Se les preguntó si estaban o no de acuerdo con la frase:
"women should take care of running their homes and leave running the country up to men"

Datos

```
> frase
   yearseducation genero conteos totales
1               0  males       4       6
2               1  males       2       3
3               2  males       4       5
4               3  males       6       9
5               4  males       5      10
6               5  males      13      20
7               6  males      25      34
8               7  males      27      42
9               8  males      75     124
10              9  males      29      58
11             10  males      32      77
12             11  males      36      95
13             12  males     115     360
14             13  males      31     101
15             14  males      28     107
16             15  males       9      32
17             16  males      15     125
18             17  males       3      32
19             18  males       1      29
20             19  males       2      15
21             20  males       3      23
22              0 female       4       6
23              1 female       1       2
24              2 female       1       2
25              3 female       6       7
26              4 female      10      11
27              5 female      14      21
28              6 female      17      22
29              7 female      26      42
30              8 female      21      45
31              9 female      30      65
32             10 female      55     122
33             11 female      50     112
34             12 female     190     593
35             13 female      17     109
36             14 female      18      99
37             15 female       7      41
38             16 female      13     128
39             17 female       3      31
40             18 female       1      21
41             19 female       1       3
42             20 female       2       6
```

MODELO CON 1 VARIABLE EXPLICATIVA

```
> mod1<-glm(cbind(conteos,totales-conteos)~yearseducation,family=binomial,data= frase)
> summary(mod1)

Call:
glm(formula = cbind(conteos, totales - conteos) ~ yearseducation,
    family = binomial, data = frase)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.7542  -0.9588  -0.2149   0.8569   1.9917

Coefficients:
               Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.13233    0.17658   12.08   <2e-16 ***
yearseducation -0.24199    0.01511  -16.02   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 361.456  on 41  degrees of freedom
Residual deviance:  49.084  on 40  degrees of freedom
AIC: 200.35

Number of Fisher Scoring iterations: 4
```

Baja bastante el valor de la Deviance

MODELO CON 1 VARIABLE EXPLICATIVA

```
>    mod11<-glm(cbind(conteos,totales-conteos)~genero,family=binomial,data= frase)
> summary(mod11)

Call:
glm(formula = cbind(conteos, totales - conteos) ~ genero, family = binomial,
    data = frase)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-6.0102  -2.0486   0.7181   2.5276   5.6304

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept) -0.72049    0.05525 -13.041   <2e-16 ***
generomales  0.12675    0.07994   1.586    0.113
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 361.46  on 41  degrees of freedom
Residual deviance: 358.94  on 40  degrees of freedom
AIC: 510.21

Number of Fisher Scoring iterations: 4
```

No es significativa

No baja mucho la Deviance

MODELO CON 2 VARIABLES EXPLICATIVAS

```
>    mod2<-glm(cbind(conteos,totales-conteos)~genero+yearseducation,family=binomial,data=
frase)
> summary(mod2)

Call:
glm(formula = cbind(conteos, totales - conteos) ~ genero + yearseducation,
    family = binomial, data = frase)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.5751  -0.9477  -0.2613   0.7238   2.0209

Coefficients:
               Estimate Std. Error z value Pr(>|z|)
(Intercept)     2.08139    0.18243  11.409   <2e-16 ***
generomales     0.09141    0.08485   1.077    0.281
yearseducation -0.24124    0.01510 -15.976   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 361.456  on 41  degrees of freedom
Residual deviance:  47.924  on 39  degrees of freedom
AIC: 201.2

Number of Fisher Scoring iterations: 4
```

La Deviance es poco diferente a 49.084

MODELO CON INTERACCIÓN

```
> mod3<-glm(cbind(conteos,totales-conteos)~yearseducation*genero,family=binomial,data= fr
ase)
>
>    summary(mod3)

Call:
glm(formula = cbind(conteos, totales - conteos) ~ yearseducation *
    genero, family = binomial, data = frase)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-2.4552  -0.8600  -0.1731   0.5884   2.1430

Coefficients:
                          Estimate Std. Error z value Pr(>|z|)
(Intercept)                2.28618    0.27107   8.434   <2e-16 ***
yearseducation            -0.25913    0.02313 -11.203   <2e-16 ***
generomales               -0.26914    0.35693  -0.754    0.451
yearseducation:generomales  0.03174    0.03051   1.040    0.298
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 361.456  on 41  degrees of freedom
Residual deviance:  46.839  on 38  degrees of freedom
AIC: 202.11

Number of Fisher Scoring iterations: 4
```

