944    71.2117   3.6360  -0.006    0.996
envmF       179.3374   121.8072   8.1130   1.472    0.179
envmJ       155.2567   122.7446  12.7930   1.265    0.228
envmK       -22.3421   118.0060   7.8230  -0.189    0.855
envmM       -32.3421   118.0060   7.8230  -0.274    0.791
envmN        66.9449    66.1172  13.5390   1.013    0.329
envmP       -73.5940   117.7496  13.7450  -0.625    0.542
envmR       -44.5940   117.7496  13.7450  -0.379    0.711
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

```
> olderm$env <- relevel(olderm$env, ref="mG")
> lmer=lmer(f2 ~ gender + env + (1|speaker) + (1|word), data= ol
> summary(lmer)
Linear mixed model fit by REML ['merModLmerTest']
Formula: f2 ~ gender + env + (1 | speaker) + (1 | word)
   Data: olderm[olderm$vowel == "o", ]

REML criterion at convergence: 212.5

Scaled residuals:
    Min      1Q  Median      3Q     Max
-1.5940 -0.5012  0.0000  0.3272  2.0931

Random effects:
 Groups   Name        Variance Std.Dev.
 word     (Intercept)     0      0.0
 speaker  (Intercept)     0      0.0
 Residual             24320    155.9
Number of obs: 25, groups:  word, 22; speaker, 9

Fixed effects:
            Estimate Std. Error      df t value Pr(>|t|)
(Intercept)  1425.39      80.33   16.00  17.745    6e-12 ***
genderM       -46.80      87.99   16.00  -0.532   0.6021
envmF         -76.58     163.10   16.00  -0.470   0.6450
envmJ         182.61     175.42   16.00   1.041   0.3134
envmK        -271.39     175.42   16.00  -1.547   0.1414
envmM        -317.39     175.42   16.00  -1.809   0.0892 .
envmN          29.58      93.46   16.00   0.316   0.7557
envmP        -108.58     163.10   16.00  -0.666   0.5151
envmR         -88.58     163.10   16.00  -0.543   0.5945
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

CORE GROUP (YOUNGER BLACK SPEAKERS; §4.5). Medial environment, for ‘o’. The medial environment has 682 ‘a’, 820 ‘e’, 376 ‘i’, **ninety-six ‘o’**, 183 ‘u’. No c-forest diagrams generated; conditional inference trees and results of linear mixed-effects regression model given below.





```
> coconocom$env <- relevel(coconocom$env, ref="mG")
> lmer=lmer(f1 ~ gender + env + school + (1|speaker) + (1|word),
> summary(lmer)
Linear mixed model fit by REML ['merModLmerTest']
Formula: f1 ~ gender + env + school + (1 | speaker) + (1 | word)
   Data: coconocom[coconocom$vowel == "o", ]

REML criterion at convergence: 1003.5

Scaled residuals:
     Min       1Q   Median       3Q      Max
-1.58677 -0.54050 -0.00993  0.47057  2.36063

Random effects:
 Groups   Name        Variance Std.Dev.
 word     (Intercept) 1926     43.88
 speaker  (Intercept) 2070     45.49
 Residual             3489     59.07
Number of obs: 96, groups:  word, 52; speaker, 39

Fixed effects:
            Estimate Std. Error      df t value Pr(>|t|)
(Intercept)  542.889     22.269  34.720  24.378   <2e-16 ***
genderM        2.765     22.329  21.160   0.124   0.9026
envmH        108.734     61.842  15.520   1.758   0.0984 .
envmJ         29.094     37.804  50.100   0.770   0.4452
envmK        128.012     89.998  46.720   1.422   0.1616
envmL        -22.330     40.216  21.100  -0.555   0.5846
envmM         81.854     34.087  32.160   2.401   0.0223 *
envmN         65.626     30.858  22.060   2.127   0.0449 *
envmP        105.132     38.790  28.250   2.710   0.0113 *
envmR         -8.018     51.194  21.260  -0.157   0.8770
schoolN       39.334     23.049  21.470   1.707   0.1023
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

```
> coconocom$env <- relevel(coconocom$env, ref="mG")
> lmer=lmer(f2 ~ gender + env + school + (1|speaker) + (1|word), d
> summary(lmer)
Linear mixed model fit by REML ['merModLmerTest']
Formula: f2 ~ gender + env + school + (1 | speaker) + (1 | word)
   Data: coconocom[coconocom$vowel == "o", ]

REML criterion at convergence: 1166.3

Scaled residuals:
     Min       1Q   Median       3Q      Max
-2.15851 -0.48038  0.02216  0.55410  1.75665

Random effects:
 Groups   Name        Variance  Std.Dev.
 word     (Intercept) 3.134e+04 1.770e+02
 speaker  (Intercept) 1.266e-10 1.125e-05
 Residual             2.394e+04 1.547e+02
Number of obs: 96, groups:  word, 52; speaker, 39

Fixed effects:
            Estimate Std. Error       df t value Pr(>|t|)
(Intercept) 1718.450     54.155   55.990  31.732  < 2e-16 ***
genderM      -67.717     43.294   81.410  -1.564   0.1217
envmH       -529.266    204.154   25.220  -2.592   0.0156 *
envmJ          9.579    105.637   45.010   0.091   0.9282
envmK       -198.900    242.178   51.500  -0.821   0.4153
envmL        -65.383    126.632   28.550  -0.516   0.6096
envmM       -136.124    105.103   43.070  -1.295   0.2022
envmN       -180.294     94.516   33.610  -1.908   0.0650 .
envmP       -295.506    119.263   36.530  -2.478   0.0180 *
envmR       -310.543    158.122   31.650  -1.964   0.0584 .
schoolN     -190.833     43.886   80.580  -4.348 3.98e-05 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

[rajend.mesthrie@uct.ac.za]