Bajo otro poquito la Deviance

SELECCIÓN DE VARIABLES

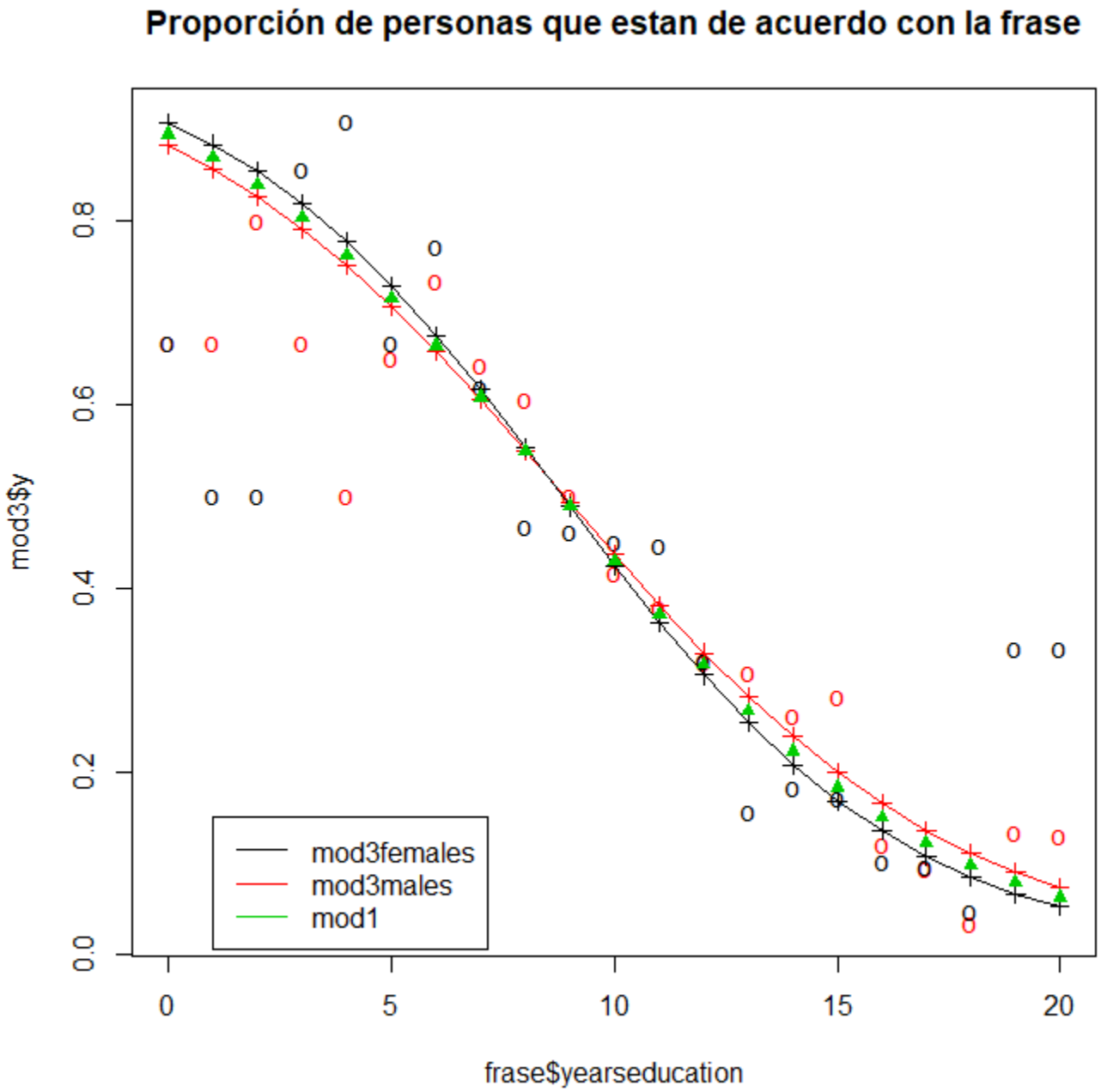
```
>
> anova(mod1 ,mod2,mod3)
Analysis of Deviance Table

Model 1: cbind(conteos, totales - conteos) ~ yearseducation
Model 2: cbind(conteos, totales - conteos) ~ genero + yearseducation
Model 3: cbind(conteos, totales - conteos) ~ yearseducation * genero
  Resid. Df Resid. Dev Df Deviance
1        40     49.084
2        39     47.924  1   1.1598
3        38     46.839  1   1.0859
> anova(mod1,mod3)
Analysis of Deviance Table

Model 1: cbind(conteos, totales - conteos) ~ yearseducation
Model 2: cbind(conteos, totales - conteos) ~ yearseducation * genero
  Resid. Df Resid. Dev Df Deviance
1        40     49.084
2        38     46.839  2   2.2458
```

Diferencias de las Deviance, modelos anidados.

Diferencias modelo chico vs el más grande

```
 > 1-pchisq(2.24,2)
 [1] 0.3262798
 > 1-pchisq(1.15,1)
 [1] 0.2835491
 > 1-pchisq(1.08,1)
 [1] 0.2986976
```

Estos son los valores de los p-values para esas diferencias de Deviance, ninguna sale significativa, es decir explican lo mismo el modelo grande y el chico, entonces se prefiere el modelo chico


Proporción de personas que estan de acuerdo con la frase
mod3$y
0.0
0.2
0.4
0.6
0.8
0
5
10
15
20
frase$yearseducation
mod3females
mod3males
mod1